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THE RECORDING INDUSTRY MAGAZINE

Mix

Interview: Joni Mitchell

**Listings:
Independent Engineers
and Producers**

**Digital Engineers
Talk About Mics**

**How the Pros
Budget for Sessions**

**Financial Planning
Maintenance**

**Computers in
Video Production**

Wang Chung

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Cheech & Chong!

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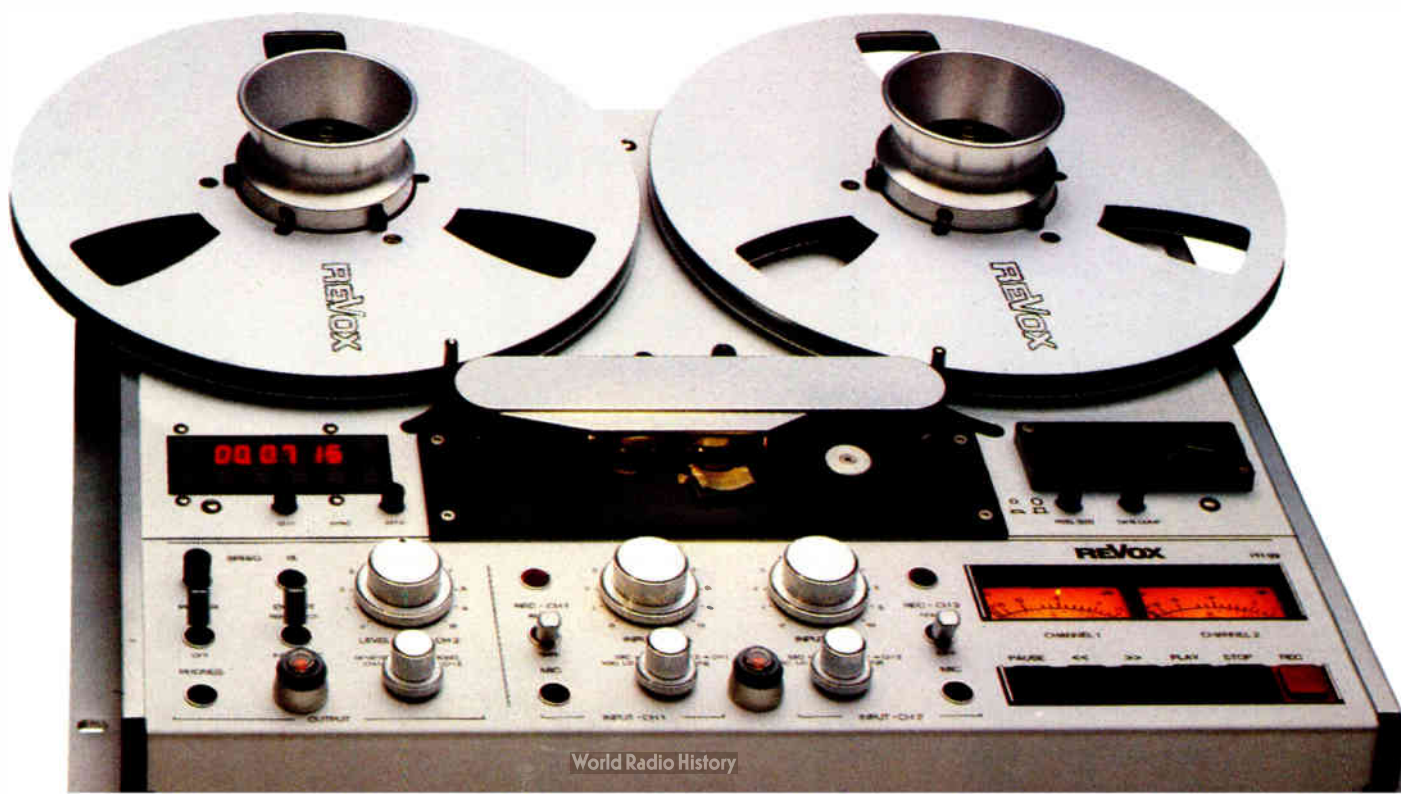
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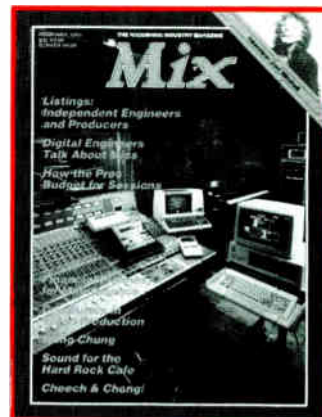
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Cover: Hitsville Recording Studios displays some of the latest technology that has become part of the familiar Motown Sound. Hitsville recently expanded the Los Angeles studios to include audio for film and video, and is now offering its services to independent producers and outside clients. Photo: Steve Broadus. Stylist: David Goggin. Corner photo: Joni Mitchell. Photo: Norman Seeff.



Maureen Droney (left) is one of ten engineers and producers interviewed for a special dialog on recording budgets—how they're used and abused, and how the pros save money in the studio. (Page 70). In this issue we also offer extensive listings of independent engineers and producers, with information on the services they offer and their credits. The directory begins on page 137.

In our **Microphone Special Report**, Mix editor George Petersen chats with digital engineers about "Miking in the Digital Age" and also takes a look at headset microphones for performing musicians. The miking piece starts on page 32.



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CURRENT

Studio Business Conference

SPARS, the Society of Professional Audio Recording Studios, will be holding their second annual Studio Business Conference March 22 and 23 at the University of California Graduate School of Business in Los Angeles.

Modeled on last year's conference at 3M headquarters in St. Paul, Minnesota, the agenda for this year's program will include seminars on Obedience Training for Bankers, Insurance Costs, Effective Cash Control, Investment Analysis and Cash Flow, Overview of the Economy using the Graduate School of Management's General Business Forecast, and Developing Areas of Business for Studios. There will be a reception each evening featuring demonstrations of studio business software.

Registration fees for SPARS members will be \$380 before March 1 and \$425 after. For non-SPARS members the fees will be \$530 and \$575 respectively. Registration will include admission to all seminars and receptions, a light breakfast and lunch each day of the conference, three nights hotel accommodations in Westwood, transportation between the hotel and the conference site, and transportation to and from the airport for those arriving in Los Angeles by plane. Participation is limited to 70 registrants.

For more information, individuals and software vendors should contact the SPARS National Office, P.O. Box 11333, Beverly Hills, CA 90213, (213) 466-1244.

SMPTE Television Conference

The Society of Motion Picture & Television Engineers will be highlighting recent developments in television technology at their 20th annual television conference, to be held February 7 and 8 at the Chicago Marnott Hotel. The conference will be divided into four half-day sessions. Friday morning will

feature a discussion of the production of stereo programs for television, the broadcast of stereo productions, and the design of television receivers for stereo sound. Friday afternoon will deal with the SMPTE Type D-1 digital television tape recorder (DTTR). Each subsystem involved in the recording format will be described by experts in that technology. Saturday morning will continue the DTTR discussion on such topics as electrical design, video processing, audio and timecode systems, error control and data shuffling. Saturday afternoon will be devoted to present-day techniques of post-production, including digital special effects, sound processing and editing. A panel discussion by experts in the Chicago area will conclude the session. For further information, contact SMPTE at (914) 472-6606.

Fender Purchases Sunn Electronics

Executives of Fender Musical Instruments have signed an agreement to purchase certain assets of Sunn Electronics, manufacturers of amplifiers, sound reinforcement systems and stage lighting systems. The Sunn marketing and administrative operations will move to Fender's Brea, California location, however, Sunn products will continue to be manufactured in their Tualatin, Oregon factory. Myril Weiler has been appointed to the position of Vice President of Electronics Manufacturing, which will include supervision of the Sunn brand products.

Fender Musical Instruments was purchased from CBS by Bill Schultz and a group of colleagues earlier this year. The "new" Fender, which includes Rogers, Rhodes, Chroma and Squire brand name products, will now also include Sunn Electronics name and product lines.

MIDI Awards

A MIDI industry awards program has been created by MIDI Marketer to recognize achievement by marketers of MIDI products. A popular vote by MIDI industry retailers, distributors and product developers will recognize Best Overall MIDI Hardware Product, Best Overall MIDI Software Product, Most Creative Advertising, Best Sales/Dealer Promotion, Most Effective Merchandising Display Materials and MIDI Industry Personality of the Year. The awards will be presented each year at the January NAMM Winter Market. For more information, call 212/924-4061.

Houston Hosts New Music America

The eighth annual New Music America festival opens in Houston, Texas on April 5 and continues through April 13, sponsored by The Houston Festival Foundation, Inc., as part of the Sesquicentennial celebrations for the city and state. New Music America highlights contemporary music in all its diverse forms, from instruments invented by the performers who play them to new uses of traditional instruments, new jazz, improvisation, sound installations and performance art.

The festival will exploit many of the city's spaces, from the tunnels that crisscross downtown to the architectural landmarks. Three composers have created works just for the Astrodome's special acoustics, including one that uses a blimp to manipulate sound; and the brooding paintings of the Rothko Chapel will be the backdrop for a program of meditative works. At the planetarium, electronic scores will include "Return of Halley's Comet" by sonic virtuoso Morton Subotnick.

For more information, contact Michael Galbreth, coordinator, New Music America 1986, 1964 West Gray, Suite 227, Houston, Texas 77019. ■

INDUSTRY NOTES

3M has merged its audio, video and data recording products into a new Magnetic Media Division, now responsible for manufacturing and marketing magnetic media in various formats including open reel, cartridge, cassette and diskette. **D. Drew Davis** was named division vice president and **Dr. Ennio E. Fatuzzo** group research and development vice president, both reporting to **George L. Hegg**, group vice president, memory technologies. . . **USC's** School of Cinema-Television has developed continuing education classes and workshops to train editors in using the new EditDroid electronic "film-style" editing systems recently donated to the school by **Lucasfilm Ltd.** and **George Lucas**, a USC grad. Call 818/788-8810 for details. . . **Studio Pass**, a nonprofit audio and electronic music studio in New York City is offering monthly one-day MIDI seminars and workshops in digital sampling techniques, sequencers and drum machines and the Yamaha DX7 and TX816. For more info, call 212/206-1680. . . **UCLA Extension** is offering a 12 session workshop on current recording techniques taught by **George Massenberg** at his West Los Angeles studio, beginning in April. Call 213/825-1901. . . **Curtis Chan**, former senior engineering manager for **Sony's** Professional Audio Division, has been promoted to product manager, audio products, at **Sony Broadcast Products'** Teaneck, NJ office. . . **Crown International, Inc.** has appointed **Walter**

Bachman manager of purchasing and **Enos Yoder** engineering group manager. . . **John C. McLaren** and **Scott Anderson** have joined **Barcus-Berry Electronics, Inc.** as chairman and vice president, finance, respectively. . . **Abe Hoch** has been appointed vice president of **Le Mobile, Inc.**, according to president **Guy Charbonneau**. . . **JVC Company of America** has promoted **Dave Walton** to marketing manager, new products and **Juan Martinez** product engineering manager. . . **Pacific Arts Video** has relocated to 50 North La Cienega Blvd., suite 210, Beverly Hills, CA 90211, ph. 213/657-2233. . . **Equipment Exchange** has opened a new dealership facility, featuring an audio/video sweetening room equipped with an N.E.D. Synclavier Digital Audio System, at 1415 Western Ave., Suite 300, Seattle, WA 90101, ph.206/623-7860. . . Four students from the **University of Pennsylvania** have opened **TheSOUND**, a company specializing in sound design and high end synthesizer rental, in suburban Los Angeles. Ph.213/650-5480. . . **Finial Technology** of Sunnysvale, CA, has appointed **Allen J. Evelyn** vice president of sales and marketing. . . **Jim Cerwin** has been named to the newly created position of manager, telecommunications components, at **Switchcraft, Inc.**. . . The San Francisco chapter of the **Audio Engineering Society** will be demonstrating an Ambisonics mixdown session, with a discussion led by **Dr. Geoff**

Barton, at **Sonic Arts Studios** 665 Harrison St, SF, at 7:30 PM February 19. . . **Aplicaciones Electronicas Quasar (AEQ)** has moved to a larger facility near Madrid at Calle Rey Pastor #36, Poligono Industrial de Leganes, Leganes, Spain, ph. 686-44-92. . . **Ed Fraticelli** has joined **Production Masters, Inc.** as director of engineering and senior editor. . . **Ellen K. Sorstokke** has been appointed director of marketing and **Sherwood "Woody" Phifer** head of the repair and restoration facility at **Mandolin Bros. Ltd.** of Staten Island, NY. . . **S/T Videocassette Duplicating/New England** has changed its name to **VCA Technicolor New England** and has moved its sales office to 124 Mount Auburn St, Suite 200, Harvard Square, Cambridge, MA 02138, ph. 617/576-5749. . . **Gerren Mortensen** and **Bill Wildman** have joined **Sony Video Communications** as key accounts managers in the mid Atlantic and North Western Regions, respectively Several changes in the **Agfa-Gavaert, Inc.** Magnetic Tape Division: **Martin Conry** moves to technical sales representative in the Lexington Marketing/Training Center, **Michael Caputo** to technical sales representative for upstate New York, **Scott Kaplan** to Los Angeles technical sales representative, **John Stephen Palma, II** to technical audio specialist at the Teterboro, NJ headquarters, **Will Morin** to video products manager and **Robert McNabb** to regional sales manager for the Pacific region. . .

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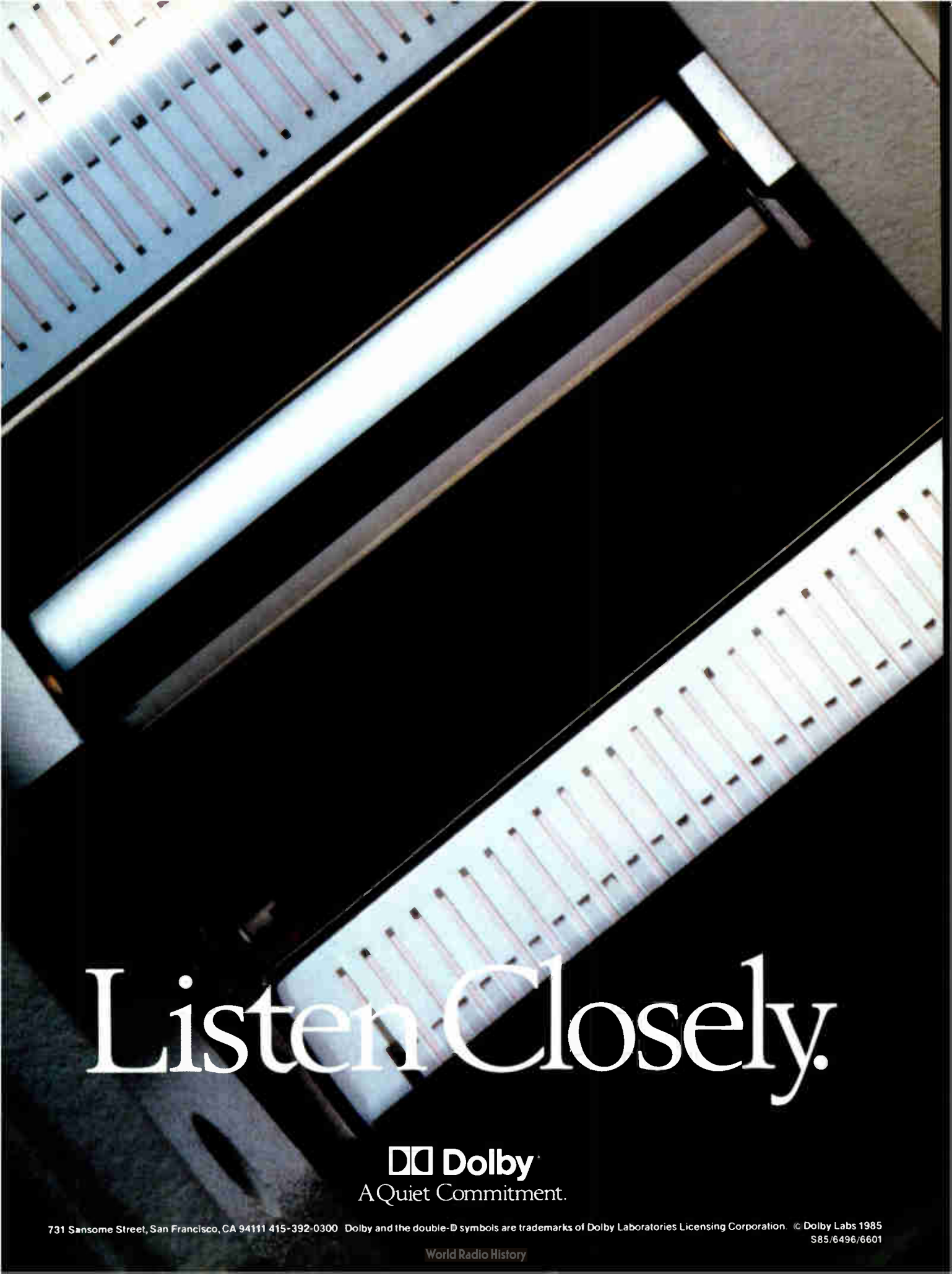
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World Radio History

SESSIONS

NORTHWEST

At **Triad Studios** in Redmond, WA, **Queensryche** completed album preproduction work with **Tom Hall** at the board; and **Clance Carrigan** was in for original demo tracks to be shopped in Nashville. . . The new **Aerosmith** album on Warner Bros. Records was recorded in **Fantasy's** Studio D in Berkeley. **Ted Templeman** produced the LP with **Jeff Hendrickson** engineering and **Tom Size** assisting. Also, **Journey** was in doing vocals on their current LP for CBS Records. Producing was **Jim Gaines** and **Steve Perry**, with Gaines engineering, assisted by **Bob Missbach**. . . At **Dave Wellhausen Studios** in San Francisco, **Ray Collins** was in working on a jazz album with Wellhausen engineering; and **Lori Lewis** began work on her country and western album engineered by **John Altmann**. . . **OTR Studios** in Belmont, CA, recently expanded to 24 tracks, had **The Pickle Family Circus Band** working on a demo tape, and performance artist and new music vocalist **Diamanda Galas** working on an album project with **Frank Harris** and **Naut Humon**. . . At **Steve Lawson Productions** in Seattle **Danny Deardorff** finished up his new LP **Shadowheart** with **Bruce Calder** engineering; and **Righteous Mothers**, who recorded their first album there completed a second album with **Terry Date**. . . **Kingfish** was in **Prairie Sun Recording** in Cotati working on some live tracks for Relix Records with **Matt Kelly** and **Barry Flast** co-producing, **Allen Sudduth** and **Steve Peterson** engineering, and **Steve Heger** assisting. . .

SOUTHERN CAL

Neil Geraldo was in **Mama Jo's Recording Studio** (North Hollywood) mixing a single from his wife **Pat Benatar's** newest album. Geraldo was producing and engineering the project. Also, producer/engineer **Peter Coleman** was in mixing Island Records artist **Danny Wilde** with **Todd Van Ethen** assisting. . . Producer **T-Bone Burnett**, with **Larry Hirsch** engineering, did tracking and mixing for **Elvis Costello** and **Peter Case** albums at **Sunset Sound** in Hollywood, with **Bill Jackson** assisting. Also, CBS artists **The Bangles** were in with **David Kahne** producing, **David Leonard** engineering and **David Glover** assisting, on mixing new album. . . Jazz artist **Dan Siegel** has been recording and producing tracks for Pausa recording artist **Luis Arteaga** at **MixMasters Audio Production Specialists** in San Diego, CA. At the board for the sessions was **Charles DeFazio**. . . Studio C at **The Complex** in L.A.

was chosen for the 12 weeks of mixing, overdubs and editing for **Sting's** film **Bring on the Night**. The music was produced by **Pete Smith**, who also produced **Sting's** album **The Dream of the Blue Turtles**. **Bill Youdleman**, who started with the project in Paris, acted as both post sound supervisor and music mixer. **Sharon Rice** was the assistant engineer for the project. . . At the **Sunset Sound Factory** in Hollywood, **Slash** recording act **The Da Bodeans** were in recording their new album, with **T-Bone Burnett** producing and **Dennis Kirk** engineering. . . **West Oak Recorders** of Westlake Village, CA, became the first commercial studio in the United States to use the Sony 1630 digital processor. Rented from CMS Digital, Inc., the 1630 was utilized in a project featuring a 75-piece orchestra with **Sarah Vaughan** singing translations of poetry of Pope John Paul II. The album will be released on Jazzletter Records. . . Artist **Ray Martin** was in L.A.'s **Skip Saylor Recording** cutting tracks with the production team of **Skip Saylor** and **John Hug**. **Saylor** engineered with **Tom McCauley**, **Joe Shay** and **Andy McCarl** assisting. . . At **Artisan Sound Recorders** in Hollywood, disk mastering engineer **Greg Fulginiti** recently mastered LPs for the film soundtrack **That Was Then . . . This is Now**, with producer **Keith Olsen**; **Frank Zappa**, with **Bob Stone**; and **Tony Iommi**, with producer **Jeff Glixman**. . . **Sound Image Studio**, North Hollywood, CA, had producer **Ed Tree** in mixing country artist **Mark Fosson** for Sound Image Productions with **Patrick von Wiegandt** at the controls. . . **George Clinton** has been mastering at Hollywood's **Capitol Recording Studios** with engineer **Eddie Schreyer**. **Clinton** is producing. . . **Stevie Nicks** worked on her recent album, **Rock a Little**, with **Rick Nowels** producing and **John Kovarek** engineering at **Music Grinder** in Los Angeles. Also in was **Allen Holdsworth**, virtuoso guitarist, producing his own Enigma Recording with **Robert Feist** as engineer. . . **George Clinton** was in **Sound Solution** (Santa Monica) working on the dance mix of his brother **Jimmy G's** top chart hit, "You Always Break My Heart" with **Leonard Jackson** and **Janine Cirillo** as engineers. . .

SOUTHWEST

Reelsound's mobile was called on by Westwood One to record **AC/DC** in Dallas and the truck's home base of Austin. **Richard Kimbal** and **Barry Freeman** were producing with **Malcolm Harper**, **Mason Harlow** engineering assisted by **Rusty Buckner** and **Brent Campbell**. . . At **Dallas Sound Lab**, **John Melchiorre** of the group **Odessa** recorded Dallas Cowboys' novelty song, "Ain't

Gonna Take It No More" on 24-track digital with **Dallas Sound Lab's Johnny Marshall** programming and performing the synthesizers with **Ron Cote** engineering the project. . . At **Planet Dallas Studios**, the **Howling Derivishes** finished a five-song demo to be distributed in the Southwest. And **Fine Line** finished a 45 and have been recording their next EP. . . **Dallas Sound Lab** hosted the first film score to be recorded in sync to 35mm projection in the Southwest. Producers **Ken Sutherland** and **Phil Kelly** of **Ken Sutherland Productions** produced the score for **Martin Jurov's** latest feature film, **Papa Was a Preacher**. . . Recent recording activity at **L.A. W Studios**, in Las Vegas, included **B.B. King** laying tracks for two of five albums in the works, engineered by **Lee Watters**, assisted by **Holly Sharpe**, and co-produced by **Walter King**. . . In recent studio sessions, **Lone Star Studios** in Austin completed recording for a new album for the **Rhythm Rats** and selected demo tracks for **Joe "King" Carrasco**. **Randy Kirchhof** was producer and engineer for the **Rhythm Rats** album, and **Joe Gracey** engineered the **Carrasco** recordings. . . **Goodnight Dallas** has completed **Alex Harvey's** ("Delta Dawn," "Reuben James") latest album for TAM Records, which includes the official Texas 1986 Sesquicentennial song "No Place But Texas." The project was produced by L.A. session player/songwriter **John Hobbs**. Nashville engineer **Billy Sherrill** mixed the album on the Mitsubishi X-80 digital 2-track. **Ruben Ayala** and **Don Seay** assisted. . .

SOUTHEAST

At **Sounds Unreel Studios** in Memphis, **William Lee Golden** of the **Oak Ridge Boys** did work on his first solo album for MCA Records, produced by **Eli Ball** and **Booker T. Jones** and recorded by **Don Smith** utilizing the Mitsubishi X-800 digital multi-track recorder. . . At **Wally Cleaver's Recording**, **Rae Pothier** wrapped her album up for Songbird Records, and **The Prevaricators** finished their second album. Both projects were engineered by **Peter Bonta**. . . At **Castle Recording Studio** in Franklin, TN, **Walk The West** finished tracks and were mixing their debut for **Castle Productions** and **Greystone Records**, with producer **Jozef Nuyens** and engineers **Giles Reaves** and **Keith Odle**. . . The "Toot Toot" team was back at **Sea-Saint Studios** in New Orleans, where **Jean Knight** recorded her latest single, produced by **Isaac Bolden**, who plays on the cut along with some popular New Orleans musicians. **Clarence Toussaint** engineered. . . **Studio One** in Atlanta, which has been home to recording artists like the **Atlanta Rhythm Sec-**

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tion, Journey and B.J. Thomas, now belongs to Georgia State University. It will now be used primarily for education, but will continue to conduct a limited number of professional recording sessions to serve Studio One's present clientele... *Robin Chase* was in *Hummingbird Studios* in Melbourne, FL, doing guitar and vocal overdubs on a couple of original songs, with help from guitarist Ed Stefanov; and *Tom Salva* was in laying down basic tracks for demos... In Nashville, *Rufus James White Jr.* and producer/engineer *Jimmy Edmonds* at Master Mix with remix engineer Tom Brown worked on Million Dollar Bill, the Bill Elliot song... Activity at *New River Studios* in Fort Lauderdale, FL, included Arista Records artist *Jermaine Stewart* mixing a dance single, produced by *Narada Michael Walden*, with mixing and co-production by *Luis Martine* and *Frank Diaz* of Pantera Records. It was engineered by *Mike Couzzi*, assisted by *Teresa Verplanck*...

NORTHEAST

The *Skyelabs* Mobile Recording Unit, based in Dover, Delaware, was out on the Washington D.C. mall recording the Religious Freedom Crusade concert. Featured artists were Chick Corea, Al Jarreau, Gale Moran, Billy Preston, Lee Konitz, Harold Danko and Glenn Zatlolla to name a few of those involved in the 17 acts that performed. The recording was engineered by *Bob Skye* with *Bernie Kirsh* producing... *Paul Orofino* and *Kenny Cruz* were in NYC's *Beethoven Studios* producing *The Bobbies*. *Dave Badolato* was at the console... *Masterdisk* prepared

Christmas releases for *Corey Hart*, *Bryan Adams*, and *Hall & Oates*. Mastering was handled by chief engineer *Bob Ludwig*, who also cut the most recent projects by *Arcadia*, *Simple Minds*, *Sheena Easton*, *Maurice White*, *Twisted Sister*, *Bruce Springsteen*, *Rush*, *Roger Daltrey* and *Al DiMeola*. Ludwig also contributed his services to the all-star "Sun City" single and EP... Tommy Boy recording artists *Stetsasonic*, were in NYC's *Little Big Horn Studio* tracking and mixing material for their next album. *Kareem Bolton* produced, with *Jerry Gottus* at the board... At *RPM Studio* in New York City, *The Zummos* completed their first album for A&M Records. Producing was *Joe Jackson*. *Dom Maita* engineered with assistance from *Mike Krowiak* and *Jeff Lippay*. Also completing work at RPM were *The Rolling Stones* for CBS Records. *Steve Lillywhite* produced with *Dave Jerden* engineering and *Krowiak* assisting... In *House Studio* in Cambridge, MA, recorded "Moral Door" by the band *Gracious Living*. The song was composed by Joanna Fink of Boston's Alpha Gallery. *Rick Dezemelyk* engineered the sessions... At *Reel Platinum Studios* in Lodi, NJ, producer *Steve Greco* was in remixing a new version of Del Shannon's "Runaway"... At *Sound Ideas* in NYC, a 48-track mix was done for artist *Gerard McMahan* and Atlantic Records. *Joel Soifer* did the engineering with *Mario Rodriguez* assisting... Songwriter *David Todd* worked at *Evergreen Recording Studios* in Pittsburgh, PA, laying tracks for his new song "Hanging On." *Harry Coleman* and *Tom Kikta* were at the board, *Rick Hughes* assisting... *David Waddle* recorded the theme song for the Atlanta hunger walk, entitled "No More Hunger," to benefit

America's hungry at *Songbird Studio* in Atlanta... At *Sound Heights* in Brooklyn, Select Records' artists *Kangol Kid* of UTFO, and *Howard Tee* from the Full Force organization, produced the group *Whistle for Fred Munao*. *Questar Welsh* engineered with *Shuan James* assisting using all the latest sampling and MIDI technologies... *Pacific Orchestra* completed recording at *Lion and Fox Recording Studios* in Washington D.C. The songs were written by Pacific Orchestra, and produced and engineered by *Jim Fox*... *Howard Schwartz Recording* in NYC, was the scene of several major music sessions for *Applegate & Schwartz Music*. "I've Got a Passion for You," flagship tune of the Pillsbury Desert Campaign, created by BBDO/NY was recorded along with new arrangements for Pepsi TV and Radio, Ivory Shampoo as well as the Miller Beer theme. Engineering was done by *Rick Applegate*, assisted by HSR's *Jeff Levy*... At *Giant Sound Recording* in Manhattan, *Reggie Lucas* was in working on two projects; *Randy Crawford* for Warner Brothers and *Megaphase* for MCA. *Joe Ferla* engineered... Activity at *Sync Sound* in NY, included mixing and sweetening audio for the first show featured Stevie Ray Vaughn, concentrating on Texas Rock. The series is produced by *Pat Weatherford* for Monarch Entertainment. *Ken Hahn* was at the board... *Benji King*, formerly of Scandal, was in NYC's *Quadrasonic Studios* working with and producing *Buster Newman*... At *The Cutting Edge* in Ferndale, NY, mastering projects included an LP and cassettes for Studioworks clients *Cindy & Rob*, and an LP for Trakworks Recording Studio's *Willie Mays*... At *RPM Sound Studio* in New York City, *The Sharks* recorded their first EP for Elektra Records. *Joey Balin* produced with *Dom Maita* engineering and *Jeffrey Lippay* assisting... At *Azimuth Recording Studio*, Newfield, NJ, *The Young Lions* began laying tracks for their new album, with *Larry Norman* producing, and *Mark Schultz* engineering. Also at Azimuth, *The Fugitives* cut and mixed two sides, produced by the band and engineered by Schultz... *Melba Moore* cut tracks for her new album on Capitol Records at *Celestial Sounds* in NYC with *Gene McFadden* and *Rahni Harris* producing, *Ron Banks* engineering, *Kurt Upper* assisting... "Stand Back," the latest single from *Stephanie Mills* on MCA Records was recorded at *Sigma Sound* in Philadelphia. The sessions were produced by *Nick Martinelli*, and engineered by *Michael Tarsia*, assisted by *Scott Macminn* and *Randy Abrams*... At *D&D Recording* in NYC, artist *John Fantasia* recently recorded three songs and already has interest from major record companies. *Eric Turkel* produced and arranged. *Peter Darmi* co-produced and engineered... At NYC's *M&I Recording*, *Steve VanZandt* was in working on "The Struggle Continues," for the *Sun City* project. With Van Zandt were *Herbie Hancock*, *Tony Williams*

—CONTINUED ON PAGE 169

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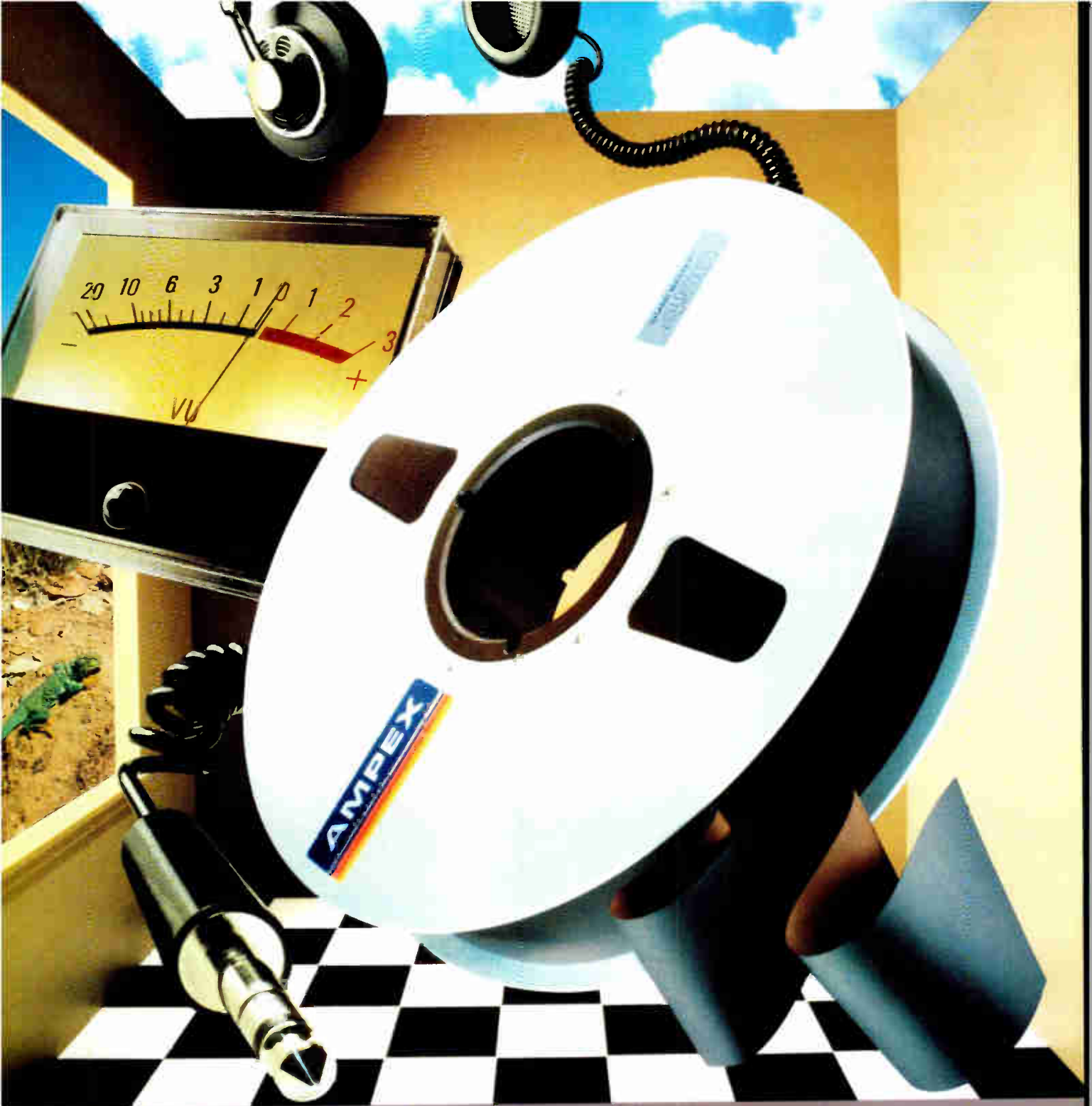
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AND THE BEAT GOES ON

AUDIO APPLICATIONS

“With the advent of programmable digital consoles, the nature of audio consoles, as well as the people and industries that use them, is changing. . . .”

and concerns of both the designer and user are raised. It becomes quickly apparent that few questions have easy answers, and that a considerable number of trade-offs are inherent in any console's design, particularly when the console is considered as a system. In general, if the technology isn't a problem, then its cost is, and any particular design approach fails to accommodate the advantages of any other approach. The dilemma facing any console manufacturer is the underlying plot of the report—in this case the drama is heightened because of the sheer number of alternatives afforded by digital technology.

Audio processing can be accomplished in either the analog or digital domains. Moreover, either technology, inherently or not, can lend itself to programmability. SSL begins with the premise that programmability is the current priority in console design; it promotes assignability and virtualization of controls, which in turn induce flexibility and optimization of controls and displays. However, a programmable analog console entails solution to several classic design problems. Mechanical switches and variable functions must be made programmable and automated. While VCA or servo systems have been partially successful, their cost, size and tolerance prohibit their implementation in a fully programmable analog console. One alternative is FET-switched resistor arrays, however FET distortion and glitch noise lead designers into often unsatisfactory practices such as control slewing, or T-switches which increase cost and tweaking. Other alternatives such as opto-FETs and MDACs introduce new opportunities, and problems. Throughout, problems such as data-induced noise into the analog circuitry remain chronic and only relatively soluble. In summary, a fully programmable analog console is a design of compromises, and ultimately leads one to contemplate an all-digital approach.

With the proliferation of digital studio storage, and consumer digital playback, an all-digital signal chain seems inevitable; only the all-digital console satisfies this criteria. Beyond the benefit of improved signal quality, a digital console (of mature design) would offer considerable freedom to allocate processing power. Specifically, it will be a software-determined device. For example, the same control surface could be configured to provide 64 comprehen-

The Future of Audio Console Design

by Ken Pohlmann

Not so long ago, there were no consoles. Then some technician stayed up all night and wired in a patch bay—an amazing idea—to be able to route signals at will. Shortly thereafter, rotary pots were added, and amplitude control was born. Embellishments followed one after another until an entire desk was required to hold all the controls comprising the input, output, and monitor sections. Then both construction and ergonomic considerations took a step forward with the in-line console. Automation was added, recall came along, and soon consoles became virtual. The recording, post-production and broadcast industries had become intrinsically dependent on the processing power and flexibility of the modern console. With the advent of programmable digital consoles, the nature of audio consoles, as well as the people and industries who use them, is changing again. Furthermore, the change promises to be the biggest since the first patch bay was wired in. What changes can we expect? Will they be toward complexity, or simplification? More prone to obsolescence,

or less? Larger, or smaller? And exactly who's dictating such changes—the users, or the manufacturers?

In a report to the industry entitled *The Future of Audio Console Design—Establishing a Dialogue*, Solid State Logic offers its perspective on those and many other questions relating to the development of new types of audio consoles. Foremost is their concern for the extent of the changes engendered by programmable consoles; the analog console is a highly evolved device, and it is unclear how entirely new devices embodying wholly new conceptual advances will be greeted by the industry. Thus, simultaneous with the development of their own next generation consoles, Solid State Logic has attempted to initiate an exchange between user and manufacturer to better evaluate the limitations, possibilities, and desirability of the many options, from the two and sometimes apparently opposing standpoints.

The report is subdivided into the four sections which comprise any contemporary console design: Audio Processing, Controls and Displays, Control Computers, and Automation and Storage. In each section, the appropriate terminology is carefully introduced,

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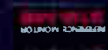


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sive channels, or 40 comprehensive channels and 48 general channels. The quantity and type of available processors are no longer directly limited by the manufacturer, but rather by the amount of processing power provided. Ideally, such a computer would also promote improvisation and creativity through its ergonomic design.

The engineering criteria of a digital audio console can be boiled down to a single concern—speed of computation. A 56 input SL 6000E console has well over 6,000 control points. At a sampling rate of 48 kHz, and two or three instructions per sample per function, the processor must accommodate some 1,000 million instructions per second. In addition, if 4 bits of memory are allocated per instruction, the resulting memory bandwidth requirement is equally impressive. In short, the processor (or networked processors) required to handle the work of a digital audio console must be formidable pieces of technology themselves.

Programmable audio processors offer entirely new methods of solving the man-machine interface problem; controls and displays are no longer inhibited by direct mechanical linkages between hard-wired circuits. An analog console offers considerable challenge to any new arrangement; it is an evolved ergonomic design. For example, a console's set-up may be quickly ascertained with a glance thanks to elements such as pattern recognition (i.e. the EQ knobs are all red, and located across the center of the board) and anomaly (i.e. a channel's mute lamp is off).

To compete, a digital console might have to implement entirely new concepts of control and display. Assignability creates the opportunity for shared controls; with assignability, a smaller control surface should accommodate a larger number of functions, with greater resolution, however the price is lack of instantaneity—a control must be assigned before it is used. Two schools of thought may be considered—a control set may perform the same function for a variety of channels, or different functions for a single channel, depending on its assignment prior to use.

A "one-per-channel assignable control set" approach in its limiting case would provide one knob per channel. It would be assigned to accommodate any function on that channel and would be maximally useful for simultaneous changes among many different channels. However, it lacks the assets of pattern recognition and location. In a "full-function master assignable control set" approach, one complete module would be provided, with

“A tapeless recording studio, in fact, would be the ultimate goal of the digital processing console”

dedicated controls, per console. It provides pattern recognition and location, and permits simultaneous changes of different functions in a channel, however it may be assigned to separate channels. Thus simultaneous changes between two modules would be difficult. But how many parameters should be simultaneously controlled in a "per-channel" implementation, and how many master sets should be provided in a "full-function" implementation? The answer is that both a "one-per-channel assignable control set" or "full-function master assignable control sets" approach has merit, thus a combination of the two is the likely compromise.

Along the same lines, assignable displays of dynamic signal conditions, static signal paths and console topography will create ergonomic opportunities, and problems. The resolution of display must match that of the control, and incorporate as much pattern recognition as possible. Also, global and local information should be presented. Fixed displays are effective in this respect; for example, a pointer on a knob provides relative position, and with a closer look its actual value may be determined, if desired. Another consideration is resolution versus relative usefulness. For example, a row of analog bargraphs might provide less absolute information (but more useful information) about channel amplitudes than a series of four digit alphanumeric displays. However, when combined,

both global and local information about the channels is obtained.

The processing required for control and display of the signal must also possess considerable speed and flexibility. When an operator turns a knob, the response must appear to be instantaneous. Scanning and update rate must be rapid (20 milliseconds or less), and reliable; dynamic noise must be distinguished from control motion with traps to evaluate raw data and reject erroneous input. Similarly, a rapid control motion must be accommodated without missing bits or glitches. This might be accomplished with dedicated processors; of course, the central processor must direct the operation of all distributed processors.

Any contemporary console, analog or digital, must provide for automation. Reset automation configures the console to previously stored values, and dynamic automation stores and updates the operator's control movements. Current dynamic automation systems operate at approximately 1/4 to one frame accuracy, storing information for about 100 dynamic functions such as fader motion and 200 single events such as switch closures. Total dynamic automation, in which all control movements are stored, would require about 40 to 50 times the processing power and data storage of a fader-only system. In addition, the ergonomics would become increasingly difficult in such a system. In an entirely digital system, perhaps the ergonomics would be the most difficult aspect to solve, however the benefits of fully computerized processing, manipulation and editing would be considerable. A tapeless recording studio, in fact, would be the ultimate goal of the digital processing console.

Solid State Logic's report is thus a summary of the complications and opportunities of designing and constructing a digital console. It pragmatically emphasizes the difficulties, and points out the need for a comprehensive approach to the project. The report estimates that parity between analog consoles and digital consoles might not be achieved until the "turn of the century," and that one must be careful to distinguish "a piece of sensible professional gear from a research prototype." However, it will be "well worth the wait." Citing more aggressive (i.e. hardware) approaches to the problem by its competitors, exemplified by products such as the DSP and Droid systems, skeptics might dismiss the SSL report as an exercise in biding time. However, I am inclined to agree with SSL's position that the undertaking is sufficiently revolutionary, challenging,

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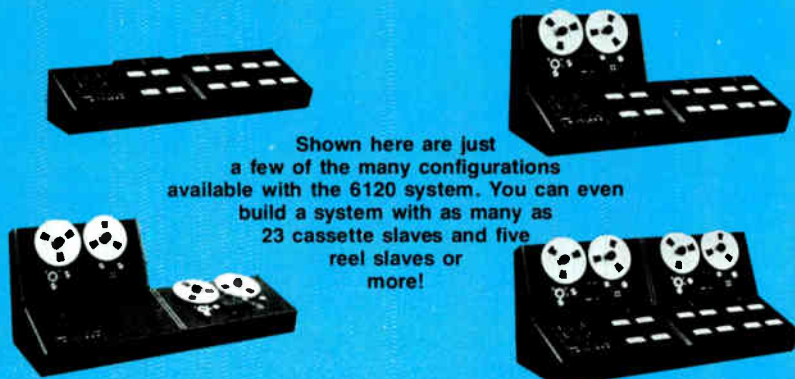
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costly and exciting to warrant discussion among all concerned.

However, in technological matters, discussion is sometimes a dangerous substitute for development. Progress and competition often just don't wait. In this case, I believe that SSL has both discussion and development in mind. Their intent is to inform their potential buyers what they have in mind, and solicit comment before it is too late. This is certainly welcome. The cost of digital consoles will be considerable, and any information SSL can receive from the field could be invaluable—to the eventual buyer of the console. Also, the mental exercise volunteered by the principle authors of the report, Colin Sanders, Doug Dickey, and Chris Jenkins, has been considerable, and that alone leads one to believe that it bodes well for any future SSL digital console. The idea of taking time to write a book about the project, and distributing it for the purpose of encouraging comment and meanwhile sorting out the possibilities is as radically promising as their digital console.

I hope that SSL's work sets precedent for the development of other audio systems. In the future, this mutual support between users and manufacturer will become more and more instrumental, as audio systems become more and more attuned to the behavior of audio practitioners themselves. That is, in the future, for all their flexibility, audio products will increasingly dictate the habits of the user, thus user contribution to the development will become more important. As topics such as artificial intelligence enter the audio industry, greater understanding will be needed of the human processing and mechanics itself. For example, an audio expert system might be ideally suited to analysis and diagnosis of signals in a production situation, and its extensive knowledge base might facilitate the human's task. Such a smart console could provide for faster and more cost efficient studio work, and ultimately justify the cost of sophisticated digital audio systems. But that can only come about if we carefully consider the interdisciplinary nature of the project, with considerable forethought. In that respect, Solid State Logic's report on the future of console design could be the first of many very important volumes on audio system design.

Copies of the report are available on request from Solid State Logic Inc., 200 West 57th Street, Suite 1210, New York, New York 10019, or Solid State Logic Inc., 6255 Sunset Boulevard, Suite 1026, Los Angeles, California 90028. ■

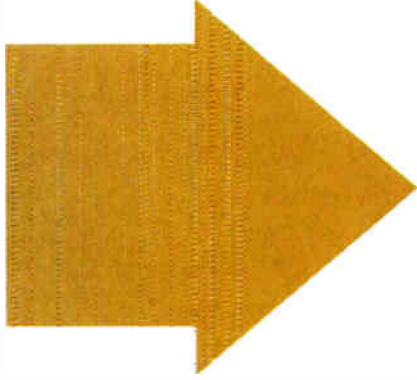
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FINDING THE STUDIO BUSINESS

Related Services and Additional Income Sources

by Tony Thomas

What follows is an excerpt from *The Recording Studio Business Operations Handbook*, by Tony Thomas, to be published by Mix Books later this year. This first book in the Mix Practical Applications Series is devoted to the complexities of operating a profitable studio from a business standpoint.

Remember What Business You Are In

A common mistake that many studio owners make is diversifying to the extreme that they forget what business comes first. It is important to remain cognizant of the fact that the recording studio business is your bread and butter and that any other sideline enterprise is simply gray.

With this fact firmly in mind, there are a number of related areas that a recording studio can become involved in to increase its profitability—without losing its identity. Several very good reasons exist supporting why a recording studio would want to diversify into ancillary enterprises:

- 1) To gain experience: One of the most important commodities a studio can offer to its clientele is its depth of experience. By getting involved in areas that are closely or even remotely related to the recording business, you will gain a greater understanding of the business as a whole. This understanding will provide you with increased empathy with your client's obstacles and objectives. Such empathy and experience can produce excellent studio/client rapport and lead to a more solid business relationship.
- 2) To centralize services: The less running around a client has to do to get the services desired, the more satisfied the client. If your studio has the

capacity to "do it all," the facility will develop a reputation for being a one stop resource—a place where an average client can go to get everything needed in the realm of recording services. Provided these added services are indeed profit centers, your studio will experience a significant built-in potential for growth without a commensurately significant outlay of capital.

- 3) To diversify: The corporate world has demonstrated that a diversified company is more immune to adverse changes within a single market than a non-diversified one. For this reason, any associated subsidiaries may help your studio get through industry recessions and seasonal slumps. As long as you retain full control of your subsidiaries and watch the balance sheet carefully, they can add to your studio's overall profitability.

- 4) To gain the competitive edge: Since the studio business is becoming more and more competitive, every studio has to look for ways to compete. One obvious way to compete is to purchase more and better equipment than the competition. This method is both risky and expensive, however, because it may not be cost effective. Another less obvious way to remain competitive is to ascertain what needs your clients have that you are not currently meeting, and to begin addressing those needs. As long as you can generate a positive cashflow by offering additional services, your studio will become more desirable to a wider range of clients.
- 5) To test a potential market: Just as major consumer companies "test market" new products, you should test market certain services to evaluate their market potential before totally committing your resources to them. Those ancillary services that pay off can eventually be turned into self-supporting companies.

Recording for Music Publishers

If you live in a major music center such as New York, Nashville or Los Angeles, you are probably acquainted

with the music publishing business and its recording needs. Although publishers naturally gravitate to these music meccas, larger cities and even many small towns across America have some degree of music publishing represented. Music publishers continually employ both musicians and studios to produce quality "demo" recordings which they play for prospective artists, producers, record companies, and other clients.

While demo sessions are not as glamorous as producing an album for a major label, they will add funds to your studio's coffers and may eventually net you some major label activity if representatives are impressed with the quality of your product. Therefore, make it a point to contact local music publishing companies and songwriters needing demos so your studio can tap into this market.

Recording for Audio-Visual Firms

Many companies specialize in producing audio-visual presentations for major corporations, hospitals, government organizations and charitable groups. These productions generally take the form of slide, videotape or film presentations. While film and videotape usually require synchronized sound and the means to lock the sound to the picture (SMPTE or Movieola), slide shows do not require absolute synchronization and can therefore be easily produced by a recording studio with little or no additional equipment.

Even though slide shows have become quite complex visually in recent years with the advent of computerization and the use of multiple projectors, their sonic needs are usually quite simple, with narration, thematic music and a few sound effects as the primary ingredients. Similarly, a studio can record narration and effects and can assemble music to be edited into those films or videotapes where synchronization is not important. As your studio grows, you can decide to add the equipment necessary to move

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HPF LPF

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REV. TIME (R/T) 2.6 sec

MID-LOW

E/R MODE 1 2 3 4 5 6 7 8

ROOM SIZE

E/R NUMBER

AUTO

LIVENESS E/R DELAY 1 (D1) 40 ms

AUTO

REV. MODE 1 2 3 4 5 6 7 8

HIGH

4K 2K 1K

MID-HI

500 250 125

LOW

REV. DELAY 2 (D2) 58 ms

AUTO

PRESET 1 2 3 4 5 6 7 8

PANEL P EDIT AUTO

MEMORY 67 M STR RCL

FUNCTION R/T D1 D2 M

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"EARLY REFLECTION" display mode showing room size and relative level and time of discrete reflections.



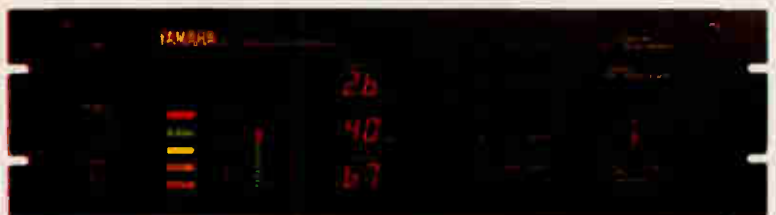
"REVERB DENSITY" display mode showing level and relative time of subsequent reverberation.



"REVERB TIME" display mode showing difference in reverb time in each of four frequency bands.



"MEMORY TITLE" display showing the titles of internal ROM memories.



into video sweetening and layback recording if these areas prove to be financially lucrative.

Recording for Advertising Agencies

One of the most overlooked sources of new business is also one of the most lucrative: local advertising agencies. While it's unlikely that Madison Avenue will beat a path to your door, (unless of course, you're located in midtown Manhattan), it is very likely that you can attract business from your friendly local agency row.

Though some recording studios consider working with agencies an unnecessary foray into commercialism, others have found it to be their bread and butter—with the recording of more artistically fulfilling music providing the dessert. The fact is, the small to medium-sized studio that fails to seriously consider the advertising agency recording market does so at a risk.

One reason studios do not get involved in recording for agencies is because of the leg-work involved. Naturally, reaching any new market does require some degree of salesmanship, public relations and, yes—even advertising. Once you develop a track record and a reputation for quality, however, the going gets much, much easier. Obviously, the best way for you to break into the agency market is by getting your feet wet in advertising recording. Initially it may be difficult to convince an agency to avail itself of your facilities. However, by offering certain incentives such as a discount, a money-back guarantee, or even by doing work on speculation (or "on-spec" as it is called in the ad business), your selling job should be eased considerably.

In some cases, it may be best to approach agency principals with your sales pitch, but in most situations you will deal with the agency's creative director, broadcast producer, copywriter, or account executive. A letter writing campaign, coupled with ads in the local yellow pages, an advertising trade publication, and the newspaper business section can help secure prospective agency clients. In fact, it might be a good idea to trade a block of recording time in exchange for the services of a local ad agency to develop an advertising campaign for reaching other agencies. After all, who would know what an advertising agency looks for in a studio better than another advertising agency?

Phone calls, visits, and other avenues of direct contact are by far the best ways of gaining new business. Plan on wearing out a few pairs of shoes "beating the pavement." As an alternative, you can consider hosting

an open house/buffet for the agencies on your list in order to get acquainted with their creative people and to allow you to show off your facility.

Once you have built up a significant number of agency credits, it's time to put together a demo reel of your agency work. This demo should be submitted to larger agencies along with a rate card/brochure, geared to the advertising industry, which could include quotes and anecdotes from satisfied clients. A good reputation and a strong list of credits—just as in the music recording segment of the business—stimulate success in agency recording.

Setting up the studio to accommodate the needs of agencies differs little from preparing for music recording. Comfortable and pleasant surroundings which provide the proper "ambiance" to fuel creativity are a necessity. Agency people tend to be creative types who are used to the finest in creature comforts. The more you appeal to their sensory apparatus, the more likely you are to have a customer for life.

Along with the proper surroundings, you must also have the proper equipment for the job. Generally, a well-equipped music-oriented recording studio will have most, if not all, of the equipment needed to meet the needs of the most discriminating agency producer. Additionally, ancillary equipment like digital delay units, flangers, synthesizers and equalizers (all regular recording studio fare) can come in handy for producing the special effects often heard in contemporary commercials. Many of the studios that appeal to agencies, however, are not huge, state-of-the-art, multi-track facilities but are more often small, comfortable 2-, 4-, and 8-track studios. Except for jingles, the average agency project generally calls for very few overdubs. Some sessions consist of a voice track or two, and a music bed. One investment you will have to make, however, is for a record or tape library consisting of music beds and sound effects. There are companies that specialize in providing these libraries which can be licensed for use by agencies and their clients.

For commercials, required equipment may only include a turntable, a complement of good quality condenser, dynamic or ribbon microphones, a small to medium-sized console, and 2- and 4-track tape machines. If you want to do jingles that require several tracks of music and vocals, a typical 16- or 24-track music studio is generally required, although simple jingles with limited orchestration can be produced on a 4- or 8-track machine.

Should you decide to produce radio

programs for syndication, then it will probably be necessary to have two or more turntables, a console with cue amplifiers, and broadcast-type cart machines.

The most important quality a studio must possess for good agency/studio relations is speed. The laid-back atmosphere which often accompanies music sessions is a rarity when ad agencies come on the scene. These sessions often last less than four hours, thus they are dependent on efficiency. It's no wonder that agency employees are notorious clock watchers. They are spending the client's money and are held responsible for the results produced by every dime. Studios that are able to produce "more bang for the buck" are held in high esteem. An engineer that is quick on the draw is an asset. Lightning fast setups and changes are an absolute necessity. Professionalism and pleasant demeanor are expected. Flexibility above and beyond the call of duty can put you on top of the heap. Although some may believe such speed can erode studio revenue, this is a short-sighted view. Advertising is a volume business. Commercials quickly become outdated, and new commercials and jingles are ordered. Agencies that serve several clients may block-book time in the studio on a regular basis to keep up with their creative output. In this business, a minute saved is a dollar earned.

Setting Up Your Own Commercial or Jingle Production Company

Another possibility for generating revenue for your studio is in creating your own commercial or jingle production company. With this company, you would hire the announcers, musicians, actors and other talent, write the copy, produce the spot, and deliver the finished product to the agency or even directly to the client. Such production companies are often in demand since agencies cannot always keep up with the creative needs of every client. This is especially true with regard to jingles and comedy-oriented commercials. If you have a good jingle or comedy writer on hand, plus the necessary musicians and/or actors, it is possible to develop an award-winning repertoire that could open many agency doors. It's a long shot, though, especially since much of the jingle work done nowadays is awarded by competitive bidding on a speculative basis. This means you may be in competition with other production houses hundreds or even thousands of miles away. You really have to be exemplary to survive the final rounds of such a competitive process. Even

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so, a production company can be a lucrative business sometimes yielding a four to five figure sum for a single jingle.

Comedy, when done just right, could be an even faster route to success. A word of caution is in order, though. Comedy that works in advertising is a rare commodity indeed. Some of the funniest, most memorable, award-winning national spots have failed to spur sales for their sponsors. And, in the advertising business, results are all that matter. One national client fired its agencies every year or two even though the agencies in question pulled in award after award for their very funny spots. Sales, meanwhile, took a tumble for every accolade received. The moral to that story: "Be funny at your own risk."

The best approach to take when contemplating the production company route is to first spend some time working with a professional creative director, copywriter, and producer before stepping out on your own. That way you will be able to build up a track record, and begin to get a feel for what will and what will not fly in the marketplace. Such an education will prove to be invaluable in establishing a firm foundation upon which you can build.

Setting Up Your Own Production and Publishing Companies

It is almost guaranteed that some "in house" projects will take place at the studio from time to time. Many studios find it productive, furthermore, to establish their own production, publishing and even record companies to promote such "in house" product. In some cases it may be counterproductive to do this, especially if you record projects by major labels who could view your production operation as competitive with theirs, and therefore as a conflict of interest.

Still, having the ability to produce, publish and release your own product gives you creative freedom while allowing you to generate additional income. Such a company will also give you the opportunity and expertise to produce records and cassette releases for churches, custom labels and independent artists. You'll also be able to "trade out" studio time and production services for profit participation in projects and groups you believe in. Down the line, if you develop a reputation as a "hit" producer, record companies and artists will want to hire your services and the services of your studio. This type of production sideline can be very lucrative and requires little additional cash outlay since you already have the recording facilities

available. Should you decide that the production and publishing route is for you, be sure to first consult your attorney and accountant to determine the fiscal and legal ramifications, as well as the performance rights organizations (BMI, ASCAP, SESAC) to find out what is required to organize such a company.

Other Potential Money Makers

1) Tape Duplication: Since song writers, music publishers, advertising agencies, churches, and bands all require tape duplication, many studios earn additional income by dubbing tapes. Large scale duplication requires specialized equipment, but its purchase can be approved if the volume of your clientele justifies this type of service.

2) Disk Mastering: Although the acceptance and popularity of the analog disk has been fading, some studios have found it profitable to maintain disk mastering lathes and consoles on the premises. These can be used for cutting acetates of a client's songs or for actual mastering of small label projects. Due to the expense of the equipment, the exacting quality standards involved, and the competitive nature of the disk mastering business, it is essential for you to confirm that such a need exists in your area before making an investment.

3) Rentals: Because it is often necessary for recording studios to have extra outboard equipment on hand, some studios have set up rental divisions. Renting allows them to effectively increase their own inventory of equipment, quickly recoup the original purchase price of expensive equipment, or continue to generate profits from gear that has been replaced but is still serviceable. Equipment that is often rented includes microphones (especially exotic condenser models), digital delays and reverbs, compressors, limiters, tape decks, synthesizers and drum machines.

The Bottom Line

The bottom line is what you'll be able to add to yours. Amid the activity of diversifying studio business, you must remember that your primary responsibility is to the studio proper. Time is a commodity that loses its value immediately. Hours left unbooked can never be reclaimed. It is up to you, the studio owner or manager, to consistently provide the clientele needed to make your studio profitable. In the competitive studio market, this is not always as easy as it sounds. If managed properly, however, developing peripheral areas of the recording market can add a whole new dimension of profitability to your studio. ■



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Packing up for a gig. It's an important moment of truth for every musician. Within the safe confines of your studio, you've worked your music into shape. Polished it. Perfected it. Put it on tape. Now it's time to take it on the road. You're excited, keyed up. How will your music hold up under the hot lights and cold scrutiny of the outside world?

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Budgeting for the Cost of Maintenance

by Greg Hanks

Everything is finally set. The months of planning are behind you, the building is leased, the architect's plans are in hand, and a construction crew is starting on the first of the month. The dreams are coming to fruition, and you are in the studio business! However, it strikes me that a lot of people entering into the studio business, (and a lot of those in it already) ignore the subject of equipment and facility upkeep and repair. Maintenance is an expense that only gets bigger when not attended to. So let's examine some of the "hidden" costs of operating a facility.

Initial Expenditures

There are a number of elements missing from your usual equipment purchase list. When an automobile is purchased, it comes with a spare tire, jack and sometimes a small collection

of common hand tools. Most professional audio equipment does not, and it is just as essential to have spare parts for your console and tape recorders as it is that spare tire. Therefore, when looking for a given machine, ask the dealer about what type of spares are included, and how much they will throw in with the purchase price. This is one of the many good reasons for utilizing the same brand of machine throughout a facility whenever this is practical. In this way, the quantity of spare parts is minimized. The spares collection should include at least one of every active device used in the item. Are all of the required extender boards included in the purchase? If not, have them included. Some equipment requires specialized tools for proper servicing, and these should be considered at the time of purchase. However, this may not be practical when the cost of the required tooling is so high that it is cheaper to

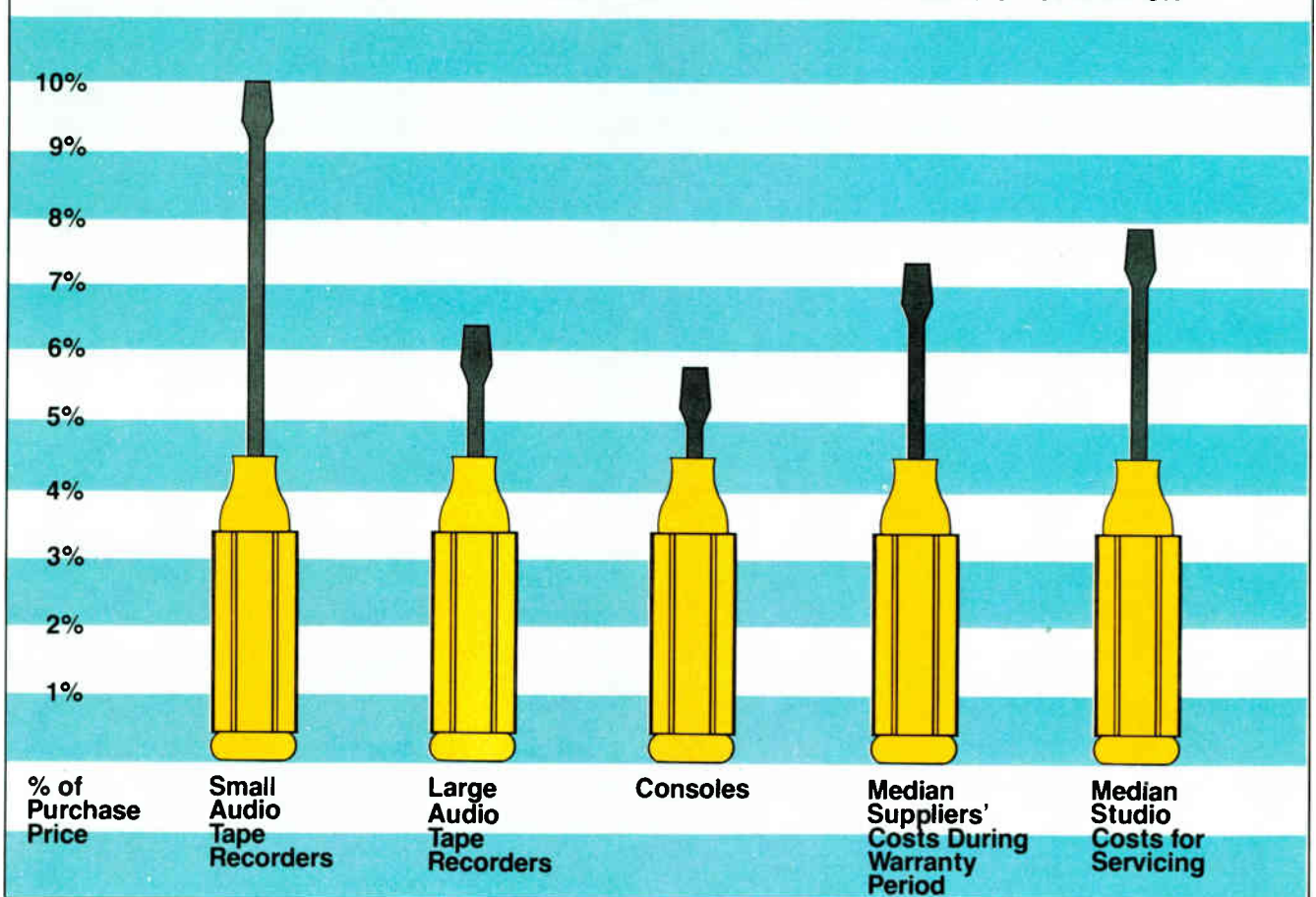
have those procedures handled by an outside facility. We will address this in depth a little later. So to re-cap the above, whenever equipment purchase is contemplated, the price should include: The base price of the equipment plus—A) The "spares" kit; B) All extender boards; C) Specialized hand tools; D) Service manual (if not part of owners manual).

Now that the major pieces of equipment are in hand, how about the test equipment necessary to keep it in like-new condition? Now is the time to make that purchase. This topic was covered in a previous article (*Mix*, Oct. '85), so I won't bore you with more ravings on the subject other than to say that it is not a frivolous, unnecessary expenditure. On a major purchase, many manufacturers will provide technical training at the factory or U.S. service facility, usually at no charge. Avail yourself of this bonus—pay for the travel, time and expense, as it will repay itself the first or second time the training is applied.

Costs of Ownership

Aside from the initial outlay described above, the ongoing direct and indirect expenses of caring for equipment must be anticipated. Direct expenses are the materials and labor

MAINTENANCE COSTS OF NEW EQUIPMENT FOR FIRST TWO YEARS OF OPERATION



"I just think more people ought to know how good Soundtracs gear is . . ."

Tom Robinson



"I did a lot of research before buying a mixing console for Turbot studios. Ideally I'd have liked an SSL or a Harrison I suppose, but frankly, they were out of my price range.

Among the producers & engineers I asked, however, the general opinion was that — if it lived up to its claims — one of the new Soundtracs desks would be excellent value for the money I had.

Well it did, and it was: it's clean, versatile and easily good enough to turn out professional masters. A few minor niggles perhaps, but what the hell. I work with the engineer from a top London studio and he loves it.

Like Pete Townshend I paid the normal retail price for my desk and didn't get any backhanders for this ad. I just think more people ought to know how good Soundtracs gear is . . ."

TOM ROBINSON

THE CM4400 BY



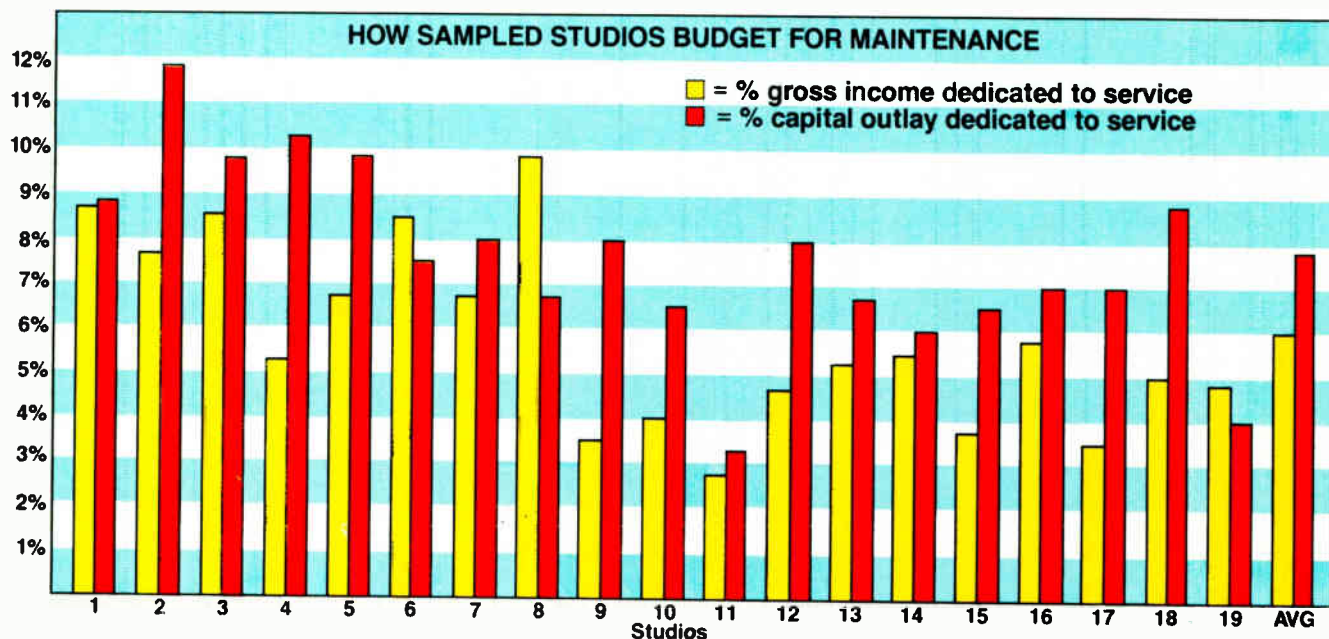
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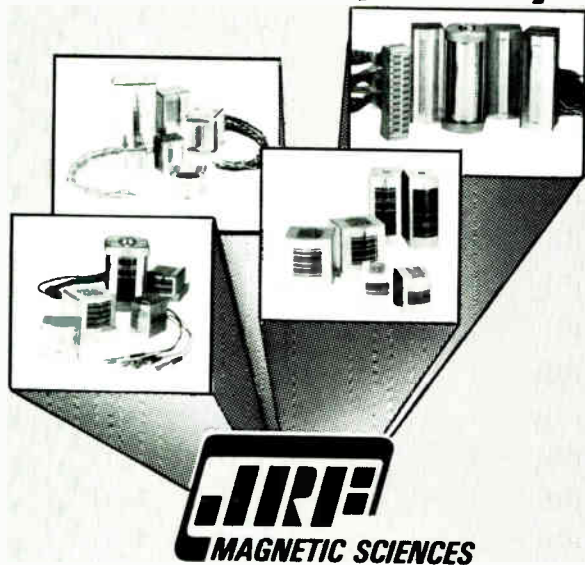
necessary to repair defects, as well as the materials and labor necessary to maintain optimum operation. The indirect expenses are those incurred through studio down-time when a piece of equipment fails, or the non-income producing time spent on preventative service. Additionally, rental expenses for replacement equipment are included in this category.

Down-time comes in two different colors, anticipated and unintentional. Unintentional down-time can become an albatross around the neck of the unfortunate studio. Most of my writings are aimed at avoiding/eliminating this dreaded occurrence. A studio's reputation can be destroyed by just a few ill-timed incidents of electronic or mechanical malfeasance. Few things

dampen the creative flame more than being told that your session will have to be re-scheduled because a major piece of equipment refuses to cooperate. So to eliminate the threat of the session going up in smoke, it is essential to care for the equipment during those times that the artist does not usually desire to be in the studio, such as the wee hours of the morning. The only time that this becomes difficult is when one arrives, only to find the previous evening's clients desperately trying for a take or a mix that's "just a little better." Room for technical care must be made in the schedule. A few hours a week are all that are really necessary to keep the "spit and polish" of a facility shining. When a room has a reputation for responding to the engineers' commands with a minimum of fuss and bother, it becomes a simple affair to demand a better hourly rate.

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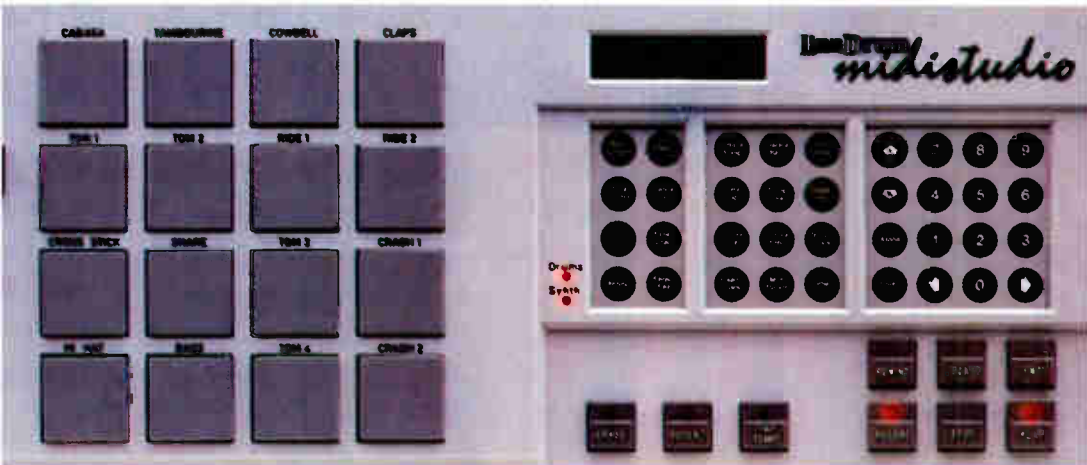
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Rental

There comes a time in the life of every hunk of hardware that the mechanics become tired, the inter-connections don't work, and the attenuators act like switches. When this occurs, the decision to replace or rebuild must be made. There are a number of considerations to be kept in mind, such as:

1. The cost of rebuilding in parts and labor.
2. The cost of renting a replacement device during the reworking.
3. The value added to the article by re-building (in terms of its resale value)
4. Actual cash impact of replacement.

A good yardstick to use as a guide for the timing of re-build or replace decisions is when the costs incurred in maintaining the device start to exceed, on an annual base, ten percent of the original purchase price. By track-



Discover the LinnDrum Midistudio: the world's best digital sampling drum machine and a 32 track MIDI sequencer with a novel difference – all the major controls are in a remote lap pad.

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- The sequencer section has 32 simultaneous polyphonic tracks, each assignable to one of 16 MIDI output channels.
- Velocity, aftertouch, pitch bend, mod wheel, preset changes and sustain are recorded.
- The lap pad attaches to the main unit to form a portable case.
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The Midistudio's sequencer couldn't be easier to use – it operates like a multi-track tape machine. Timing correction, erase and transpose work instantly – while you play. Editing is simple, with both single step and real-time functions. And after your performance, store both songs and sounds on disk.

Speaking of sounds, the Midistudio comes with 16 of the best digital drums you've ever heard. You can also create your own sounds with the studio quality sampling or choose from the hundreds of drums, percussion

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The LinnDrum Midistudio is the most durable, full-featured, performance quality product Linn has ever built. See your Linn dealer today for a demonstration.



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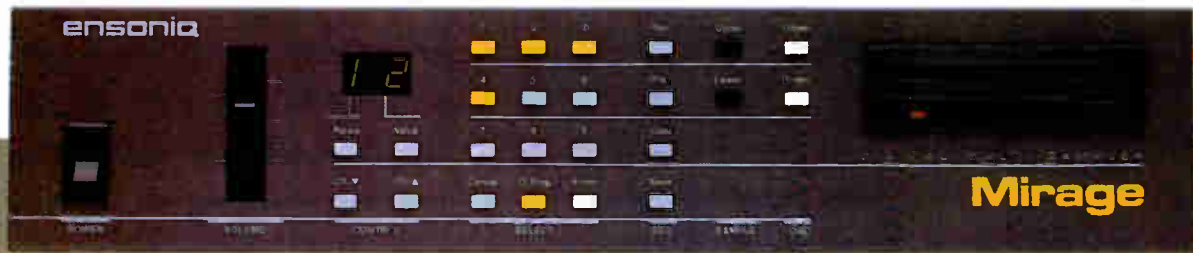
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Synth voices come alive with character and individuality when doubled with real sampled sounds. Just make one simple MIDI connection and the Mirage Multi-Sampler responds with startling expression to your keyboard's pitch bend, modulation, velocity and pressure sensitivity-even breath control.

The Mirage Multi-Sampler has all the performance and sampling features of the Mirage Digital Sampling Keyboard-without the keyboard. It's a complete eight-voice instrument with a musical range of 5 octaves. There's even an on-board sequencer with overdub and disk storage ability. All this for about the price of a day in the studio¹.

If you want to create your own sounds, the Mirage lets you sample from virtually any source. But whether you're into sampling or not, Ensoniq has an ever-expanding Sound Library of diskettes with the most true-to-life sounds ever heard from an electronic instrument.

For live performance, recording, composing or creating your own sounds, top off your system with the Mirage Multi-Sampler. And breathe some new life into Old Faithful while you're at it. See your authorized Ensoniq dealer today for a complete demonstration.

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1. The Mirage Multi-Sampler retails for \$1395.00 . . . complete.

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The Ensoniq logo consists of the word "ensoniq" in a bold, lowercase, sans-serif font. The letters are contained within a thick, black rectangular border. A registered trademark symbol (®) is located at the top right corner of the border.

MICROPHONES IN THE DIGITAL AGE:

Engineers Speak Out



PHOTO: RICHARD LAIRD

Tom Mintzer (center, wearing sax) conducts horn ensemble for direct-to-digital session of his *Incredible Journey* project. Calrec Soundfield microphone, placed in center of group (at left of Mintzer), formed two stereo images to cover both reed and brass sections.

Also in this report, we take a look at some recently released microphone products and investigate several entries in the performance-quality headset microphone market.

Tom Jung

Tom Jung is an individual who has worn many hats over his long career in the record business: label president, musician, producer, engineer, studio owner, and everything in between. His involvement in Sound 80 Digital Records in the late 1970s led to his experiments with a 45 ips, two-channel prototype of the 3M digital system, running simultaneous digital versions of the company's direct to disk recordings. One of these sessions, with the St. Paul Chamber Orchestra, took a Grammy Award in 1979 in the Best Chamber Music Performance category. Today, Jung presides over Digital Music Products (DMP), a label specializing in digitally recorded jazz CDs. DMP's most recent projects (both engineered by Jung) are *Big Notes* (the label's third Flim & the BB's release), and Tom Mintzer's *Incredible Journey*, which features an assemblage of New York's hottest session players doing contemporary big band tunes.

A sample is only as good as the microphone, preamp and technique used.

by George Petersen

As we are about to enter the second decade of digital recording, we can marvel at all the innovations the new medium has brought to the industry. However, the sonic clarity of both modern digital recorders and the Compact Disc format have brought all the other components of the audio chain—from studio air conditioning systems to console preamps—under extreme scrutiny. And as a vital part of the recording process, the use and selection of microphones has come to be re-examined over the past few years.

The digital era has also brought a resurgence in direct to 2-track recording, where microphone choice and selection is critical. The relatively new field of miking for sampling devices is another area of increasing importance, especially with the popularity of computerized music production and the availability of samplers in nearly every price range.

We talked to a number of engineers about the effect of digital on their approach to microphones. All those queried had extensive experience in the analog realm before working with digital, and their diverse musical interests provide further insights into the problems of miking in the digital world.

Did the digital medium change your approach to microphones?

Our early tests with digital really opened all of our eyes. Though it was far from perfected, it was clear to me then that this would be the wave of the future. I recognized certain compensations that weren't necessary going direct to disk that are typically necessary in analog recording, and the similarities follow through to digital. Every engineer, either consciously or unconsciously, ends up compensating for these deficiencies when working in analog, through equalization, dynamics processing and that sort of thing.

Microphones have typically changed design-wise over the years to compensate for the deficiencies of analog. Rising high-end microphones are popular, and people don't even like flat mics anymore because they sound so dull compared to something with a boost at 10k. This kind of thing pointed out that we had to look to microphones again, because some of the badmouth-

—PAGE 35



“Shure’s Headset Mic keeps us great drummers from annoying us great singers.”

-Keith Knudsen-

The SM10A/SM12A

If you’re like Keith Knudsen, your vocal sound is just as important as your drum and percussion sound. That’s why Shure has created a special microphone just for you.

The Shure Headset Mic. Now, no matter where you twist or turn, the adjustable head-worn unidirectional dynamic microphone remains in perfect position. At precisely the distance and angle you set.

And even though the microphone is tiny in size, it’s packed with everything that makes Shure vocal microphones legendary. The microphone is ideal for close-up vocal applications due to its ability to discriminate against distant sounds and reject both overload and distortion. There’s even a highly effective windscreen to further reduce pop and wind noise.

Plus, the Headset Mic gives you high output for punch in live vocal situations; a crisp, clean and balanced midrange to separate your

voice from the instruments; and scintillating highs that add sparkle to your performance.

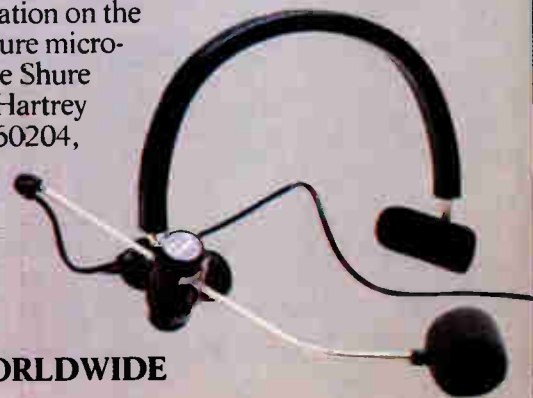
The Headset Mic is available in two versions. The standard SM10A (microphone only) and the SM12A which features a receiver for use as a monitor.

But whichever you choose, be sure of one thing. Now you’re free to play your instruments any way you want... without stretching for the vocals.

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PHOTO: COURTESY RUSSIAN HILL RECORDING

There's something else you should never be without if you're in the studio, and that's MIX! Because MIX is the publication that is most dedicated to keeping recording professionals informed about their industry. MIX keeps you up to date on the latest equipment and production techniques. It tells you what other studios, engineers and producers are doing. And MIX listings are the most complete guide available *anywhere* to studios and other production facilities...



PHOTO: PHIL BRAY

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...YOU'RE IN THE MIX

ing digital has gotten is due to old, bad analog habits. Some of the harshness [of digital] is actually EQ that's present in the microphones, or microphone non-linearities that are really preserved in digital.

I've been going back to ribbon mics a lot over the past few years: they don't have a rising high-end—as a matter of fact the high-end typically rolls off a bit. The ribbon microphones I'm currently using are a combination of Beyers. I'm particularly fond of their bidirectionals, but I also have a stereo mic designed by Bob Speiden [SF-12 Coincident Stereo Ribbon microphone]; it's a bidirectional, 90 degree fixed relationship ribbon that's very nice. It's been a real favorite of mine over the past two years, and it's pretty much grown to be my exclusive drum mic.

I really feel I'm still learning; digital is still a new learning experience, and I'm having a ball with it, because dynamically there's so much to explore.

What microphones did you use on the Big Notes project?

I'm trying to get away from multi-miking, to get drum sets to sound natural, using one mic overhead, with maybe one mic for the foot [kick]—either a Sennheiser 421 or a B&K 4007 if the foot isn't too heavy. The B&K has a great sound.

For piano, I used a pair of B&K 4004s: they're a line level version of the 4007s. Mine are modified to put out +4, so I don't even have to run it through a console. It goes through a combining network and feeds directly into the digital recorder.

What mics did you use on Incredible Journey?

It was a project I really wanted to do for a long time, because I'm a big



The Audio-Technica AT5R, unveiled at last month's NAMM Show, is a miniature, unidirectional, phantom powered condenser microphone designed for vocal applications. Price is \$250, including 25 foot cable.

band nut and I firmly believe that you can't take individual microphones, mix them electrically, and create the same illusion that happens when you're standing in front of a big band. I have a Calrec Soundfield microphone that I used to cover the entire brass and reed section. We did this in a dual figure-8, but with the Soundfield mic you have the ability to change the mic's angle on the remote controller, so I had the angle set at about 110 degrees, with two stereo images—brass on one side in one left/right stereo, and reeds on the other side.

It was wonderful, but initially it was very hard to convince the players that it would work, and these were studio cats—Randy and Michael Brecker, Marvin Stamm... the happening cats from New York that I work with all the time. They were skeptical, but once they heard the playbacks, everything was all right. They realized they had to get the balance themselves, and the ensemble playing got incredibly

tight, sensitive and dynamic. I didn't even need any solo mics: whenever there was a solo, the guy would get up and take a step in towards the mic.

I miked the rhythm section conventionally, as it applies to my own recording. I think I used seven microphones for the entire 18-piece band.

Have you done any miking for sampling devices?

I think one of the problems with a lot of the samples I hear is that people aren't taking the microphones seriously enough. A sample is only as good as the microphone, preamp and technique used. Some of the sampling devices today are pretty hip: out to 50kHz now, so you have a 20kHz-plus bandwidth, and I find that they're pretty faithful. I'm working on a project now with Billy Barber—a solo project using a Kurzweil—and I find that the care used in recording a sample should be the same as the care given to recording anything else. It's very important.

Rik Pekkonen

Over the past 20 years, Rik Pekkonen's engineering career has included nearly every type of recording, ranging from soundtracks (*Rambo, An Officer and a Gentleman*) to working on 17 Crusader/Joe Sample records. His first all-digital project was Joe Jackson's highly-acclaimed *Body and Soul* LP. At press time, Pekkonen was finishing up an acoustic guitar album with

The MC 740 N(C) is Beyer's first studio condenser mic featuring five switchable polar patterns. The microphone carries a suggested price of \$1,000, and another version of the unit, with remote control of the directional patterns, is expected to be available later this year.

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Larry Carlton, recorded (using Sony ECM-P55 microphones on guitar) at Rm 335, Carlton's home studio.

Has the digital medium affected your selection and use of microphones?

No, not at all; it really hasn't. I treat the digital machine as just another machine and use the same approach to recording that I always have.

What kind of microphone techniques did you use on Body and Soul?

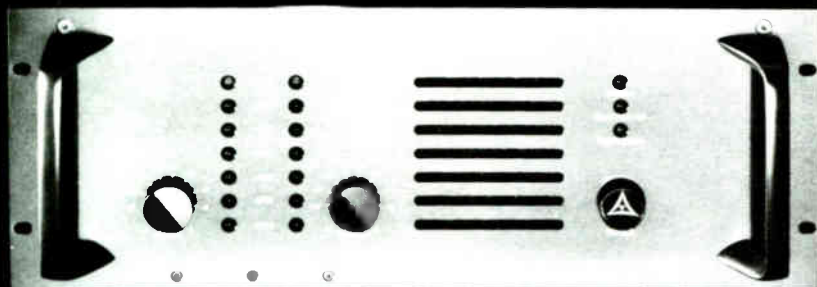
We wanted a more room-ambient sound for the drums than you could get at any of the New York studios, so we went to this very large room—a hall, like a Masonic temple with 40- to 50-foot ceilings. I used Neumann M50s for all-around room ambience, [AKG] C-12As on toms, [Neumann] U47 FET on the kick drum, a Countryman Isomax on snare, and [AKG] 451s on high hats and stuff like that. This is my normal set-up, whether analog or digital.

We tried a variety of mics for piano, but I think we ended up using C-12s. It depended on the song: mainly it was two mics, but if there was some solo stuff where we wanted some room sound, we'd use some M50s out in the open, in addition to the C-12s. I love the C-12 on piano.

David Kershenbaum, the producer, has a mic he's always used for Joe's vocals—I think it's a derivative of B&K, one that I have never seen before. It's the definitive Joe Jackson mic. We tried everything else in the world and it always came down to that mic.

The horns were miked with C-12As, and when we wanted some room, we had them play into the M50s. You didn't have to add any echo—this

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The M 800 is the top model in the Paso Sound Products (Pelham, NY) line of dynamic mics for recording and PA use. The M 800 has a 40 to 18k Hz bandwidth, and includes a shock isolating stand adapter.



room must have had a three-second decay to begin with, so we just backed the horns off and had them play into the M50s. It was wonderful. I generally like the old tube mics, I think they're better microphones overall. I'm an old tube kinda guy.

Richie Corsello

While perhaps best known for his multi-album association with the Greg Kihn Band, Richie Corsello has enjoyed a long and varied engineering career working with jazz (Sonny Rollins, McCoy Tyner, Bill Evans), R&B (Sylvester, Tiggi Clay) and rock (Eddie & the Tide, Hyts, Country Joe McDonald) acts. One of his first records was "Shame, Shame, Shame" by Shirley & Company, which charted at #12 in 1975. Corsello recently completed his fifth digital project, *Citizen Kihn*, recorded at Fantasy Studios and released late last year.

Did the digital medium change your approach to microphones?

My miking has not changed at all, but one thing I'm very careful about now is noise, like a guitar amp sitting idle and going into the digital machine. When rolling analog tape, that noise gets lost in the hiss, but with digital it doesn't get lost: it stays right

there. It's the same with an acoustic guitar—you might put a mic a little farther away to get a little room sound, but the digital machine picks up the guy's shirt rubbing against the guitar, which is annoying.

Did you use any sampling on Citizen Kihn?

A lot of the drums are sampled, I've got an AMS 1580, which has a memory storage where you can edit the front and back of the sample, and I replaced most of the drums on the album electronically. I find that when we go into the studio, the quicker we get the tape rolling, the better the band feels over the course of the first day or two, instead of working on drum sounds for two or three days. So we go for the best sound we can get, and if there's a problem, we just go back and replace it.

The room that you record a sample in is really important, and the choice of microphones is important, but I did things like putting a snare drum in a small echo chamber. I miked it with a Shure SM56 about two feet away, and put a U87 in the room to make the snare sound really big.

Another technique I used on the album was using two mics—a pair of U47s—for ambience in an XY pattern,



Designed for high-end recording, broadcast and sound reinforcement applications, the KY and K4 models shown here are the top entries in TOA's new mic line. Both are phantom powered, cardioid condensers with detachable wind screens and interchangeable capsules. The uniquely-shaped miniature KY mic includes a 15-foot cable for separating the mic body from the electronics module for handheld use or unobtrusive hanging.

but at two different levels: one in the center of the room, about 20 feet up, and the other about four feet high, with both pointing in opposite directions. By putting them left and right



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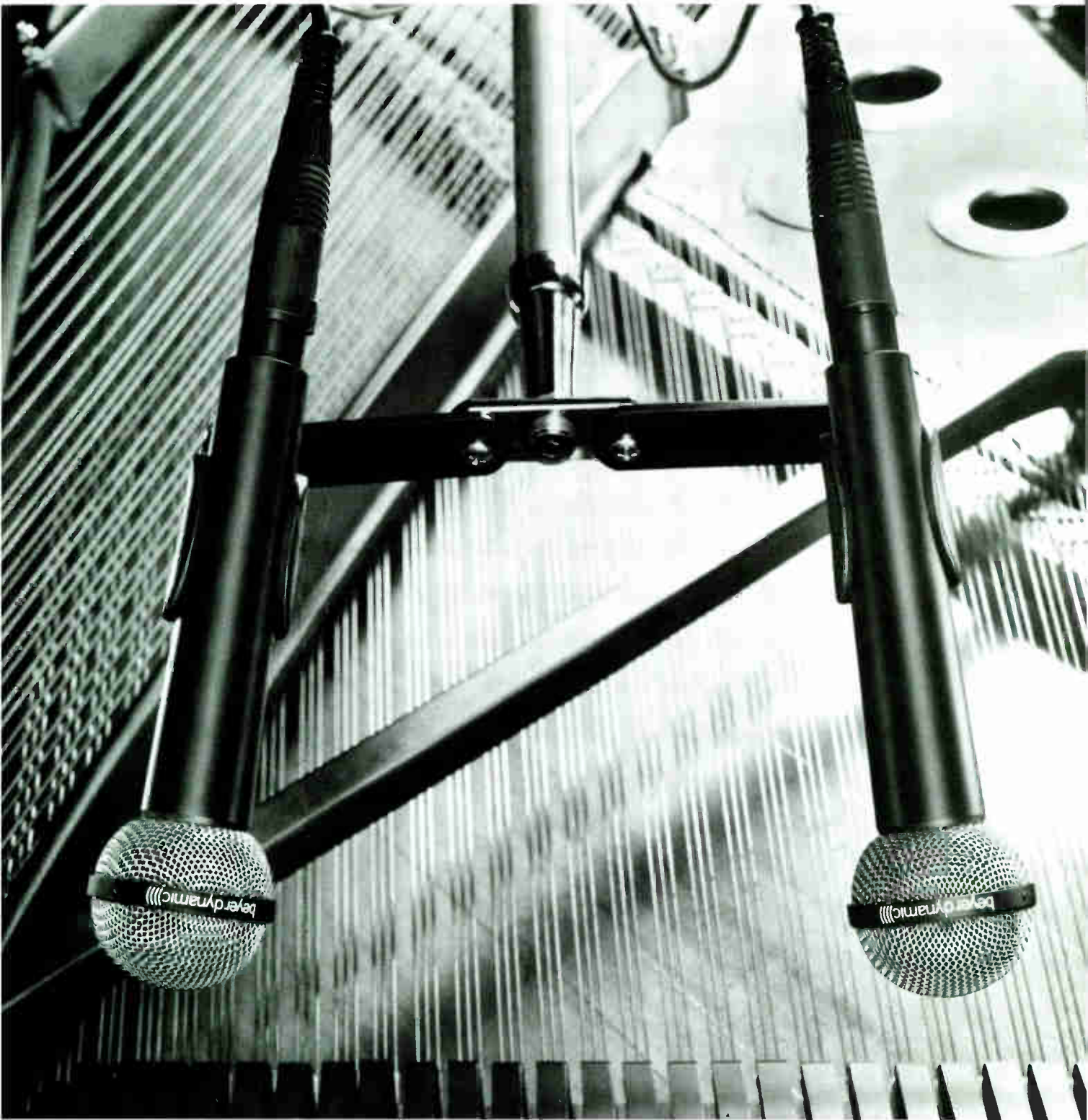
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BEYER RIBBON MICROPHONES AND



THE DYNAMIC DECISION

THE DIGITAL RECORDING PROCESS

Digital technology holds forth the promise of theoretical perfection in the art of recording.

The intrinsic accuracy of the digital system means any recorded "event" can be captured in its totality, exactly as it happened.

Naturally, the ultimate success of digital hinges on the integrity of the engineer and the recording process. But it also depends on the correct choice and placement of microphones, quite possibly the most critical element in the recording chain. This can make the difference between recording any generic instrument and a particular instrument played by a specific musician at a certain point in time.

The exactitude of digital recording presents the recordist with a new set of problems, however. The sonic potential of total accuracy throughout the extended frequency range results in a faithful, almost unforgiving, recording with no "masks" or the noise caused by normal analog deterioration. As digital recording evolves, it places more exacting demands on microphones.

Ribbon microphones are a natural match for digital because they are sensitive and definitively accurate. The warm, natural sound characteristic of a ribbon mic acts as the ideal "humanizing" element to enhance the technically perfect sound of digital.

Beyer ribbon mics become an even more logical component of digital recording due to an exceptional transient response capable of capturing all of the nuances and dynamic shifts that distinguish a particular performance without the self-generated noise and strident sound generally

attributed to condenser mics.

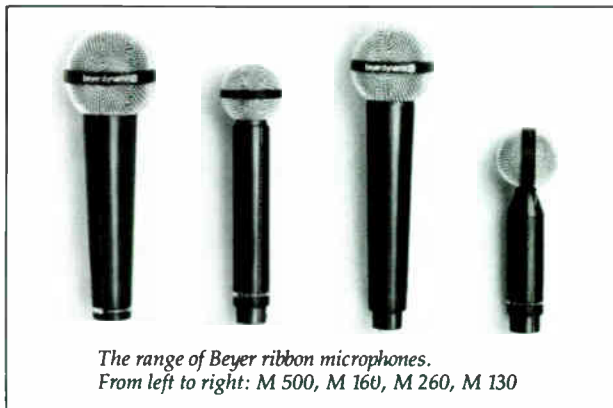
Beyer is committed to the concept of ribbon microphones. We manufacture a full range of ribbon mics for every vocal and musical instrument application.

The Beyer M 260 typifies the smoothness and accuracy of a ribbon and can be used in stereo pairs for a "live" ambient recording situation to record brass and stringed instruments with what musicians listening to a playback of their performance have termed "frightening" accuracy.

Because of its essential double-ribbon element design, the Beyer M 160 has the frequency response and sensitive, transparent sound characteristic of ribbons. This allows it to faithfully capture the sound of stringed instruments and piano, both of which have traditionally presented a challenge to the engineer bent on accurate reproduction. Axis markers on the mic indicate the direction of maximum and minimum pickup. This allows the M 160 to be used as a focused "camera lens" vis a vis the source for maximum control over the sound field and noise rejection.

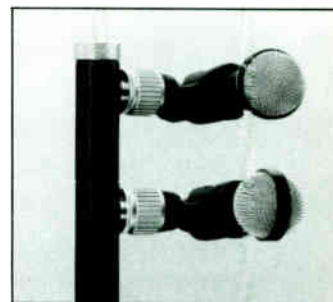
Epitomizing the warm, detailed sound of ribbon mics, the Beyer M 500 can enhance a vocal performance and capture the fast transients of "plucked" stringed instruments and embouchure brass. Its diminutive, durable ribbon element can also withstand extremely high sound pressure levels.

The Beyer M 130's bi-directional pattern enables the engineer to derive maximum ambience along with clean, uncolored noise suppression. Two M 130s correctly positioned in relationship to each other and the source can be used as part of the



The range of Beyer ribbon microphones. From left to right: M 500, M 160, M 260, M 130

Mid-Side miking technique. The outputs from the array can be separated and "phase-combined" via a matrix of transformers to enable the most honest spatial and perceptual stereo imaging — sound the way we hear it with both ears in relationship to the source.



Given the high price of critical hardware used in digital recording, the relative price of microphones is nominal. Realizing that microphones are the critical sound "source point," no professional can allow himself the luxury of superficial judgements in this area. Especially when one considers the value of ongoing experimentation with miking techniques. For this reason, we invite you to acquaint yourselves with the possibilities of employing Beyer ribbon technology to enhance the acknowledged "perfection" of digital recording technology.

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ACO Pacific, of Belmont, CA, now offers a new microphone package for critical measurement or digital applications. The 7046 mic has a rated frequency response of 5-20 kHz, ± 2dB. A complete system—two mics, preamps and power supply sells for under \$2,200.

and mixing them with the track, it kind of smoothed out any rough edges that were in the drums with the samples. It's kind of like an artist painting a picture and then smearing it with his hand, rubbing all the colors together.

Were you using traditional miking for the acoustic drums?

It was pretty traditional: Sennheiser 421s on toms, a 421 or [Electro-Voice] RE20 on bass drum, SM56 on snare drum, and for overheads, I used (AKG) 452s. I also used two 452s on hi-hat: one from the top pointing down, and from the bottom facing up, throwing one of them out of phase. It gave us a really nice, natural hi-hat sound. I used the same technique on the tom toms; miking them on the top and bottom, reversing the phase on the bottom mic. It adds another dimension to it—you can make even a tiny drum set sound pretty big by doing this.

Toby Mountain

In addition to owning Northeastern Digital Recording, a digital recording/editing facility (credits include remastering the *Diva* soundtrack for CD), Dr. Mountain is also well known for his direct to 2-track digital work. His most recent project is a series of environmental recordings of nature, to be released later this year on the Ryko Disc CD label.

Has the digital medium affected your approach to microphones?

Some of the things I used to do with analog recording—like a lot of close miking, and using mics that tended to cut through the [analog] medium—I tend not do so much anymore. There have been a lot of microphones developed for the analog medium, but now manufacturers have to rethink that approach for a medium which is totally

flat as far as frequency response goes.

Most of the stuff I do is either classical or jazz, and I tend to use a minimalist approach. For a classical orchestra or chorus in a good room, I tend to use a double omni—spaced about six to ten feet apart, about 30 feet back. I like the results from this spaced omni approach, but it depends on the room. In a room that's not so nice, I tend to use an XY cardioid pair.

I just completed an unusual project—a series of environmental recordings which capture different sounds in nature: rain, waves, the woods, a stream. This brought up a lot of interesting problems, especially with digital. I generally stuck with a two mic set-up, either spaced omnis or XY cardioids, but was amazed at how much filtering [equalization] I had to use to get the sound I wanted. There seems to be a low-level ambience that our ears don't pick up but microphones do. With something close up, like a stream or brook, I would use an XY pattern with cardioids or an ORTF [the French national radio technique using an XY crossed pair with the mics spaced about six inches apart] to give it a little more space. With a field or large open area, it's best to go with omnis that are spaced apart.

What do you suggest for sound sample miking?

I've done quite a bit of miking for synthesizer sound samples and generally the best way to do that is with close miking in the driest room you can find. The problem with a sound sample is that it includes everything, including the room noise, which you want to avoid as much as possible. I

Gotham Audio, of New York City, has introduced the TLM 170 microphone (the first transformerless mic in the Neumann fet 80 series) to the U.S. market. The mic features five switchable directional patterns and utilizes a double membrane 28mm condenser capsule.



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Both systems feature DYNEX®II, Cetec Vega's advanced audio processor for the highest signal-to-noise ratio, widest dynamic range, and most natural sound.

R-31A PRO Receiver

The R-31A PRO receiver features two easy-to-read LED bargraph displays—one for RF signal level and the other for audio level. The receiver is extremely sensitive, highly selective, and very stable. Either line-level or mic-level outputs may be selected through the rear-panel XLR connector. Line-level output is also available from the rear-panel terminal strip. The receiver can be powered by either AC or external DC.

T-37 PRO Bodypack Transmitter

The T-37 PRO bodypack transmitter accepts all positive-biased and most negative-biased electret lavalier mics via an easy-to-use mini 4-pin XLR connector. Conventional panel-mounted mic on/off and recessed power on/off toggle switches are featured. The ultra-rugged case stands up to hard use.

T-36 PRO Hand-Held Transmitter

The T-36 PRO hand-held transmitter uses the popular Electro-Voice BK-1 ("Black Knight") condenser element with an attractive black wind-screen. Housed in an attractively contoured black case, it has Cetec Vega's patented internal dipole antenna. An audio gain control and power and audio on/off switches are conveniently located on the bottom.

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usually use a PCM-F1 with a Schoeps or AKG cardioid, miking it fairly close, but try not to make it too bright.

Roger Nichols

It was the AEC's loss and the record industry's gain when nuclear engineer Roger Nichols turned to music engineering in the 1960s, to work with groups such as The Grass Roots and The Four Tops. He later became best known for his work with Steely Dan and Donald Fagen, earning several Grammy Awards in the process. For the past ten months, Nichols has been working full time, preparing to market Wendeljr (see January 1986 *Mix*, page 60), a scaled down version of his fa-

mous Wendel drum computer. However, studio work remains one of Nichol's main interests, and he will begin cutting tracks on John Denver's new album next month.

Has the digital medium changed your approach to microphones?

Not a lot, but what it made me realize is how good some of the microphones I was using were. When you're doing tracks, the actual amount of time you're listening to the raw signal from the microphone is a very small part of the total time you listen to the recording of that instrument. So your mental response to the sound of that microphone is mainly based on what you hear on

—PAGE 96



Shure SM10A

Headset Microphones

Being a musician has never been an easy vocation, especially for those who both sing and play an instrument. However, this situation is even more complicated for drummers and multi-keyboardists, where the use of a standard boom mic stand becomes either awkward or downright impossible. Fortunately, a good selection of quality, full-bandwidth headset microphones are available today, both with and without headphones for integral monitoring. The use of headset microphones is not limited solely to percussionists and key players, as these mics also appeal to broadcasters and announcers, as well as guitarists and bassists (in hard-wired or wireless configurations) looking for increased mobility.

Music quality headset microphones are produced by a number of manufacturers (here listed alphabetically) in a variety of price ranges, and offer performance that is a far cry from their limited bandwidth cousins in the paging and communications industries. Several other companies, including Beyer and Audio-Technica, are planning to introduce models in the months to come, but specific details were not available at press time.

The HeadMic™ from Nady Systems is the smallest and lightest performance microphone made today. The unit can be had in many forms: an HM-I model with Lemo connector for connection to Nady's LT-410 or VHF 900 wireless transmitters; a hard-wire HM-II with switch box and ten-foot cable with XLR termination; either model comes standard with a Countryman Isomax™ mic capsule, or an Audio-Technica ATM-831 capsule can be

—PAGE 96

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World Radio History

THE SOUND OF

THE

HARD ROCK

CAFE



by Dan Daley

The meticulously maintained rear end of a 1960 Cadillac hangs in place of an awning above the entrance to the New York edition of the Hard Rock Cafe. If its gleaming polished chrome isn't sufficient evidence of owner Isaac Tigrett's attention to detail, then the interior decor should be the clincher. Several decades of rock and roll memorabilia adorn the walls of the multi-level eatery-cum-hangout, including some guitars whose vintages and bloodlines would make any aficionado's mouth water.

The Cafe's sound system, however, never quite stood on a par with either the food or the decor, according to some habitués of the place. That situation has now apparently been remedied by a combination of components—manufactured primarily by Ramsa/Panasonic—and a design and installation approach that appears almost zen-like in its energy. "The way all of the people—the personalities—involved in this undertaking came together was incredible," said Gene Juall, product manager for Ramsa, who has been part of this project from the very beginning.

Juall, coordinating the equipment, worked in concert with Howard Smith of the Culver City, California-based acoustical design firm of Smith Fouse & Associates, Inc., and with Robert Drake, a former New York City DJ and



PHOTO STEVE CRISMAN



“We’re Committed To Building A Quality Product That Really Works...”

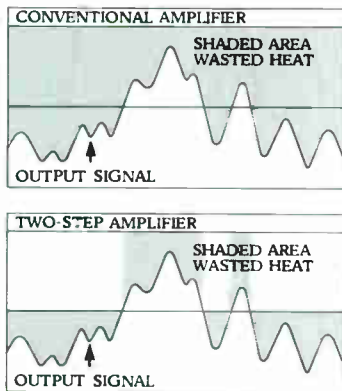
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QSC Quality Service Commitment

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engineer whose company installed the system.

Juall reached repeatedly for military metaphors as he spoke about the project, interjecting at several points that "all of us have earned our stripes" during the process. The martial allusions are apt, at least from the logistical point of view: the installation, which took place over a period of about five months, could only be carried out during the Cafe's normal down time, between 4 a.m. and 10 a.m.

"Chicken was the big problem during installation," says Robert Drake dryly. "Chicken and ribs. When you're trying to run seven-and-a-half miles of cable and you've got guys at seven in the morning carrying cases of chick-

en and ribs into the place, walking all over your wires, you've got problems. If it weren't for the chicken and ribs, it would have been much easier. They would not shut the club down at all; not for 24 hours, not for ten minutes."

In addition to chicken and ribs, Drake, Juall and Smith faced a number of other problems, such as dealing with the Cafe's physical plant with its balconies, various levels and memorabilia-covered walls. Then there was the need to make the system versatile enough to cover both recorded and live music, along with multi-track recording, radio broadcast and video applications. It was, in the words of Drake, "a can of worms."

Once owner Tigrett had perceived

The Sound System Components of the Hard Rock Cafe

As chief of the sound system installation, Robert Drake points out that the new Hard Rock Cafe sound system was started literally from the ground up, incorporating enough wiring to span the width of Manhattan twice. Some of the other salient features of the system made by Ramsa are:

- *The small but powerful WS-A10 speaker. Fifty-two were installed throughout the club. It is rated at 160 watts.

- *WS-A70 speaker. Eighteen of these provide 160 watts apiece.

- *Eight WS-A200 speakers provide the front line of the live performance end of the system. The speaker/horn enclosure is rated at 250w.

- *Primary power is supplied by 18 WP-9210 Power Amps.

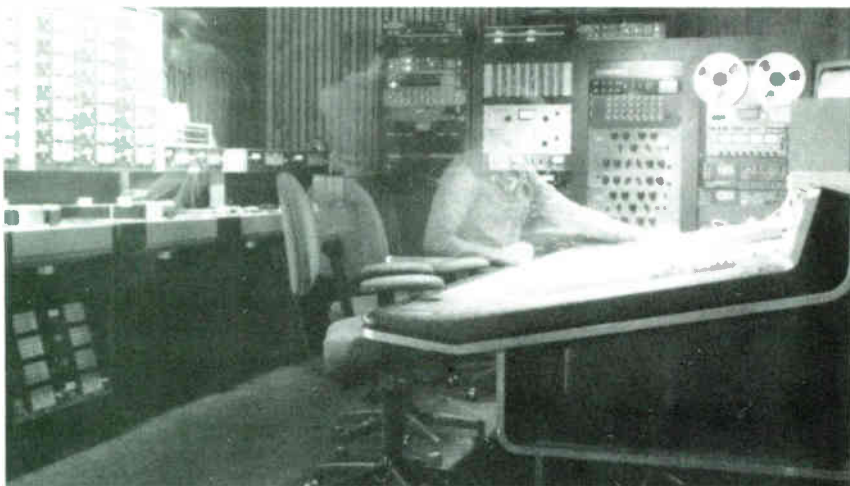
- *The centerpiece of the live system is the WR-8616 mixing console, a 16-channel, 32-input board specifically designed for recording and broadcast applications. The console is complemented by three WR-X01 auxiliary mixers, each with 12 inputs.

According to Ramsa's estimates, the total value of all the components in the new system is just under \$60,000 list.

—Dan Daley

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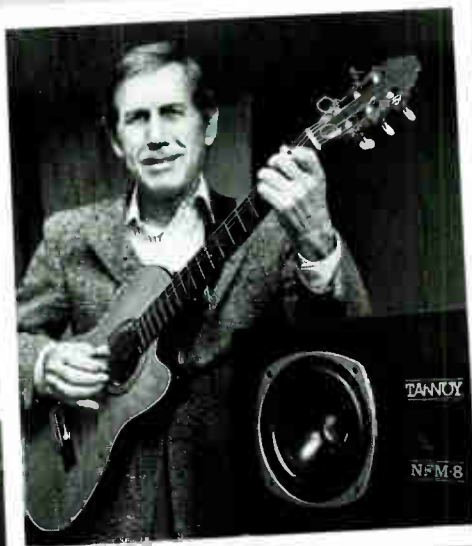
the need for a new system, he contacted friend Bill Beatty of Studio Instrument Rentals in New York for recommendations. Beatty in turn called Juall at Ramsa, who then contacted Smith, whose firm had worked in consultation with Ramsa during the 1984 Olympics in Los Angeles. Robert Drake was contacted simultaneously by the Cafe. "Michael Johnson of SIR had called me and asked me to go over there," recalls Drake, at the time ostensibly to see what could be done about upgrading the existing system. "I met with Isaac, looked at what was already in place and then started to concoct some systems of my own using the concept of direct sound, as opposed to reflected sound. The concept was of a multi-zoned, multi-speaker system, so that any individual in the club, no matter where they were sitting, would get even, direct sound without having to raise the gain to compensate for areas that weren't covered, and still keep the levels comfortable."

That concept matched what Smith envisioned augmented by sophisticated electronics. "It was done with the thinking that it would be a sort of 'fire

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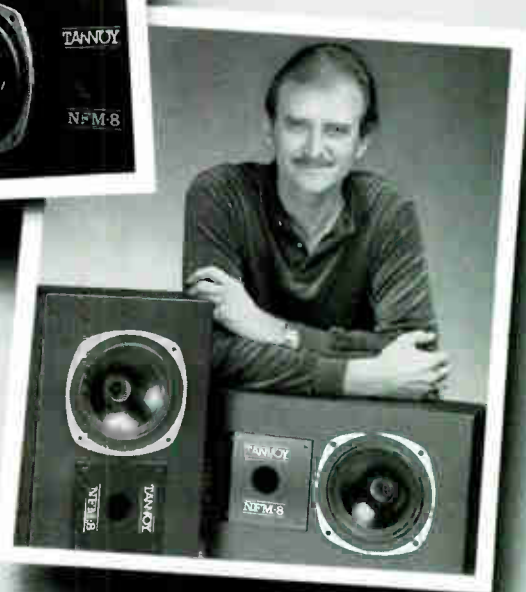
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Technician installs one of the 52 Ramsa WS-A 10K speakers used throughout the Hard Rock Cafe into the soffit over the bar.

and forget' system," says Smith. "Smart' electronics would minimize the necessity for operational control by people who would not normally be technical people. And the requirement to mitigate the acoustic environment because of the visual impact—all the memorabilia on the walls—precluded acoustic treatment, so we went with an electro-acoustic solution to improve articulation." That is, using a large number of small speakers to cover specific areas at very short throw distances. "That approach reduced the amount of reverberant sound in proportion to direct sound," he continues. "We aimed for a very high-presence sound characteristic, like what you might hear in an exceptional car stereo system."

This direct sound-local zoning approach became the heart of the system, utilizing components developed by Ramsa, including 52 small, two-way WS-A10 speakers set into the walls throughout the club. These speakers, along with the larger WS-A70 speakers and several custom-made sub woofers, make up what is referred to as the background system, which is re-

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sponsible for handling the pre-recorded music. Drake went so far as to calculate the directionality of all the small speakers. "Each element of that system had to be aimed precisely, like the pinspot," according to Juall. "One small speaker error is one thing, but start adding up the effect of a bunch of misdirected speakers and you end up with a real mess."

The zoning aspect is rather unique in that each section of the establishment is treated as an individual acoustic environment. "It's unique," Drake

—PAGE 50

Developing An Idea

You have to hand it to Isaac Tigrett. Launching the Hard Rock Cafe chain was a great idea—the establishment provides a shrine for rock-ophiles and a sanctuary for the status conscious. But cashing in on contemporary culture was not Tigrett's goal. The Tennessee native, heir to one of America's oldest railroad fortunes, didn't need the money.

"The American cafe has always epitomized a melting pot to me," says Tigrett, who was educated in Europe. "It serves as a gathering place for different socioeconomic groups. I wanted to bring that concept to Europe." And on June 14, 1971, he and his partner, Peter Morton, did just that. "London in the '60s was a magical place. But it was also a very class-oriented system. Europe hadn't caught up socially with America yet. So I decided to open up a classless restaurant, where a taxi driver and a Lord could feel welcome."

His decision was not only motivated by strong views on social reform ("I was a raving Marxist at that time," he declares. "There wasn't a march I didn't march in"), but also "because I was probably the world's biggest groupie. I was deeply involved in following the social movements of the world in the '60s. Often, these movements were demonstrated through music. It seemed natural to a 20-year-old mind to put the two together." Thus the Hard Rock evolved, not only as a salute to rock and roll heroes, but also as an institution that hopefully transcended social stratification.

London's Hard Rock Cafe became a cultural phenomenon. As its fame spread through Europe and

—PAGE 51



SANKEN INTRODUCES FOUR MORE MICROPHONES

Maker of world-acclaimed CU-41 double-condenser microphone releases new products to international market.

Sanken Microphone Co., maker of the CU-41 two-way condenser microphone, famed among sound engineers throughout the world for the transparency of its recording qualities (which make it perfect for compact disk recording), is pleased to announce the release of four more of its high quality microphones to the international market. The microphones are:

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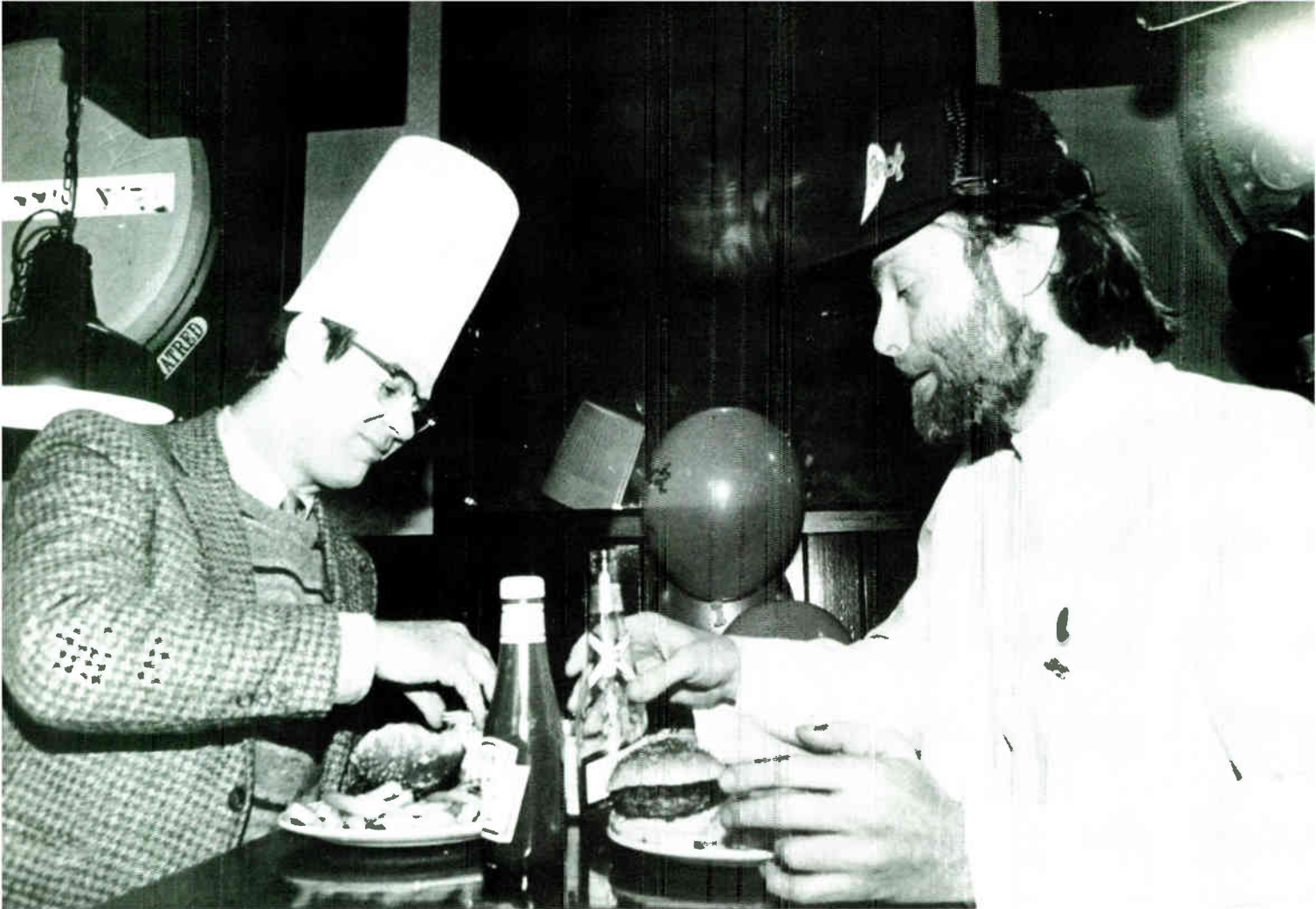


PHOTO: STEVE SANDS

says of the approach. "It's been tried before and it failed because the concept wasn't followed all the way through. These small systems have to be treated the same as a large system; it won't work otherwise. You've got to zone it."

There are three separate zones allotted to the automatic gain control amplifiers, which sense ambient noise levels and adjust gain accordingly, keeping the music level consistent and comfortable in each section. "It can bring the system up and down a certain percentage above the nominal level of the load," notes Juall. "It's plus or minus 6 dB, but it can be adjusted to as much as 12 dB."

There are five zones for VCAs, each with separate equalization, "so we can EQ each area of the club for what it needs," Juall says. "Also, the level can be controlled in any zone either automatically or manually," by the local operator. "There is a central location in the basement where the amps are," says Juall, "that will allow full control over any VCA area. They are completely independent, but the wiring is set up in case they ever want to change that."

Then there are another eight zones for separate power amps. Juall also notes that Ramsa provided some line

Dan Aykroyd, director of marketing for Hard Rock Cafe, and Isaac Tigrett, owner and founder of the Hard Rock Cafe, eating the restaurant's famed burgers.

mixers which have an automatic ducking feature. This dips the level of music to allow paging over the intercom so the page doesn't have to be too loud.

The live, or foreground, system was the flip side of the installation. "The foreground system is totally separate from the other one," he says. "It has the potential to be used along with the background system, but the real reason it's there is to duplicate the reality of the band playing live."

Drake's wiring design allowed for versatile use of this aspect of the system, Juall says: "We have a three-way split off the stage, meaning we have the live sound mix, the broadcast mix and a feed to a third line which could also be used for broadcast or recording or whatever you want it to be. You also have an additional fourth line in, which you could use for a remote truck, for example."

Wiring accounted for much of the sweat during installation, according to Drake, into whose purview this task fell. "I tried to allow for as much future

potential as possible," he says. "In the foreground system, I allowed for 27 mic inputs plus foldback. The foldback in this case is tie lines; you have six tie lines to any location.

"We used EMT Greenfield conduits. These are not customary studio trenches that might run along a wall; we couldn't do that in this situation." They employed 4-inch EMT risers through from the basement and provided access panels throughout along with dreg lines on all cable lines. All cables are braided copper-shielded non-microphonic wire.

Another unique factor in the foreground installation is the inclusion of a time-delay system. "We wanted to insure that wherever you are in the club, when you hear the band playing you perceive the sound to be coming from where the band actually is," says Juall. When the foreground system is in use, the smaller, near-field speakers of the background system function as a fill system.

Maintenance is expected to be minimal, according to Drake. "I'd qualify it as a maintenance-free system," he said. "Or at least as close to one as you can get."

One of the advantages of such a sophisticated set up is that the club doesn't need to keep a full-time tech-

—FROM PAGE 49, AN IDEA

across the Atlantic, the demand for more Hard Rock establishments grew. When Tigrett and Morton decided to divide the territories, the former became the custodian of Cafes in Dallas, Boston, New York, London and Stockholm. "Peter, who's an excellent restaurateur, owns franchises in the west, for the most part," Tigrett explains. "He's really changing the face of the L.A. Hard Rock."

On March 12th, 1984, the New York Hard Rock opened, importing the rock-shrine tradition from England while furnishing a unique flair of its own. Every Hard Rock has individual style, and none of them, according to Tigrett, represent the literal spirit of hard rock music that lent a name to the Cafe. "Fifteen years ago, the restaurant represented Jimi Hendrix, Cream, the hard rock of rock music. Today, the Hard Rock stands for current hits, a wider cross-section of genres. It means something completely different today than it did when I began to plan the project."

Tigrett's attention to detail extends so far that he went to considerable

effort in assisting with the interior design of New York's Hard Rock. It was his idea to install a 70-foot Stratocaster guitar bar, made of custom wood, inlaid mother of pearl and tortoise shell, and brass. Often obscured by a crowd waiting for tables, the bar is one of the many Hard Rock surprises to newcomers. On weekends, and many weeknights, lines form outside beneath the Hard Rock canopy (the back end of a 1960 Cadillac, suspended over four giant brass doors, and flanked by illuminated, brass plated 1930s gas pumps) through possession of a Hard Rock Gold Card (admission) gets a customer in the door.

Once inside, the wait is never dull. You can always find a favorite guitar from the array over the entrance, which includes Waylon Jennings' personalized Fender Telecaster and Bo Diddley's Gretsch box guitar. There's Elvis memorabilia (a tour jacket, a license plate) and Chubby Checker's black and white checkerboard platform boots. The "God Wall" (another Tigrett creation) displays a Madonna & Child alterpiece, an electric Star of David, and a 3-D holographic angel

(whose vestment bears the Hard Rock logo), holding out the words "love" and "peace."

In the same arena as Ringo's autographed snare drum, Eddie Van Halen's handmade Kramer guitar and framed pages in John Lennon's scrawl, food has some tough competition. But the Hard Rock's menu, portions, service and special recipes make the grade. Alluring ambiance aside, some regulars just come to the Hard Rock to eat.

Hard Rock clientele span an incredible range of ages with the average somewhere around 30. Again, Tigrett credits the power of rock and roll. "This is the first time in history that a popular music form has gone from one generation to another," he says. "Rock started in the '50s and it's still going strong. You can put on 'Great Balls of Fire,' and find young children digging it for the first time, and a 60-year-old digging it too. That's what brings such a diverse age range together at the Hard Rock, that common preference for a music that continues to carry tremendous appeal to everyone." ■

—Brooke Comer

nician on staff. To preserve that level of operation, however, the components have to be extraordinarily reliable. "The power amps are well-proven," declares Juall. "They were used extensively at the Olympics in L.A. and at the World's Fair in Knoxville. They're used at SIR every day, and in all those applications, there's only been a single failure."

Throughout the complicated design and installation process, owner Isaac Tigrett allowed Juall, Smith and Drake a lot of latitude. A spirit of camaraderie developed between all of them during the project that transcended the technical and economic aspects of putting in a sound system; a sort of *Zen & the Art of Engineering*, where *ohm* became less a technical term than a chant.

In Bill Beatty's words, "Anybody can serve you a gin and tonic. The reason people come here is because Isaac has created a certain kind of atmosphere, and we have complemented that atmosphere. Isaac doesn't understand dB's, but there are a lot of people out there that don't understand what a cheeseburger *really* costs. He understands his end and we understand ours. It's a perfect marriage between the technical world and the commercial one." ■



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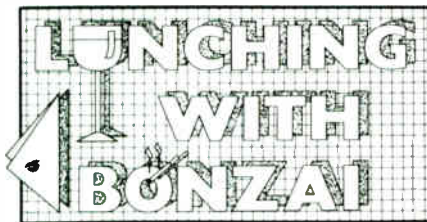
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CHEECH & CHONG

SMOKIN'
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by Mr. Bonzai

Scoring a good interview is like scoring a good lid. You are probably dealing with a stranger, but someone you might get to know real quick. If you're lucky, you get high together and walk away with a nice stash.

I strode into the MCA tower, parked my tape recorder, camera gear, notes and bottle of beaujolais, and announced myself to the guard. There was no "Mr. Bonzai" in the logbook. "Sorry, no pass—but you can call up to the office." I got Jane Ayer, Cheech and Chong's publicist, on the phone and found that I was in the wrong Universal City tower. A pretty flaky beginning, I thought—must be a stony omen.

Jane is a sweetheart, a reporter's dream. I lugged my way over to her tower and she whisked me into her office and zipped off to get the boys. I've seen her in action before, orchestrating media madness with everyone from Michael O'Donoghue to Julian Lennon. I passed the time dislocating the joints of a Godzilla statue on her

desk. She returned shortly, made the introductions, and we adjourned to the boardroom. En route, I remarked to Tommy how helpful Jane was. He said, loudly, "Oh sure—Jane's great. But she thrilled the entire Knicks basketball team at the hotel one night and wouldn't even come up to my room for a drink." Cheech added, "She's got her standards, man."

I first met Cheech and Chong in Montreal, 1972. I was working for CHOM-FM, Canada's most notorious underground station. They did a live show from Andre Perry's old recording studio, a lavishly converted Catholic cathedral. They were the rave comedy duo of the day, bringing a refreshing, nose-picking, wasted humor to our stoned and sophisticated ears. Who could have guessed that they would parlay their concert and album success into films grossing hundreds of millions of dollars?

Their latest smudge on the entertainment biz is *Get Out of My Room*, a collection of four music video romps and a "behind-the-scenes" look at production. They have lots of beautiful women conveniently written into the show. They include their own "bloopers," which are hard to distinguish from the "real" thing. The video takes some surreal leaps of sense that will either delight or nauseate you. Cheech and Chong are still alive and well—messed up and hopelessly confident. A time

capsule of our time would be worthless without their bonged-out presence.

Bonzai: This "mockumentary" of yours—is there any reality in what we see—the production hassles, budget problems and the usual overflow of beautiful women?

Cheech: That was real life. As you see it on the video is how it occurred.

Bonzai: This is your debut as a director?

Cheech: No, actually I've just directed under different names in the past. I directed a film called *The Godfather*, and a little thing called *E.T.* I didn't want to dilute our Cheech 'n' Chong audience.

Bonzai: In *Get Out of My Room*, I see the influence of Fellini's *8½*...

Cheech: Interesting you should mention that—I once directed under the name Fellini—Carlos Fellini.

Chong: And you've directed under a '55 Chevy, too...

Cheech: I also did a lot of porno movies—starring and directing both. I just set up the camera in my room and direct whoever comes in.

Bonzai: You've done so much—why are Mexicans usually seen as lazy, unambitious, undependable people who are preoccupied with cars and sex?

Cheech: I think that's a misconcep-



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The immigration department obviously doesn't believe that Cheech was "Born in East L.A."

tion—we're not that interested in cars

Chong: I have to disagree there—Mexicans are still amazed by cars.

Cheech: We see them as a gift from the gods.

Chong: I always see Cheech with the hood up, looking in at the motor, saying, "I don't believe it." Also, they're fascinated with those hazard lights, too.

Cheech: I think Mexicans are much more artistically expressive because they use the automobile as a found art object—

Chong: Like their home.

Cheech: Mexicans customize, you know—they put red paper on the tail lights, with tape around 'em. Little customized touches that make them down-to-earth.

Bonzai: Why are you two the richest potheads in history?

Cheech: Because we didn't export it—just ingested it.

Chong: I don't know—I think Reagan has more money than I have...

Bonzai: Cheech, did you lip sync the video for "Get Out of My Room"?

Chong: How could you tell? Even his moustache couldn't hide that job.

Bonzai: How did you get so many women to degrade themselves?

Cheech: Well, in the casting sessions I gave them their bonus in advance, up front. They become sex slaves.

Bonzai: Tommy, since you directed all of the Cheech and Chong films, does that mean you have a lot more money than Cheech?

Chong: I saved a lot more money. I never had time to spend it. Cheech

had a lot of time—hanging out with beautiful girls while I was directing.

Cheech: He got divorced before we made any money.

Bonzai: This reference to the "big black dildo" at the end of the video—I think it really sums up the general audience reaction to your humor. Why is it that people are afraid of big black dildos?

Cheech: Oh, it reminds 'em of home.

Chong: What's this about big black dildos?

Cheech: At the end of the video—remember? You said our comedy was like a big black dildo. "Some people run from it, some people go 'oh, yeah!'"

Chong: Who said that?

Cheech: You did!

Chong: I must've been... in love.

Bonzai: What is the most frightening movie of all time?

Cheech: "Psycho" scared the shit out of me. How 'bout you, Tommy, home movies of your first wedding?

Chong: *Places in the Heart*. Sally Fields, boy—thought she was going to act there for a minute—scared the shit out of me. No, really, the most frightening movie of all time is *Invasion of the Big Black Dildos*.

Bonzai: What influences did your parents have on your work?

Cheech: My father's loud voice. I used him as the model for the father in *Earache, My Eye*. And his gallows humor—he's got a deadly sense of humor. He was a cop for 30 years. And I picked up that little voice I do from my mother—like when she describes, "They had these *little* sandwiches at the luncheon with ham and cheese and *little* pieces of bread and *little* pieces of ham and cheese..."

Chong: I think my mother's Scots/Irish blood balanced my father's lack of business sense. And the Irish are very depressed—there's a blackness about 'em and I function well under adverse conditions. I don't function well when everything is going great. I get depressed. If I go to a screening of

PHOTO: MR. BONZAI



our films and it goes really well, I get depressed.

Bonzai: When your first film turned out to be such a success, was it fun going back and seeing the people who had doubts about your commercial abilities?

Chong: No, because those people keep those doubts. They never say, "Good for you, I never thought you could do it." They say, "Well, you were lucky this time."

Cheech: And, "Let's talk about the next film—who knows if it's going to make it?" So, no money.

Chong: There are still people who doubt Spielberg, ya know. He made three billion this year but what's he going to do for an encore?

Bonzai: Who were your early comedy heroes?

Cheech: Amos 'n' Andy, Red Skelton, Jackie Gleason, Red Foxx, Lenny Bruce...

Chong: Richard Pryor was the biggest for me. He was struggling when we were struggling. I once went down and watched him at The Bitter End West when he was really doped out. I loved him—he was real honest. Then he got his shit together, and we did.

Bonzai: As actors, do you identify with



TV hostess/ghoulie Elvira meets her match on the set of Get Out of My Room.

any matinee idols?

Cheech: Johnny Wadd.

Chong: Robert Mitchum—a real pot smoker from way back.

Cheech: I like everything Anthony Quinn has done.

Bonzai: He's chicano, isn't he?

Cheech: Grew up in Boyle Heights

here in L.A. I'd like to kinda follow in his footsteps in a dramatic sense. He can play multinational roles—from a shipping magnate to a boxer. He's a great actor—I like his hulking, animal style—not that I'm like that.

Bonzai: So you have serious dramatic aspirations?

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—FROM PAGE 55, BONZAI

Chong: He learned how to act during his divorce...

Cheech: I may do a few dramatic roles this year...

Bonzai: Tommy, do you have this dramatic urge?

Chong: I'm going to direct and star in a movie, and I'm writing and directing some comedy for television. I have no dramatic aspirations. My dramatic acting comes in making the deal.

Bonzai: This isn't the end of Cheech and Chong adventures, is it?

Chong: Until they come up with enough money to get us together again.

Cheech: This is our year of living dangerously. We're working on separate projects that we wanted to do for a long time. But if they offered a few million for a Cheech and Chong movie, I'd be right there.

Chong: I wouldn't—I have my standards. Five million dollars each or I wouldn't do it.

Cheech: You lyin' Chinaman.

Bonzai: Let's switch sexes—if you could be any woman, who would it be?

Chong: Probably Margaret Mead. She got stoned a lot and balled a lot of people.

Cheech: I'd like to be Eve. Did you know she was the world's first carpenter?



ter? Not many people know that—yeah, the first thing she did was make "Adam's Banana Stand."

Bonzai: What is the difference between animals and humans?

Cheech: Animals don't sue for alimony.

Bonzai: How would you like to be remembered in history?

Cheech: I like the member I got now. I wouldn't like to be re-membered at all. I be:cha it hurts.

Chong: I'd like us to be remembered as the greatest comedians in the last two or three hundred years, to be mentioned in the same breath as Mother Teresa. They should make saints out of us—Saint Cheech, Saint Chong.

Bonzai: Why does so little humor survive in historical records?

Cheech: Because it's of the times—people are funny for their times. Chaplin's classic physical moves have survived, but he was also very topical.

Chong: Very few people realize that Chaplin used to do a lot of dope jokes. In *City Lights* he does a bit with cocaine in a salt shaker.

Bonzai: What is the biggest mistake of your life?

Chong: (laughing) Cheech, you want to answer that?

Cheech: Saying "I do" when I shouldn't have.

Chong: And quitting the Stones...

Cheech: Yeah, right before they got a record deal.

Bonzai: Do you remember that moment when you first discovered puberty?

Cheech: Vaguely—I almost passed out.

Chong: My first memories are sexual feelings, getting horny—but I was raised in the country and there were a lot of older female cousins around.

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Bonzai: When you die, would you like to be burned, buried, or sunk?

Chong: I just want to sit there and rot. I want to be noticed.

Cheech: I'm going to be sunk in the ocean.

Chong: I want to die owin'—then I'd be remembered for sure. If I ever found out I was terminal, I wouldn't tell anyone. I'd take out some huge loans, go to Vegas and blow it all. We had a friend who did that—Lenny Bruce's father-in-law was friends with Cheech. He was on his way out—had been a junkie, had a bypass operation. He knew he was on his way out, so we hired him as a writer. He got paid \$10,000 in \$1,000 installments. Lived right up to the last payment. When you die, it doesn't matter what they do—it's up the cleaning lady to worry.

Bonzai: Do you have any favorite aromas?

Cheech: I like Narcissus and Night Blooming Jasmine—I have them outside my bedroom window. The smell says, "Let's party." I also like gardenias. They remind me of funerals when I was an alterboy and got out of school and got paid, too.

Bonzai: If you had 25 hours in a day, what would you do with the extra hour?

Cheech: Oh, I don't know—feed the kid, I guess.

Bonzai: Can you recall any odd recording sessions?

Chong: Looking for sound effects. To get a toilet flushing, we'd follow people into the bathroom and record their sounds. They'd come out looking sorta upset.

Cheech: But you find that a recording of a toilet doesn't really sound like a toilet. You have to record something else...

Chong: Like Cheech gargling. All the toilet sounds on our records are Cheech gargling. Another time we needed a gunshot so we asked the studio guard. It thrilled the shit out of him—he'd been working there for 15 years and had never fired his gun. He was afraid it was going to blow up in his face.

Bonzai: Are there any old sayings that you really dislike?

Chong: "You better off!" or "Don't worry, it's only money."

Cheech: "What are ya gonna do, take it with ya?" And also, "Don't worry, they'll never hear it in the final mix."

Chong: One that really gets me is, "But he's your brother!" ■

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HEALTH AWARENESS FOR ENGINEERS



Dr. Maurice Miller, Chief of Audiology, Lenox Hill Hospital

by Dan Daley

You hit the "play" button for the umpteenth time in the darkened control room. The music pours out of the monitors, literally rattling the coffee cups on the console. The client is ecstatic (and perhaps a little punchy) and yells, "Turn it up some more," which you obligingly do. The cigarette smoke from the corner where the drummer and his girlfriend are puffing away wafts through the control room. The "hold" light on the phone is flashing: it's your better half calling to tell you that if you're late for dinner one more night you better start checking the classifieds under "Apartments, Furnished."

Sound like a normal session? For many working engineers this could be just another day in the studio: high decibels, airborne carcinogens, stress. All these factors, individually and collectively, take their toll on the body and the mind. The results can be hearing loss leading to deafness, emotional pressures that interfere with concentration and your ability to do your job, physical disorders like ulcers and migraines or worse, according to some authorities.

The trouble is, for far too many engineers and others involved in recording for a livelihood, these conditions are the norm and are regarded as such instead of being viewed as health-

Hearing Tests

Dr. Miller made available to *Mix* the resources of the audiology lab at NYU along with the services of his audiology students to give free hearing tests to engineers so we could get a small (and admittedly unscientific) idea of the state of the ears out there.

Unfortunately, the response was rather underwhelming; only two engineers showed up during the period allocated for the tests. While scheduling difficulties may have accounted for some of the low turnout, another possible reason is perhaps summed up in the words of a DJ. (who requested anonymity) who works in a New York City club: "I wanted to know, but at the same time I *didn't* want to know."

Dr. Miller analogized this sentiment to those expressed by cancer patients. "Even though this test was for free," he said, "the possibility that some damage might be found, or even to acknowledge the fact that the process of damage is going on, might have made a few people nervous enough to avoid it altogether."

Check with your local medical association for further information about physicians specializing in ear-related problems and for audiologists who can provide hearing tests. However, if you're a little anxious about taking a hearing test, the American Speech Language Hearing Association has a toll-free number through which a hearing test can be conducted over the phone. Call 1-800-638-TALK.

—Dan Daley

threatening. The cumulative effect of all these phenomena can take years off your career—and possibly off your life.

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As far as you're concerned, it's music. However, your ears perceive it as noise, and they react accordingly. But it's your profession and you love it and your ears are used to it, right? Wrong, according to Dr. Maurice Miller, professor of audiology at New York University and chief of audiology at Lenox Hill Hospital in Manhattan. "One of the great myths among noise-exposed people is that, 'The noise is not bothering me; my ears have toughened to it.' They haven't toughened. What has happened is that you have lost significant amounts of hearing which cannot be replaced."

Doctor Miller went on to document the physical damage done to the inner

To put decibel levels into a perspective, here are some approximate sound levels from everyday sources:

Average office	60 to 80 dB
Average conversation	66 dB
Constant traffic noise	70 to 100 dB
Noisy restaurant	80 dB
Snowmobile	94 dB
Subway (in station)	96 to 120 dB
707 airliner on takeoff	110 to 115 dB
Rock band in medium room	115 dB
Rock concerts	up to 140 dB

ear by exposure to sustained high decibels. "There are thousands of hair cells spread along a microscopically small membrane in the cochlea [the inner ear]," he explained. "If these hair cells are overstimulated by excessive noise, what happens is that the cell cannot handle the amount of energy and it starts to swell. Then, after further exposure over a period of time, the hair cell collapses and dies. It is eventually replaced by scar tissue which is incapable of analyzing sounds of a particular given frequency." In other words, partial deafness, clinically referred to as Sensory Neural Loss.

Doctor Miller pointed out that permanent loss of hearing in any frequency range is the result of long periods of exposure over the course of several years. Each time the ears are exposed they are damaged to some degree, but not irrevocably; they experience what audiologists call a Temporary Threshold Shift (TTS). "Within about 14 hours, the hair cells bounce back to their normal resiliency," said Dr. Mil-

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LAURIE SPIEGEL: Computer Music Pioneer



Laurie Spiegel at the International Computer Conference.

by Larry Oppenheimer

Laurie Spiegel has been at it for a while. Starting in the late '60s, she has been involved as a composer in electronic and computer music through their most formative periods, often lending her influence as a mainstay on the New York electronic music scene to their directions. Spiegel, now 40, did not turn to music as a career until after receiving a bachelor's degree in the social sciences. Her first encounter with an analog synthesizer around 1968 piqued her interest in both the compositional and timbral aspects of this new musical instrument.

She found Juilliard, where she was doing graduate studies in lute and composition, slow to acknowledge the validity of electronic music, and the rigid conservatory atmosphere stifling to her ideas. When her teacher, award-winning composer Jacob Druckman, moved from Juilliard to Brooklyn College, she followed, found the atmosphere more tolerant, and eventually received her Master's degree in composition there. In 1970, she obtained

an Electrocomp synthesizer and began using it in the soundtrack music that she was composing for a living. That same year she also set up and began teaching one of the first college level courses in electronic music in Bucks County, Pennsylvania.

Frustrated by the limitations of analog synthesizers, Spiegel crossed into New Jersey in 1973 to begin working on the GROOVE system constructed by computer music pioneers Max Mathews and F.R. Moore at Bell Laboratories (BTL) in Murray Hill (see *Mix* 12/84). GROOVE was an interactive, real time, digitally-controlled analog synthesis system that allowed great generality in the interpretation of controller information. Spiegel was one of the heaviest users of the system, (along with composer Emmanuel Ghent, with whom she also studied) developing real time interactive applications in both music and digital image synthesis, and received numerous grants and awards during that period. Her works from that period are still played internationally. An immeasurable amount of her effort (among others) in compo-

sition and software writing, and about seven years of time were laid to rest when GROOVE was dismantled in the late '70s.

Since then, Spiegel has continued searching for and working toward tools with the same compositional power and freedom as the earlier, more experimental tools that she had used, but using current technology which overcomes some of their limitations. For a while, she wrote software for a prototype 48k Apple II given to her by Jef Raskin, who was at that time with Apple Computer, and, in 1980, participated in the development of the alphaSyntauri system for the Apple II. She has recently been involved in writing a compositional language for a complex digital synthesis system that is still under development.

This interview was conducted over a fast-food lunch during a short break in the proceedings at the 11th International Computer Music Conference in Vancouver, Canada. Spiegel spoke at length about how people create music and why most of the currently available computer music instruments aren't fulfilling their promise in aiding that process. Through a haze of cigarette smoke she expressed her opinions and perspectives rapidly and passionately, but calmly and with vision. Thoroughly considered and obviously sincere, her comments inform, inspire, chide, and prod one's conceptions of how rich music composition can be.

LO: Even after you went to Brooklyn College you still found some lack of understanding towards your approach, didn't you?

LS: This was before the Phillip Glass "revolution," and atonal composers said things like, "Why on earth would you use such a limited pitch collection?" And I said, "Well, gee, I didn't need any other pitches in this piece." But also I used limited pitch collections partly because for the kinds of algorithms that I was beginning to write, that was all I needed.

I was writing interactive algorithms for control, and you can do an awful lot with simple materials in terms of exploring, well, everything. Something like rhythm may only require one or two pitches if you want to deal with that, and stereo placement... all of these other things. You get several parameters, like two or three different probabilities to control in real time, plus a couple of placement and rhythmic parameters, and you really don't need all 12 pitches.

I personally wouldn't be able to handle that much simultaneously and come up with something that was meaningful to me. I tend to go slowly. I deal with as much material as I can really

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stay on top of musically before adding more. I'm not interested in getting in over my head and making a lot of stuff that's out of control. I'm a very old-fashioned, simple musician. I'm a sucker for beauty and emotion and sensuality. I really believe in algorithms. It's a lot of fancy, high-tech double talk for another way to describe things that people have been doing for many centuries.

Why don't you just give me sort of a quick synopsis of your work with electronic and computer music?

It's hard to be brief over so long a period when so much was happening. I've never done exclusively electronic work, but I've done predominantly electronic work and in a variety of media, starting in the late '60s with

the Buchla synthesizer, which I fell madly in love with, that Mort Subotnick had at NYU in his old Intermedia program; I mean, electronic sounds, all that. After a few years I got fed up with some of the limitations of that: the lack of memory, the simplicity of control patterns, the limitation to what you could do in real time or with tape editing, oscillator drift, the lack of memory and logic, all of those kinds of things.

Then I went to Bell Labs and started playing with computer-controlled analog stuff—the GROOVE system that Dick Moore and Max Mathews had made. It had other limitations, but it had some really wonderful points. I worked with that for several years, both musically and also visually. I took the code over to another computer and kluged it extensively to get it to output

to a frame buffer to do graphics. I've not really done much graphics in the last few years—partly through lack of tools, partly through lack of time—but music to me has always been somewhat of a synesthetic experience, and I wanted to be able to capture that.

In 1977, I also programmed and composed at BTL on Hal Alles' purely digital instrument. Hal worked from 5 a.m. to 5 p.m., and I worked from 5 p.m. to 5 a.m., sometimes with Roger Powell, who was there for about six weeks.

What capacity were you in at Bell?
They called it "Resident Visitor." We could only work in the wee hours of the night when nobody else was using the equipment for more important stuff. I used to sleep in a sleeping bag in the anechoic chamber at night when I worked all weekend or was too tired to go home. It was a small, wonderful group of people doing music there. We were not allowed to talk about it publicly, but a lot of wonderful work was done, not interfering with the lab's official business.

Then, by '79, they'd gotten rid of the GROOVE system, the frame buffer, and all of that stuff, and it knocked out my computer graphics work as well as the sonic part. I think I had made a couple of stabs at Music V, but I was not really interested in non-interactive music, and I was also much more interested in compositional and interactive processes than in the computer as a means of creating sound or as a keyboard interface. I was sort of spoiled rotten by knob turning and things like that with the analog systems. I took that same kind of interactive, knob turning approach and I just kind of laid it on the compositional level with GROOVE: tweaking densities, probabilities, and entropy factors, and stuff like that, and switching rule systems on and off.

GROOVE had this wonderful generality. There's one kind of data for all of musical space. A function of time, $f(t)$, and you could create whatever kinds of structures you wanted. You didn't have to quantize anything below the resolution of the human senses; all of music could just be continuous curves in all dimensions. But you could, and you could go back and forth between perceptually continuous changes and discrete things like scales, enveloped notes, standard things. The note was not implied anywhere.

You look at MIDI and the modern instruments, and the assumption is that you have fixed sound definitions and you have sequences of entities. These are all unnecessary. You can just start with a bunch of parameters of sounds and compose patterns of change over

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time. You can make all of music as we've known it within that, but you're not stuck to these concepts, such as the "note." You can open a sound, the same way you could with an analog synthesizer and just play in its timbral space expressively. Unfortunately, GROOVE was very limited timbrally, but you could do these great compositional things: make a function of time represent a probability of occurrence, like "Is it going to bring in this melodic sequence or that one?"

I did do a lot of stuff with notes in GROOVE partly because of the difficulty of doing that with the early analog systems. With the analog synthesizer, I'd been very involved with timbre, and then I guess I had a reaction on the computer back to dealing with counterpoint, rhythm, harmony, stuff like that. Because of that and the timbral weakness of GROOVE, I went into the composition direction more. I did a lot of interactive process algorithms where I dealt with the density of change over time as a parameter on a knob, or changing the probability of variation of a fixed sequence—you might call them abstract high level control parameters, and then interacting with them live.

So you were writing software for it.
Oh yeah, you had to. GROOVE was basically several libraries of routines that let you access input and output devices and store time function values and access them, and you used all of the routines in these libraries by writing FORTRAN IV programs. The existence of so-called "user friendly" digital music systems, where it's assumed that the musician doesn't know a computer language, is recent, and they're quite limiting and frustrating to me. What's happened to the use of computers in music as it's been done commercially is that everyone has fallen madly in love with the fact that your computer gives you memory and precision, and they completely overlook the fact that the computer gives you logic. Even within this relatively institutional academic computer music community here at the ICMC, the basic emphasis is still much more on data than on logic; precision of control rather than the ability to create or define processes of evolution and interact with them. Few people appreciate the potential of rule-making systems that can take a lot of stuff over for you so that you can focus your own musical activity in the areas of your greatest sensitivity or interest at the moment.

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a set of rules which you have chosen and that lets you go on and focus on the things you want to do. Ideally, you'd want those rules to approximate what you'd do yourself anyway.

For example, let's take rhythmic structures: normally if you don't want to control the dynamics or if you're unable to do so, like if you have a non-velocity sensing keyboard, they get set to a constant and the loudness is flat. There's no reason to have that happen. You could easily make rules that say something as simple as "This is 4/4 time. Make the downbeat of every measure a little bit louder than the other guys," or "When I play more notes per unit of time, I'm probably making a climax and everything should play louder." It's just using a set of musical rules that make some sense, instead of being stuck with something that becomes flat and lifeless because you're not allowed to describe rules like that. Of course, in the early days, in many of the larger institutional systems, and all the low-level, grassroots, self-kluged music systems, people do program and they use all the capabilities of the computer, but in the things that are out on the market...

Generally, computer music systems are sold on the basis of their memory and their precision as opposed to their ability to really help you more easily make things more musical.

In some senses, that's still a concept in sequencing, but far less literal. In other words, it's not necessarily a linear sequence nor is it necessarily a totally fixed sequence, but still, when you're setting up a set of rules, you're saying... It could be as simple as the kinds of things that you might tell to another player that you're going to improvise with. When you're dealing with a real time interactive music system, essentially it's a lot like improvising with another person except that you have to tell that person everything. They don't have this intuitive grasp of musicality. You're not provided with the means of doing that very often. You have all of these sort of large academic institutional systems that give you all of these kinds of freedom, general systems, but they trade off real time and other very important things. I don't really believe that's necessary. I believe that it's possible to have generality in order to have freedom, and still keep things simple. You have to do a lot of thinking about what's really important, fundamental. And as for generality, what makes things complicated is not understanding principles which are general and fundamental enough.

Still, you can't work in a completely open space. You have to have limits and structures. The important thing is



Laurie Spiegel with Artificial Intelligence pioneer Marvin Minsky at Digicon '85.

that every musician be given a way of setting up their own personal set of limitations, by choice.

So you're talking about working more with musical parameters. Again, more with structural than event-oriented stuff. But not just that, even structural things like how you use input devices. What I'm really talking about is the fact that in the commercial field I think that people making systems to go out don't really appreciate that music is fundamentally different from most computer applications in that it does not involve standard procedures. There are certain things that are standard, or can be handled by standard methods, but basically, each musician creates his or her own set of procedures, and what musicians want more than anything else is a way of expressing their own individuality and their differences from each other. What you need in sounds is a monopoly over a sound that no one else could figure out how to make, that says something about you that's honest and unique. A lot of development methods for computer systems for public consumption really start with the premise that there are standard techniques and that everybody pretty much does things in similar ways, like accounting software. The main thing that musicians do similarly seems to be to try to do something different. It's unique to creative tools.

It's been a self-fulfilling prophecy on the part of the manufacturers. They make the assumption that musicians work with a standard set of tools, and therefore they provide a standard set of tools, and, of course, musicians are then forced to work with a standard set of tools and they become accustomed to working with them and accept that as the general situation. Right. People don't think. They just accept things or they gripe that there's

nothing much they can do about it. I think the market for electronic computer instruments is much, much larger than what's been tapped. An awful lot of people I talk to are sitting on the sidelines waiting for something that's usable and workable for them, and, in fact, I am in a way, too, because I can't do the kinds of things that I want to do on anything I see out there.

A good example: everybody pretty much has adopted the multi-track tape recorder as a standard format for representing music. It virtually precludes, or makes extremely rare and difficult, having immediate, spontaneous access to everything across the board that you're hearing at a given moment. I don't think that Beethoven could have written any of his piano sonatas by overdubbing successive layers. I don't think Chopin could have written any of his pieces that way. I rather doubt Debussy could've, and on and on.

The compositional practice of starting at the beginning, laying in one layer start to finish, going back to the beginning, and laying in another layer was the common practice in medieval times, what we call Notre Dame School technique. It was before the evolution of harmony. The compositional process changed as harmony evolved. Harmony is basically the science or study of organizing what's happening simultaneously. Vertical organization. And the multi-track format that everybody's using out there makes it extremely difficult to deal with vertical organization and the sequence of vertical organizations. You have to work out the chord changes on paper first, or in your head, and read or remember them. To really compose just on the computer system itself, you're limited to relatively simple harmony, and harmony is just one problem.

So the computer becomes primarily a recording device, like the tape recorder its software was modeled after, and much of its creative potential for creating and performing is overlooked and lost.

Another example: the mixture of timbres. When you orchestrate, you're not just saying, "OK, this is what the flute does, here's what the oboe does." You're saying, "I want this particular quality of sound to evolve during this phrase. If I put a flute on top of an oboe here, but not to make it louder or more complex, I can mute down the sharpness of the oboe, because that's the way those sounds interact."

There are large bags of orchestral tricks whereby the timbral units that you're using are combinatorial across the orchestra and they recombine and recombine. You might have just three separate basic lines of music throughout a whole orchestra piece,

PHOTO: LARRY OPPENHEIMER

and you've got a hundred individual players crossing back and forth all the time as to which of these lines their sounds are actually attached to. This concept of instruments that are separate from each other with specific lines to follow is really a bit of an oversimplification. What you're doing, really, in orchestration is more like, "I've got this melodic and harmonic stuff. How do I use timbre to amplify the drama and emotion that's in it?" Or maybe, "How do I get the stuff that's happening in my imagination out where people can hear it?" or stuff like that.

That's making the assumption that the work is being conceptualized the way that it's being constructed.

What's happening is that people look at a multi-track deck, and they also look at conventional score paper and they assume that the process of creative evolution of what they see is somehow derived from the score format, visible in it, or consistent with that format. But a final representation may have very little to do with how you got there. Multi-track recording is the last stage in many works that start with a bunch of notes on a piece of paper at a piano: they aren't voiced, they aren't orchestrated, they aren't organized in any kind of parallel arrangement, and the only sequential thing is that they're locked to beats in time. When you do, let's say, a piano sketch, you might do a chord series and then lay in a melody, or conversely, or a single line might just keep branching, or you might work everything through together start to end, or you might write the ending first and then work up to it, or you might... there are a lot of ways of doing it.

In a second pass you would decide the orchestration, and assign timbres and doublings, all of that stuff, then do another pass where you do the articulation, the dynamics, the little special things. The passes don't break down by voices and instruments, they break down by interpretive parameters and things like that. Actually, you might need to deal with details of any of these types at any moment. You need to be free to.

It's not that the multi-track format isn't workable, it's just that it seems to be the only option that manufacturers are thinking in terms of. They're all doing it, and there are a lot of people waiting for other things, who are not buying anything because they would have to change their working methods so extremely.

I find that interesting, though, because you're equating the construction of the piece with its composition, and

I'm not sure that's always true. I think that sometimes people may lay down, say, a sequence of chords, and they can get the aural feedback with that by having it on tape, and then lay something on top. They may still be thinking vertically in terms of the development of the piece.

Well, OK, if somebody lays down a sequence of chords and then wants to orchestrate from it and you've laid that sequence down in what they call a polyphonic format, which is really homophonic, where you have a bunch of sounds with the same timbre, let's say, a piano sketch. How many systems give you the ability to easily voice from that?

I'm seeing an unbelievable amount of redundancy among these hundreds of systems that are out there. They all seem to be doing minute variations on the same model and there are a lot of other models which, for some reason, nobody wants to deal with. One of the reasons for that, I think, is that the multi-track format is easier to code. It takes a parallelistic process and it makes it sequential. It sort of, in colloquial usage, "Von Neumannizes" a parallelistic creative process. The multiple parameters of the sound are still parallel, but they're largely set to constants throughout the sequence. You have, perhaps, multiple instances of the same kind of sound, but it's not the kind of parallelism that you would have in dealing with full polyphony at every moment; which is what you have on paper or when you're working a piece out in your imagination. It's a sequential bottleneck between parallel imagination and parallel sound. This is fine for some music and impossible for others. It's a tiny part of how computers can make music, but it's almost all of what's being sold.

Some of the PC-oriented programs that are coming out now allow you to do a lot more working with MIDI in terms of information you may have laid down for one instrument that can then be copied or even transferred; you know, lift it out of one spot and put it into another. That does allow you some degree of orchestration.

Music still has to be already conceptualized from the very start in channels, but there are things beginning to come out like that. There's also still this fundamental problem that you have to predefine a sound as a fixed thing on which events get played, and can't easily deal with timbre as a growing organically changing dimension of composition or expression. These are just examples of the gulf between what musicians do and what's available. I get a lot of calls asking, "What should I get?" I generally try to ask

people what their working procedures are; I tell them to look really closely at how they work and see whether there's enough correlation yet to be worth the money.

Well that sort of leads perfectly into talking about the compositional language that you want to construct.

That goes back to what we were discussing earlier, the idea that what musicians need is the ability to express and explore their individuality. You really can't standardize musical activity. What you're creating in an instrument is a tool for people to be non-standard if they want, and explore their individuality: to try things out and really enjoy doing it without feeling like they're fighting the system; where they can really get caught up in the content of what they're doing and really have a good time and go as far as they want.

What kind of language are you going to implement that's going to allow them to do that? What kinds of facilities would a language like that have? How would it be workable for a musician who perhaps doesn't have an extensive programming background? Not making the assumption that they're completely stupid and can't learn programming, but that they don't have some established language background.

By and large, most musicians are pretty comfortable with words as a medium of expression. We use them all the time. We even use them in scores and in rehearsals with other people. Music does have a language anyway for methods, materials, and forms, but most computer-based systems don't let us use any of it. There's terminology for processes and structures, parameters, relationships, all kinds of stuff. You can express general rules, and you should be able to tell them to an instrument that will be able to use them the way fellow musicians would. You can say, "If it's too high for the flute, use the piccolo." It's exactly the same as "If A is greater than B, then do C" in any computer language. You can say all kinds of things verbally in music. What you really want to do is find a way that you can concentrate on the things that you as a human being do best and get rid of drudgery. This is classic "computer as labor-saving device" kind of stuff. The computer can decide things according to rules you've taught it. Of course, a language for music needs to be concurrent and interpretive, among other characteristics, but I don't want to get technical now.

It sounds like what you want to do is create a system of rules that contain a

lot of stylistic information. Stylistic in terms of orchestration.

Through language you want to create a syntax and a vocabulary where, starting with basic things, a person can define new terminology in terms of the old stuff, the way languages grow naturally. You're on the basic level of... OK, an example: standard logical tests in computer languages are "greater than," "less than," etc. So in music it doesn't require a great programmer to deal with musical extensions of those same concepts: longer, shorter, higher, lower, faster, slower, before, after. Instead of "If A>B then do C," you've got "If C# is after D, then double it with harp." "Double" is a word that you use in music, basically meaning, "attach another voice with another sound descriptor set to this same event or line." Music has a terminology, and I would like to see a language, and I have been working along the lines of trying to see that the language we already use is available because it's very important. We do use it.

One of the reasons I'm so hyper about languages for computer music systems is because we have this incredible vocabulary for structure in music that has many branches. Many cultures have such vocabularies in one form or another, in many different

historical periods. In Western music, we have a vocabulary for abstract structure in time and other dimensions which has been evolving in parallel with mathematics for about as long, which is tailored to what is perceptually meaningful in music, and which is simply not available in computer music systems, especially in the marketplace.

If you saw the film, *Amadeus*, there's this wonderful scene where Mozart is dictating to Salieri the Confutatis from his Requiem, which is a movement that I've absolutely adored for years and years, and he basically is able to verbally give that entire movement and part of the Lacrimosa to Salieri to take down in a couple of minutes of footage because he's able to use a verbal vocabulary. I would like an instrument where I could do that and say, "Repeat this part here on eight beats on do, then re, then mi, and double it with that on alternate strong beats," and that kind of thing, because language is a shorthand. Like a lot of composers, I'm not a great keyboard player, and I don't work my best by recording my own playing. I compose in other ways.

I'm absolutely all for physical interfaces, but we also need a language for defining the use of those interfaces.

There are several different areas that a musician wants to work in. We want to be able to describe the nature of sound. We also want to be able to describe, to invent, to specify—and this is separate—the instrument's response to a physical action or gesture. It may be a sound, but it may be something else, the changing of a rate, who knows. You also want to be able to describe structure; correlations between things: how one aspect of the music responds to another, ways that they're similar or different; the circumstances under which something should or shouldn't happen; how something which is happening over and over should change depending on its context, or depending upon what may be coming in live.

We want to be able to describe processes, and this is one of the big things in the 20th Century across all of the arts and sciences: a much greater degree of conceptualization in terms of processes as opposed to entities. In music school they told us, "Rondo and sonata are forms." This might have just been Juilliard; I don't know what they say elsewhere. They are shapes, architectures, certain proportions and properties. Something like fugue or canon were described to us as processes: process of evolution.

A fugue isn't a fixed form, it can have any number of episodes, any number of voices, any combination or order of the various kinds of transformations that are used, any modulations... Fugue is a process whereby you create a piece of music. After fugue, Western music evolved through a long formalist period where we had lots of things like sonatas and rondos, which are more or less like templates that you fill with material.

Now, we are in an era where there is more interest in the concept of process again. Twentieth Century artists, painters, etc. are very interested in processes whereby they generate works, or they define a process and that becomes a work in itself. This is very applicable to music, and I want very much for there to be publically available tools for people to explore it.

I've had a really good time making pieces of music which are processes, which involve described processes of musical evolution, and you can play off of them, change their parameters as they run, play things against them live, or just listen to them as they are. There are a lot of reasons that this is interesting, but the point is that the computer is an ideal tool for it, and so I've tried to do what I can to see that such tools might become available.

There are a lot of other new things to think about. One is that there's a very traditional, absolute schism between the listener and the musician;

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the passive and the active roles. In the old days, a lot of people played music at home on their own instruments, actively. Then radio and records moved in, and they became passive listeners. What we've got now is more and more of an attempt on the part of those passive listeners for some kind of active participation: selection of sound systems, equalizers, ways that they can somehow control the sound. Control is available to date basically on the acoustic level, but not on other musical levels. You can actually write an algorithm that generates a piece and continues to evolve musical texture, put it out on a floppy disk for computer, and have it played by a bunch of people who will be able to sit there in their homes with their joysticks and bias it towards the major or the minor key and make it go faster and slower, and make it go staccato and legato, and get thicker and thinner. It's like what Marvin Minsky calls a "false dumb-bell." [Minsky, a pioneer in artificial intelligence, uses the phrase to identify dichotomies that are artificially constructed where none actually exist.] Passive and active musical roles will always be there, but it's no longer necessary. It's possible to be in the gray area in between and it's not an unnatural thing.

None of this stuff that computers can do is new, it's just that computers can do some of it better, with more variety possible. Let's look at an old-fashioned automated instrument. One of the instruments that I played and loved dearly was the banjo. What you do with the banjo is to set up a sort of automated pattern with your right hand, picking or frailing or whatever. Then you do things with your left hand that change what the actual pitches are that cycle through that pattern. You come up with wonderful melodic, motivic, and rhythmic material that, if you sat down, closed your eyes, fixed in your imagination, and wrote on a piece of paper, you'd never think of.

What you've got on a banjo is the interaction of two patterns: an ordering process and array of pitch values you select with your left hand on the fretboard. You get an awful lot of variety in banjo music by using different left and right hand patterns and changing tunings, rhythmic meters, and tempos. That's really simplistic compared with what we can do on computers, but it's essentially the use of some kind of process to generate stuff that keeps you going, keeps you excited, makes the music move, which is under your control but suggests or presents possibilities to you that you

wouldn't have necessarily thought of on your own, and then you just kind of go out from there.

The use of compositional algorithms, interactive process descriptions, a lot of this stuff is a really natural extension from things like bluegrass picking patterns, canon, isorhythmic motet, or even the Alberti bass line. (Composer) Bill Buxton is always quoting me as saying, "The computer is the folk instrument of our time." But, as I see it, it's nowhere as good as most folk instruments yet. It's not easy enough yet to do the kinds of things we've been doing all along. Computer music systems are not being conceptualized well enough. Music is being dealt with as though it's made up of sounds and of notes, rather than of patterns, processes, gestures, motions, curves, transitions... ways of putting them together. There's a long, long way to go in realizing the really wonderful potential of all of these... but a lot of it has tremendous continuity with the past. The existing musics that we all love and which are why we went into music in the first place are being tremendously oversimplified and not really looked at deeply enough. Computers in music are being tremendously under-utilized; we're only at the beginning right now. ■



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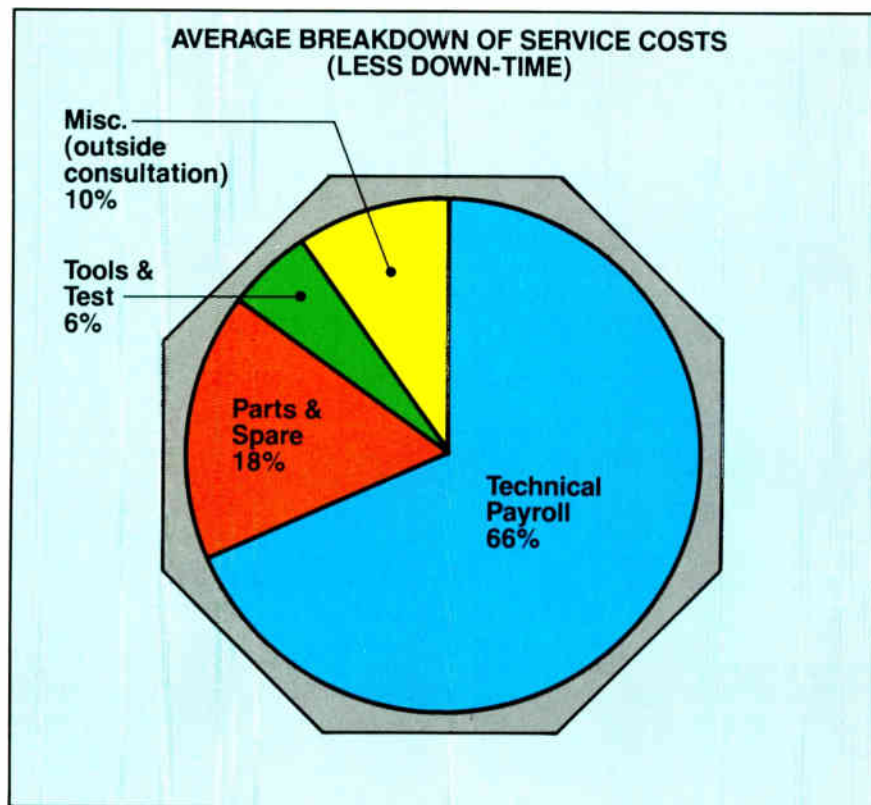
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ing your service expenses on each machine, you can quickly see which devices need to be overhauled. The ten percent rule of thumb is a pretty good one to use as a budget base for establishing the cost of servicing the entire facility.

On much larger capital investments, this percentage can be lowered, but not all that much. It may seem excessive to allocate \$15,000 a year to servicing a console, but it will be seen that the costs in payroll are not offset by even this hefty number. But downtime, as reflected by the time given back to the client, is also to be assigned to the device in question, which means that a machine can fall into the rebuild/replace position very quickly. This line of thinking brings in the concept of rental as an economic alternative: it makes sense to rent a replacement while the tasks are being performed rather than risk the potential of lost session time caused by the erratic behavior of a partially repaired machine.

The Bottom Line

To some extent, all of the above ramblings are doing nothing but side-stepping the real issue, which is how much—at the bottom line—is service going to cost you? To answer this question, we have drawn from our own client list and interviewed a large number of major recording facilities and manufacturers on both coasts. It is our contention that the service costs of an operation can be figured from two different methods.

Method One

When a studio first opens, all the equipment is new, and the manufacturer is responsible for warranty service for a period from 90 days to one year. It is also in this period that you acquire the initial expenses as a large capital outlay for tools, test equipment and spare parts. The benches must be bought or built, the filing cabinets, lights, chairs, drafting table and all of the other accessories that live in the tech room must be purchased. So on one hand, the parts and labor required for operation are minimal, while "tool up" is at a high point. Income projections for the studio are only that at this time, with no background of studio use as a basis for the projection. Since this is the case, the best way to forecast technical expenses for the first two years of operation is to use a percentage of the initial capital outlay for service expense.

It seems that when a manufacturer/dealer places a new piece of equipment, the costs approximate 7.4 percent to care for the warranty period. The research covers small 2-track tape recorders to larger computer-based consoles. This number is the average from our respondents. Based on a large random sampling of studios, we find that the average spent for technical support is 7.8 percent of the equipment capital outlay of the facility. These two numbers are fairly close to each other so we would say that the proper amount of money to expect to spend in the first two years of operation should

be around 7.6 percent of the money spent on studio equipment. (See the accompanying chart.)

Method Two

After a facility has been around the block a few times and the accountant types have decided that there are specific dollar amounts that can be expected for a given year, then it is time to allocate funds for the care of the technical operation. When looking for the financial where-withall to maintain an ongoing studio, it is a good idea to have some foundation on which to base your requests. We feel that a good evaluator is the gross billings, and our research bears out those pre-dispositions. Having interviewed a goodly number of studios in both stable and growing markets, (you know who you are, and thank you!), we were able to chart service costs against gross income. The mean expenditures worked out to be about 6 percent of the total studio sales. This number can be misleading because it includes both the established facility that has long since amortized all of its expenses, and the growing firms that are attempting to break new ground and explore a larger and different client base. The extremes of this can be seen in the accompanying graph.

Conclusions

It can be seen from the charts and text that technical support is a significant percentage of both initial equipment outlay and gross income. By far the largest portion of the service dollar is spent on labor. Illustrating this point is the "pie" graph, which indicates the average distribution that has been indicated in our research. It is critical that these dollars are well spent. In times past, it was a simple affair to hire someone who possessed some technical experience, (usually built a couple of hifi kits) who could learn the gear and integrate into the staff. Nowadays, with the profusion of automation, MIDI, microprocessor based outboard equipment and synchronized multi-track recorders, it is poor economy to try and shave expenses with un-trained or inexperienced technical staff. Your business life is in the hands of your technician...so make sure you have a good one.

There are many technical expenses that we did not include in this analysis. The installation of the studio and control room are capital expenses. Large scale modifications, custom construction and the like also fall into this category. Often these activities will increase the cost of the technical department because of the manpower drain that they represent, and the studio must keep on rolling! ■

CHRISTINE McVIE ON FOSTEX

Christine is a singer, songwriter and, of course, a member of Fleetwood Mac.



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PRODUCERS & ENGINEERS TALK BUDGETS

by Linda Johnson and
Blair Jackson

First, we should state the obvious: there is no correlation whatsoever between the amount of money spent recording an album and how that record eventually fares in the marketplace. There have been scores of albums made for just a few thousand dollars that have sold in the millions. Likewise, there are countless LPs that were years in the making, cost astronomical sums to complete, and were then ignored by the public. The mind reels with thoughts about The Knack's debut album a few years ago, made for just \$18,000, and which went on to sell two million copies. Or Fleetwood Mac's *Tusk*, which also sold in the millions, but is widely regarded in the industry as a "failure" because of the expense involved in making it—more than a million dollars.

There are as many ways to make a record as there are artists to make them—the process of creation is as important as the finished product to many artists, and everyone works at the pace his or her budget will allow. Someone like Bob Dylan obviously has the time and money to labor over his records endlessly, yet he generally likes to work fast in the studio, making his tracks as "live" as possible, and eschewing multiple overdubs. Steely Dan, on the other hand, labored over every detail of their albums, spending weeks, even months, on every track. There are a thousand variations in between those two approaches, and certainly one is no "better" than the other.

One constant, though, is that in the end, it's almost always the *artist's* mon-

ey that is being spent. When a band signs a deal with a label, recording costs are frequently included in the contract. But like an author's advance, the fees shelled out by a record company for recording are recoupable later. Who has not heard tales of supposedly successful albums that actually make no money for the artist because all the money "made" from the record went to pay back the record company?

"We were ready to start recording, and this artist was waiting for his demo cassettes in the mail. It was crazy. That was his last record."

—Maureen Droney

Yes, having that hot-shot producer work on your debut LP may be a good move from a commercial standpoint, but sooner or later you're going to have to *pay* for his name and reputation.

This is a business where people would always rather talk about the latest gadget, the "New Dylan" or "The Next Big Thing" instead of the bottom line. But that's what this forum is about:

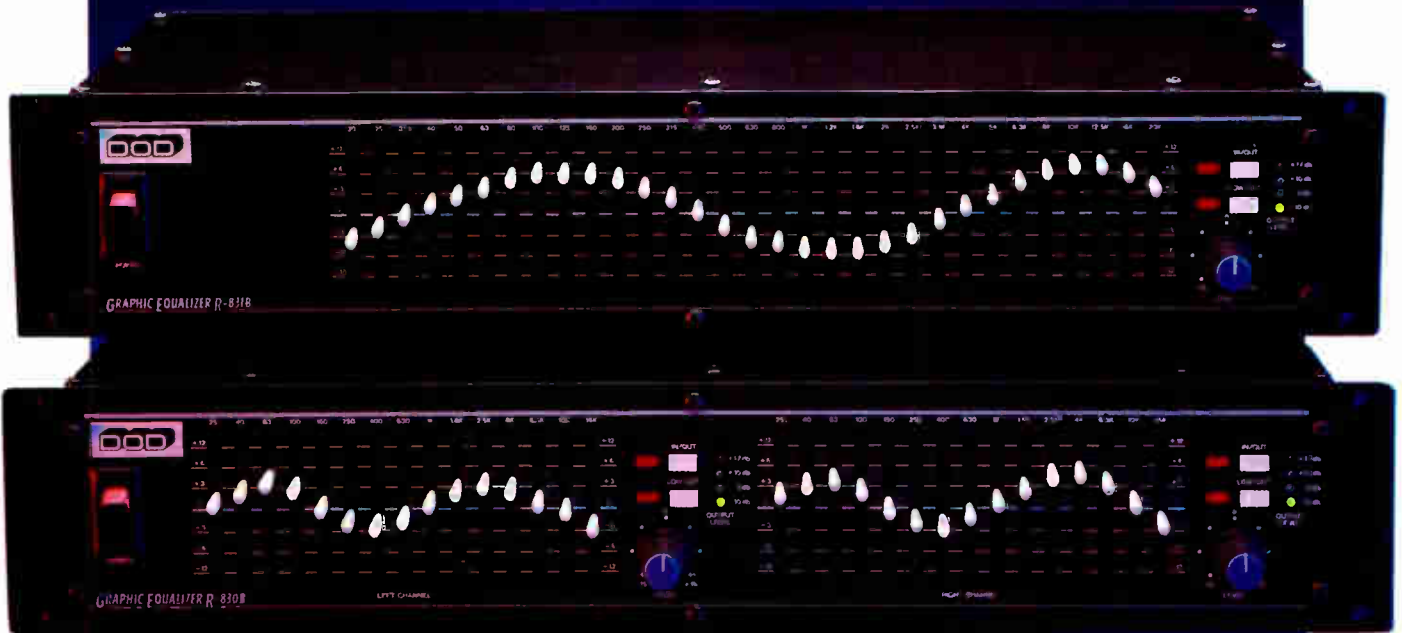
budgets. Recently, we talked with a cross-section of engineers and producers about pocketbook issues—how they formulate recording budgets, tricks and shortcuts for saving money in the studio, examples of waste in recording, and a number of other issues. Our respondents have varying kinds of studio experience, as a glance at the mini-bios below would indicate.

In 1978, **Maureen Droney** was engineering 4-track demos for various bands in her hometown of San Francisco. Eventually she landed a job as a staff engineer at the now-defunct Automatt, working with such artists as the Jefferson Starship, Huey Lewis, Wire Train, and Translator. Since then, Droney has been freelancing, and at press time was engineering the latest Santana release at the Plant Studios in Sausalito.

Terry Manning began his career as engineer/producer some 20 years ago at Stax Records, recording hits for The Staple Singers. In the early '70s, he broke into rock and roll, engineering the *Led Zeppelin III* album, and has since worked with ZZ Top, George Thorogood, Molly Hatchett and several other artists. For the past two years, Manning lived in England while working on various projects for Joe Cocker, Zeno, Fastway, and Outside Edge. Among his favorite studios in Europe are Abbey Road, Mayfair, The Workhouse, Air London, and Puk. Since returning to the U.S. last year, Manning has spent a lot of time at Ardent Studios in Memphis, finishing up an album for The Sluggers.

Today, engineer/producer **Rod Hui** is kept busy with several rap music projects, but he got his start in the music business doing live monitor mixing for such shows as the Rolling Thunder Review Tour back in the early '70s. From there, he learned the ropes of his field through hands-on experience at Big Apple Studios (now Greene Street) in New York, where he worked

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his way up to staff engineer. Now freelancing, Hui still spends much of his time at Greene Street, working with such artists as Kurtis Blow, Run DMC, Starsky, Bonnie Tyler, and Chaka Khan.

Joe Chiccarelli has been putting his talents as engineer/producer to use for several years in the Los Angeles area, working for artists including Pat Benatar, Oingo Boingo, Frank Zappa, The Bangles, Romeo Void, and Lone Justice. Chiccarelli often records at local studios like Capitol, Conway, Preferred Sound, and Master Control, and most recently was in at Sound Castle finishing up a new album for a band tentatively named Shadowboxers.

For Canadian engineer/producer Fraser Hill, budgeting for album projects has always meant cutting costs wherever possible during his nine years in the music business. In what he calls "an extremely difficult market," Hill and his partner, Rick Hutt, have managed to survive in The Great White North through producing/engineering for such artists as Red Rider, The Warriors, Seven Minutes, and the Northern Pikes. Among Hill's favorite places to record in Canada are Manta Sound, Elora Sound, and Sounds Interchange.

At 29, John Potoker is part of the new guard of New York engineers who are cutting their teeth primarily on

"When something is not working, don't keep knocking at it. Just drop it and go on to the next thing."

—Rod Hui

12-inch disks. He's worked on the staffs of such leading Manhattan studios as Sigma Sound, Hit Factory and Right

Track, and, for the past two years, has worked as an independent producer/engineer. His credits are impressive indeed, with 12-inch mixes for the likes of Paul McCartney, Billy Joel, Hall & Oates, Wham, U2, The Thompson Twins and Phil Collins; and engineering on albums by Talking Heads, Ashford & Simpson, Thompson Twins, Stephanie Mills and others.

Jay Burnett certainly came into the business on the ground floor: he once worked as a janitor at New York's Electric Lady. He moved up through the ranks over a period of years, however, and eventually was a staff engineer there. In 1980, he became an independent and built his first studio, Intergalactic, "a very crazy studio," by his own admission. He has a long association with master mixer/producer Arthur Baker, and helped build Baker's Shake Down Sound studio. He has worked primarily on dance records by artists ranging from Bruce Springsteen to Simple Minds and Hall & Oates. In addition, he was active on the Sun City anti-apartheid project.

For years, David Kahne was considered the hot young producer of up-and-coming West Coast bands. And that, as much as anything, explains why the now well-established Kahne was grabbed by CBS to be a staff producer a couple of years ago. A capable engineer, arranger and musician, as well as producer, Kahne has been the guiding hand on projects by Romeo Void, The Bangles (whose second album he was working on at press time), Wire Train, Pearl Harbor, Fishbone, Translator, Red Rockers and others.

Richie Zito is probably best known for his guitar pyrotechnics for a wide assortment of artists through the years, but for the past two he has also worked as an independent producer. He and his principal mentor, Giorgio Moroder, co-produced part of Berlin's last album, and Zito has been at the helm for projects with Tony Basil, Animation, Eddie Money, Joe Cocker, Eric Martin and others. He has worked at studios throughout California, including Oasis, Encore, and Fantasy.

A name that is increasingly respected in Contemporary Christian Music circles is Ed Nalle, who is also the leader of a top Christian band, Glad. Working out of such studios as Omega (in Kensington, MD), Ardent in Memphis, and Nashville's Gold Mine, he has produced George King, Cathy Sinni, Brown Bannister (Amy Grant's producer) and a host of other leading lights in Christian music.

When going into a new project, who determines the size of the budget and how it will be allocated?

Droney: If you're talking about an



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actual record company, usually they determine an amount and you have to work within that. You may negotiate beyond that for things you feel are needed after the fact. In some cases, I have to submit a budget in conjunction with the producer to the record company for approval. And, of course, with locals, you work up a budget and then they have to raise the money.

Manning: I will lay the budget out myself—totally in advance. I don't like to leave anything to chance; it has got to all be decided as much as possible in advance. I'll just go through and to the best of my knowledge figure out what musicians, studio time, and everything will be required, find the cost, work it all out, and submit that in writing to the A&R person at the record company. And, in some cases, I'll also submit a copy to the artist's management. Then, we'll all meet, discuss every item, and if there are any revisions to be made, we'll make those and then come up with a final written budget. And, of course, I'll always fill in a little extra somewhere because you never can foresee it. I like to leave a ten to 15 percent leeway. We almost always come in well under, but it's better to have it and not need it.

Hui: I think everyone goes in with a pretty good idea of how much it will cost. Depending on whether you're cutting an album or a single, I would say now, with today's technology, the price has come down a bit, since you can program a lot of stuff at home; you can do a lot of pre-production work before you go into the studio. For a 12-inch single, the budget would be anywhere from \$5,000 to \$10,000, and the average time would be 40 hours. Anything over 40 hours would be pushing the budget. If you're dealing with an album, the band is usually signed, and the record company will advance you about \$30,000 as seed money, and you do your best with that. Then, if the company likes it, they'll give you the rest of what you need. For a single, this is more difficult because unless you're working with an established artist—which usually isn't the case—you're using your own money, and the record's success—in terms of getting money back—depends on how much clout you have. For example, if I'm interested in an artist, I will sign them to my production company (Rodway Productions), and I have to front all the costs for the single or demo.

Chiccarelli: Usually the deal that the label makes with the artist includes what the recording budget is going to be. The record label might come up to me and say "You have \$100,000 to do the record," and then I'll sit down and look at all the elements of the project and figure out if I can do an album for

that much money. If I feel I can't, I'll work out what I think is the closest to it, and then go in and say "Look, I've got a problem here because I think the singer is going to take a long time, or the band is going to want to experiment with synthesizer sounds, or whatever. I think I can do this record, but not for \$100,000. I'm going to need a cushion of \$120,000." In other cases, the record company may say there's no set budget, which is called an "approved" budget, meaning that I have to (within reason) come up with my own budget.

Potoker: It seems from my experience that on album projects, I just get in touch with the artists, their management and the record company and

try to work out something that is mutually acceptable. Actually, I've never really had much problem in this area because with any luck everyone is shooting for the same thing, and it's really just a matter of working out details on how it all can be done.

Burnett: On a lot of the stuff I do, I'm working with Arthur Baker, who is hired because of the sound he gets, and clients know that it's going to cost a certain amount of money. So we basically just work, do what has to be done, and then bill the client. But it depends. I just did a 12-inch with Simple Minds. Bob Clearmountain, who's the producer, called me from London and asked if I could work with him on this single. So I booked time at Unique

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Recording in Manhattan where I work a lot, and I told Virgin Records, who actually hired me, how long it would take me and then they sent the tapes over. The studio then bills Virgin, but I get them a good deal because I work there so much.

Kahne: I lay out the budget myself usually, or at least allocate the budget the band comes in with. If I actually sign a band, I put in the deal how much will go to recording the first record. I try to structure the costs with the managers. I've worked with some real small budgets working with young bands on independent labels. The first Romeo Void album came in at about \$3,500! I've been spending more as the need arises on more recent projects, but that's usually been a function of the position of the band. The first Bangles album, for example, was really inexpensive, but the new one we've been working on is costing more. The band has more experience and their music has become more sophisticated, so the recording is more elaborate.

Hill: The labels here (Canada) usually like us to come up with a figure, and then they tell us what we can and can't have. Basically, we try and break everything down per song. On certain songs, you know even before you start that you're going to be in for a few dollars. So if you don't have much money to work with, you're going to have to, for example, use an Emulator or something instead of bringing in a real orchestra. But I would say the number one thing to do in budgeting is getting a producer set. Then, right from the beginning of negotiating the contract, you decide if he's going to go all the way through the project, or if a person will be brought in to mix. And then you would cost two or three studios, and then two or three places for overdubs. What Capitol does is they give me a cost breakdown sheet, and then I hand that in after padding it all over the place. You always plan for the worst.

Nalle: After you've been in the business for a few years, it becomes easier to accurately put together a budget. You know—approximately—how long it takes to complete each stage of the recording—basics, lead vocals, etc.—and you plan accordingly. I like to do as much pre-production as possible so there's a minimum of wasted time in the studio. That way, you go in and you're only doing the work that *has* to be done in the studio.

Do you actually sit down with the artist and talk money?

Manning: No. I personally don't think that's necessary, but it depends on the artist. If you're working with someone like David Bowie, obviously they know

a lot more of what they want than somebody who is a first-time artist—not that they don't know, just that they haven't been around for 20 years, and they need more guidance. So in normal cases, no, I wouldn't want to burden the artist with that type of thing. Of course, I would have a general idea of what the artist wanted, and then take that into account with what I thought was needed, and then put those two together.

Hui: No. I wouldn't put that burden on them. It's something they really don't need to know. I write it down for myself. You have to gauge yourself. If you're over-running on certain parts, you have to realize what it's going to cut into and decide what is more important.

Chiccarelli: Yes, absolutely. Everything is discussed with the manager and the artist. I'll say "Here's what it's going to take," and they'll usually say "Well, gee, that's a long time," but you eventually work it out together. I'll sit down with them and find out what they feel they want to spend more time with than maybe they did on the last album, or whether they're concerned with getting different players in, etc.

With all the new technology today, every artist has to compete with the Madonnas and Bruce Springsteens, and all these artists who are spending hundreds of thousands of dollars on a record, and taking a year to do it. New artists have to come up with a sound that's equal to that. Listener's ears have gotten very sophisticated, and demand a good-sounding record, and a well put together record. So unfortunately for new artists, it really means that you've got to come up with something that sounds as strong as the major artists.

Records are certainly taking longer today, too. With all this technology available, synths and SSLs etc., you just have the ability to go a lot further soundwise, and people are experimenting more and more.

Hill: Yes. In a lot of cases you do. In the Red Rider project, we definitely talked with them about the budget because they're really conscious about money. The first thing that comes up usually is: your talent, my particular talent, and how much I'm worth. A studio is a studio, but when it comes to the stuff that's most expensive, it's the band and its talent. If it's a band-oriented situation, then you don't have to worry about session players, but if I do a country project with a solo artist, I have to put up a contract for all the musicians hired, which is a whole new section for the budget.

Zito: I never discuss money with artists because I like to keep a creative relationship with them. I don't want to re-

mind them every day about how much everything is costing. Artists generally have managers to worry about that sort of thing—that's their area of expertise. So I find myself talking creatively to the artist, and then both creatively and economically with the record company and management. I think if a performer is worrying about money, he's not going to give his best, in most cases.

Potoker: We talk, but most artists don't seem very budget-conscious. They usually are aware of how much money they spent on their last project, but not the one they're working on.

Kahne: I present the budget to the musicians before we go into the studio and we discuss approximately how long each stage of the recording is going to take. It's their money, ultimately, so I try to get them to be cost-conscious. At the same time, I don't want them to feel rushed and to panic. But so far I haven't had any problems; I've never gone over budget. I try to build a buffer into the budget to take care of any problems or unexpected expenses that might arise. Sometimes I'll go into that buffer, sometimes I don't. But the budget has to be the bottom line.

I've found that if you've got \$10,000 to work with, you'll probably spend it, and if you've got \$150,000 to work with you'll spend that, too, because as your budget increases, so do your options, and that opens up the recording process. And that's where a lot of people go overboard, and that's where a \$150,000 record becomes a \$300,000 record. The money changes the way you work, not always for the better.

Are there any tricks or shortcuts you've learned that can help save money/time on a project?

Dronery: Developing a good relationship with a studio is the best way to get the most for your money. You bring them business, so the better your chances are of getting good rates and deals. It's good for both you and the studio. Another trick is making decisions quickly and at the moment of working, which really helps keep things moving, and keeps the quality there. If you leave things undecided, there's more room for confusion and problems later on. A lot of people get all this stuff recorded and say they'll deal with it in the mix, but the mix is very important and shouldn't be the time to be making those kinds of decisions. With a big budget, you have a lot of time to be creative and experiment on these kinds of things, but with a small budget, all this stuff should be worked out ahead of time. You should have everything planned, and know how the project will progress. Another

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thing that really helps is to see the band play live, because you want to be able to capture that spontaneity, that sound, on the record. It helps you understand what the band wants.

Manning: I like to go in with the group in advance, not to totally decide everything because that kills the spontaneity, but to get things well enough rehearsed so that there are no major glitches, you know the direction that you're in, and everyone knows the chord changes and arrangements. But to me, there really aren't very many tricks/shortcuts to saving money on a budget. The only thing I know of that you might call a shortcut would be just working hard and efficiently, which of course means no drugs or alcohol. Otherwise, there's no real way to save money, because every time you try to scrimp and save, you'll probably see the effects of it in the end. Sure, it's expensive to hire a studio that has an SSL console, but I think that you always get more for your money. And to me, you save a lot of time and money by using a good studio, even if you have to pay more for it. It's just so much better and can do everything more efficiently.

Hui: The job of the producer is to make sure that money isn't wasted, to make sure that the time spent in the studio is

as productive as possible. You've got to know how to run the session smoothly. There's a rhythm—a pace—in the recording studio. You set the mood, and you go from there. When you're in the studio, you really have to focus. When you're unfocused, through drugs or whatever, you waste time, you can't hold up, and you lose time *and* money. So you have to be professional to be successful. You've got to be able to make product. Also, budgets are getting smaller. Record companies are not just giving anybody \$100,000 anymore. There was a time when the companies were picking up everything. But now they want more in *quality*—not *quantity*. Another thing is that the value of the dollar has decreased. You can't buy as much for \$100,000 as you could two years ago. All the new technology is expensive. But there are ways to help save money; namely, a *lot* of pre-production. Knowing what you want *before* you go into the studio. **Chiccarelli:** Obviously, the more pre-production the better. Working out arrangements on home demos; I like to spend a minimum of two weeks with an artist either doing or re-doing demos, scrutinizing them, and going from there; altering songs if needed, etc. After that, it's good to rehearse for some period of time so you don't go into the

studio cold, and basically eat up studio hours figuring out song arrangements. I could spend anywhere from four days to two weeks rehearsing for an album, depending on the artist. If you've done the band's previous album, that makes it real easy because you know where strengths and weaknesses are, that it took a long time to get background vocals but the guitar parts went real fast, etc. So you know all the pitfalls, and you also know maybe direction-wise where you want to go, where the band wants to expand, and so on. The knowledge you have from the past on that certainly helps a project along.

Hill: With Canadian labels, the cash flow isn't as great as in the States, so you have to be far more cost-conscious—not that you don't in America—but you have to be willing to eliminate some things in order to get better things in the end. For example, what Rick and I might do is cut our basic tracks at Manta or Sounds Interchange, which are two state-of-the-art studios here, and then go somewhere like Elora Sound or Metal Works, which are smaller facilities at half the price, to do overdubs, etc. In some cases, we bring in a person to mix for us, which means we have to save on something like overdubs so that we can bring someone else in later.

Another way to minimize expenses is to do a lot of pre-production. If you want to go for feel, and just wing it as you go, you better be prepared to spend over \$100,000 or so. Up here in Canada, we really have to watch it because budgets simply aren't that big. We're constantly cutting corners. There aren't that many acts to record here, so if I do find somebody I like, then I usually have to raise the money myself, and I have to be really ruthless with the budget. In that situation, you're really sweating bullets because there's no record company that'll give you more money to finish off a project. Having very few acts to record here, and not having a lot of money to deal with, we have to be extra organized and quick in the studio. You just have to do anything you can to save money. One thing that really helps is familiarity with a studio, because people there know you and how you work. If I say "OK boys, I'm really tight," everybody will go into overdrive.

Potoker: What you need is a good song, a unique vocalist and a unique sound. If you don't have those things all the tracks in the world aren't going to make a good record. But look at Phil Collins, as an example of someone who made a great record relatively inexpensively. His album, *Face Value*, was started at home on an 8-track,

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and then bits and pieces were transferred to regular multi-track in the studio and then developed further. I think if people got into SMPTE more and maybe striped a track at home, if there was something particularly cool about that home demo, then they could easily sync it to 24-track and keep more of that good home work—as opposed to getting rid of it and then spending thousands of dollars in the studio trying to top the demo. People lose perspective and get tunnelled in on projects.

Another thing I do is I'm very conscious of where I do my work. I do a lot of my mixing at Sigma [in NYC], for example. I like mixing on an SSL, and I work better and faster on an SSL. Actually, though, I can sometimes do work cheaper in London. In terms of the quality of the facilities, I think London has a slight edge. Your money goes a bit further, and it's a more relaxed atmosphere to work in. Lockout isn't as expensive as it is in New York, and I like to do lockout—I try to do all my projects that way because it just makes more sense working until you get tired, sleep until you're rested and not be controlled by the clock so much. When you see the expense, it can look like a lot, but I think you save money in the long run and work more efficiently.

Burnett: This isn't really a "trick," but I do always try to mix in rooms I know real well, like Unique or Power Station. I really don't sit around thinking of ways to save money. I'm trying to make the project right. I'll almost always do whatever I feel is needed to be done. If I need to rent another AMS, I'll do it. The people who hire me know I'm only doing what needs to be done.

Using SSL boards cuts down on my time a lot. I think they're really great. I've based a lot of how I mix on the capabilities of the SSL. If you can really get to know them, you can cut your mixing time way down. I've been in situations where the producer has come in and had to spend a lot of time familiarizing himself with the console. It really helps to know the equipment before you go in.

Kahne: When I first started producing, I used to do all my own engineering for free, rather than hire somebody. Also, I'd get real involved in the arranging, the writing, and the playing. If I wasn't a player and engineer, I simply couldn't have made those inexpensive records. As my budgets have gotten bigger, I've been able to hire some engineers, which is great because I know I lose some objectivity if I'm listening for distortion and checking to see if the performance is right.

What do you do when a project isn't going well? Where can you make cuts and adjustments?

Droney: You have to say "Let's move on." I'm an engineer, so I'm not the one usually making these final decisions, but I do have a part in realizing when things aren't going well. There's just a point of diminishing returns, when you realize you just have to go on. But you have to be careful to not kill creativity with efficiency and rigidity. And usually record companies are pretty supportive and understanding. They want a good product, so they tend to be sensitive about the demands of creativity. They'll give you what you need to end up with a good final record. Of course, for lower budget projects, you have to just hurry up as best you can. There can actually be a real excitement to doing things quickly. An adrenalin gets going that can spark creativity and spontaneity.

Manning: I think the warning sign that a project is not going well would be when the producer feels that he's not in control. I've got to be in control. I don't mean dogmatic; I just mean that somebody has to draw the line, because record companies don't just sign new groups and say "OK, here's a half million dollars. Hit the studio guys. When you're through let us

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know." They say, "Here's \$50,000, and here's a professional who has done this 25 times, who may not cut you a hit record, but at the very least is not going to lose a fortune for us."

As far as making cuts once in session, you just have to know instinctively where the cut-off point is. It's not even something I could really comment on because it would depend on the situation itself. In most cases, if you have adequate preparation, I just believe there's not going to be any real problems.

Hui: When something is not working, don't keep knocking at it. Just drop it and go on to the next thing. It's also important to create an environment where you can cope with those kinds of problems smoothly when they come up. When you're dealing with an artist or band, you want to be their friend, and also their guide. I think the days of the tyrant producer are gone. People are people, and one of the jobs as a producer is to be a team with the artist and the engineer, and to create a harmonious environment. Sometimes there's an argument in the studio, and the air is so thick you could cut it with a knife. You feel sick, and you just can't do anything in that type of environment. You might as well call it a day. When it's just not working, the producer will usually say "Let's take a break," or move on to something else. And if it ever comes to the point where you know you're going to run over budget, you have to go and talk to your label and try to get a little more money. But you have to have good justification for it. You have to make sure that the money you've already spent has been worthwhile. That'll make the difference of whether they'll dish it out or not. If the other material sounds bad, they're going to say "forget it." But usually if I know I'm running over halfway through the project, I will start cutting corners immediately so I won't have to ask for more money later. Maybe instead of spending two hours on an overdub, I won't even do the overdub. Overdubs would definitely be where I'd cut a lot of stuff. Or instead of doubling the background vocals, I might use an Emulator, or something quicker.

Chiccarelli: I tend to work in the more upgrade, world-class studios for mixing and the initial tracking, and then I do my overdubs in a less expensive environment, where the pressure is off, and you're paying \$50 to \$75 an hour, as opposed to \$100 to \$150 an hour.

If I have to make cuts while actually *in* session, I'd put a limit on recutting tracks, or just trying new approaches for the sake of trying new approaches—

just basic experimenting is really costly. Or say if we spent a lot of time on the drums, I'd try to speed other areas along, or maybe not rent as much outboard gear as I had planned; or

"Listener's ears
have gotten very
sophisticated and
demand a good-
sounding record,
and a well put
together record."

—Joe Chiccarelli

instead of renting a Fairlight I'd rent something less expensive—those sorts of things. But if things got really bad, at some point I would definitely go to the record company and say "Listen, we thought we'd get all our drum tracks done in five days and it took ten, and we thought we'd do all our synths in two weeks and it took three, and I'll be honest with you, we're probably not going to come in at \$120,000. We're going to come in at \$140,000. Is that OK?" I've never gone that far over budget, though, so I've never run into a situation where they said "No, you can't have it."

Hill: Well, what Rick and I might do is have him go in and actually play some of the parts for the band, or he might fill in things with his Emulator. Having worked with the album long enough, he just knows what it needs. And if you're lucky to have someone like that, it often gets you out of tight corners. For instance, if you've got to be in New York on Thursday to mix, and it's Tuesday night and you can't find the bass player to come in to re-do an overdub, who's the next best person? The guy sitting right next to me in the control room! Of course, nobody really likes it, but this can save a fortune because Rick is not going to write out a contract; he's just going to do it and get it over with. When you really have to cut costs, you just keep going down on everything. Say if we wanted to do background vocals for a solo artist and we'd like to have five people sing-

ing. Well, we'd just have to cut it to two, and things like that.

I phone the record company nearly every day to let them know how things are progressing. Some people really demand that you do that, but I think it's good. I've found that I get in the hot seat if I leave it for three or four days. It helps to constantly talk to the company to help keep track of the time and money you've got to work with.

Potoker: The only barometer you can use about how a project is going is the vibe in the control room. You can't fool people into thinking the music is happening if it's not—you know it and you can't kid yourself. So the first real warning signal is when you see the artist refuse to acknowledge that, for whatever reason, it isn't happening. Sometimes, as an engineer, you'll want to try to work on something different, but if the artist is really determined to work on this other thing, they usually win out. A lot of time gets wasted working on stuff past the point where it's realistically productive. Maybe that just isn't the right time to be working on that particular track. If you don't have an unlimited budget, the best way to deal with that is to drop what's not working, move onto something new, and hopefully try a fresh approach on the other thing later.

As for cuts, the last place I'd make cuts is in mixing, but that may just be because of my background. Where I probably would make cuts, if it came to that, is instead of using strings and horns, I'd use a Synclavier. They give you pretty good realism. I think synths and samplers are having a positive effect on music because they're economical if used efficiently, and they've allowed for the introduction of a lot of new sounds and textures. Whereas before you might have taken time to get a specific crash cymbal sound or use a horn blast, people are being more open and imaginative.

Burnett: One way to cut is to find a cheaper studio. There are a lot of less expensive studios in New York where I've done demo work for about \$30 an hour and it still sounded very good. They may not have as many equipment options, but you can still make something that sounds completely professional.

Kahne: The main problem I see is when someone starts a project with too much technical stuff going on—they put down SMPTE and they're going to go 48-track and they use digital machines and drum machines—even though they might not need it. They take the time to put down drum machine tracks even though they know they're going to use a real drummer later. What they're doing, really, is putting off decisions. They want to try

—Page 165

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Lexicon PCM 70 Digital Effects Processor

Lexicon PCM70 Digital Effects Processor

by Larry Oppenheimer

Those of us that create in the domain of sound have been blessed with a number of technological advances recently, and if you've read anything that I've written, you know that I am greatly excited by developments in musical instruments, such as MIDI, and in audio, such as digital signal processing and automation. In fact, for several years now I have dreamed of a way to harness the power of digital reverbs and effects devices through external control of their parameters. Think about being able to sing onstage and move the sound off into the distance as the song winds up, or play a pitch bend on your synthesizer and have the sound spread into lush echoes. How about synchronizing effects like these to a video image?

It took some time for the necessary technologies to mature a bit, but the marriage of MIDI and digital signal processing has now made my sonic fantasy a reality, manifested in the form of the Lexicon PCM70. Rather strong praise, I admit, but I believe that I will amply justify it below.

The Lexicon PCM70 is a digital signal processor primarily intended to generate effects, but also quite capa-

ble of high quality reverberation. The original conception of this unit was as a reasonably priced package containing the tragically under-used effects programs developed for the Lexicon 224X. The decision to include reverb in the PCM70 came about because it made the machine a better value for the money.

If this machine were simply a repackaging of the 224X effects with reverb thrown in, it would still easily be worth its \$2,300 price. But Lexicon added dynamic parameter control via MIDI, and that changed everything. We'll get into more detail on that later.

The PCM70 is housed in a rugged steel and aluminum package which occupies one rack space and extends 13.5-inches deep. It weighs only 10.7 pounds. On the front panel are the basics: power switch, input level knob and LED headroom indicator, and the unit's user interface (controls). There are four hardware parts to the PCM70's user interface: four buttons (PGM, REG, LOAD, BYP) that perform global control, a stepped, infinite turn potentiometer called the "Soft Knob," a numeric keypad, two arrow keys (one up and one down), and a 13-character alphanumeric display.

The PGM and REG buttons put the machine into either Program mode,

from which the program matrix (explained below) is accessed, or Register mode, from which user registers are accessed. If neither is selected, the PCM70 is in Parameter mode, in which parameters of the current program or register can be edited. The Load key is used in both storage and recall operations, and acts as an "enter" button for several functions, such as naming registers. BYP is a bypass switch, which is useful for effect in/out comparisons.

The arrow keys and the numeric keypad are only used to move through the rows and columns, respectively, of the program, parameter, and register matrices. Row 3, column 6 is reached from row 2, column 2 by simply pressing the down arrow once and then the "6" key. The display is where you find out what's going on. All information from the PCM70 to the user is shown here.

The soft knob is the control that is used for all data entry. It is never used for selecting, only for parameter editing. It is the strict and consistent division of the front panel controls into global, selection, and editing functions that makes this system of user interface work.

The rear panel contains a balanced input and two unbalanced outputs, with a separate gain select button (-20



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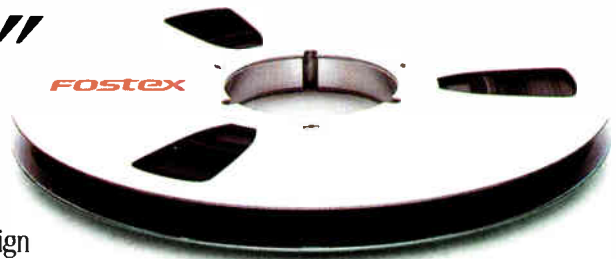
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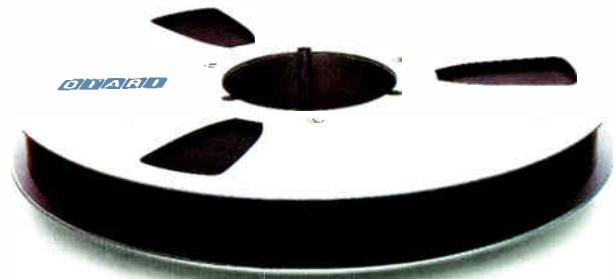
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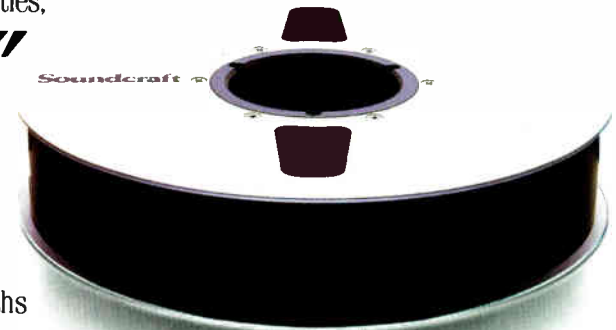
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or +4dB) for input and output levels. With these buttons, the 70 can accept signals between -23 and +18 dBV, and output between -8 and +16 dBV (into > 10 kohms). Control jacks on the rear panel include bypass and register step jacks, and, of course, MIDI In, Out, and Thru. All jacks, except MIDI, are quarter-inch phone type.

The PCM70 is a multiple processor system, based around Z8404 microprocessors for control and semicustom Lexicon chips for the high speed processor. It has a bandwidth (for the processed sound) of 15 kHz, and a dynamic range of 80 dB (20 Hz to 20 kHz noise bandwidth). The high quality A/D converters provide linear 16-bit quantization and operate at a sample rate of about 34 kHz.

The construction of the unit is excellent, and should provide reliable service for quite a while. It generates surprisingly little heat, even after being on for a while. Should it require servicing, however, it will not be hard for a qualified technician. The covers are removed quickly and easily, offering access to both sides of the single PC board. The board is securely fastened to the frame and is well laid out and silk-screened. The number of trimpots is so small that it is doubtful that calibration will ever be a problem. This piece of gear will stand up to the physical abuse that it is sure to get as it becomes a staple in the repertoire of touring groups.

Programs and parameters

The PCM70 contains three effects programs (Chorus & Echo, Multiband Delays, and Resonant Chords), and three reverb programs (Concert Halls, Rich Chambers, Rich Plates). There are between three and ten factory presets of each program, totalling 40 presets in all. Some of the presets are simply ROM-stored front panel setups, while others provide features (such as bpm and infinite reverb) not available any other way. Some brief program descriptions are in order here.

The Chorus & Echo program is a delay line with six taps along it. For each tap, level, delay time, feedback, and panning can be set. Any of these parameters can also be adjusted globally (all six at the same time). These delays may be modulated with either a sine or triangle wave to create chorusing effects, in contrast to the 224X's random modulation, which provided more natural chorusing, but a less traditional flange sweep. The depth of modulation and the number of voices being modulated are also variable. A maximum delay of 432 ms is available for each voice. The program can yield a wide variety of chorus, flanging, and echo effects.

Multiband Delays is another multi-tapped delay line, but here, each tap is fed through a high- and a low-cut filter. For each tap, level, delay time, low- and high-filter cutoffs, and panning may be programmed. As in Chorus & Echo, there is also global control of these parameters. Only the first two taps (called "voices") can be recirculated back into the delay line, but there is a feedback control for each. The maximum delay time per tap is 936 ms.

Resonant Chords is somewhat different in construction, featuring six separate delay paths, each having a short delay line which is heavily fed back until it becomes a resonant comb filter. Putting a transient such as a drum through this comb filter would excite it and produce a boingy, metallic tone at the resonant frequency. This is basically the same idea behind the Karplus-Strong "plucked string" digital synthesis algorithm. In addition to the resonator, each path has a longer delay line of up to 773 ms, a high cut filter, and panning. All of these parameters except the high cut filter can be set individually for each voice. Only voices three and six can be fed back. The pitch of each resonance is not shown as a delay time, as it was in the 224X, requiring calculation to figure out what note it was, but in half-steps ranging from D-flat 1 to E-flat 7, which is a little over six octaves. As you change the pitch of a resonance, it plays so that you can easily find the desired pitch by ear.

Each of the effects programs has a few presets with "BPM" in the name. In these presets, the delay master (global delay control) is replaced by a rate control, calibrated in beats per minute. The individual voice delay time parameters are displayed in 24ths of a beat. With these controls, rhythmic effects can be readily created and synchronized with a drum machine or other external signal source with a definable tempo ranging from 64 to 191 bpm.

Concert Hall is a classic Lexicon reverb program, and features the now-standard parameters originated on the 224 (separate LF and MF decay times, crossover, predelay, diffusion, decay optimization, HF damping) combined with some that were added on the 224X (definition, chorusing, stopped mid and low decay times, early reflections delays and levels) and others developed on later generations (size, attack, gate). Some parameters, like depth, don't seem to have made it to this machine. All three reverb programs have the same adjustable parameters, except that the Concert Hall only has four early reflections, while the Rich Chamber and Rich Plate both

have six. All programs in the PCM70 also have a mix parameter, allowing onboard mixing of dry and processed signals.

The gate parameter is present on all three reverb programs and is how gated reverb is achieved. It can be adjusted from 0 to 4.5 seconds; quite a wide range. An interesting distinction here is that most gated reverb programs are based on FIR (Finite Impulse Response) digital filters, that is, a multitapped delay line without feedback, while hall or plate programs are based on IIR (Infinite Impulse Response) filters. On the PCM70, it appears that gated reverb is achieved by "gating" an IIR reverb program with the dynamic decay feature. The result is that the 70's gated reverb has the same density, smoothness, and buildup as its ungated reverb.

The Rich Chamber is also a descendant of a 224 program, but it has been considerably refined along the way. The program is intended to simulate a wide range of chambers, from 5.6 meters a side up to 32 meters a side. While the Concert Hall program fits behind the music, the Rich Chamber adds warmth and appears to wrap itself around the sound. The primary sonic difference between the Rich Chamber and most room programs seems to be that the Rich Chamber has less obvious coloration. This does not mean that this program is incapable of simulating a terrible sounding little room; the factory presets, "Small Room" and "Tiled Room" give two completely different small space ambiances which both proved to be quite realistic.

One of the Rich Chamber program's presets is the Infinite Reverb program. This program is notable for having more parameters than any other such program that I've seen, including useful touches such as early reflections, and even definition (which affects density of the later reverberation).

The Rich Plate is, of course, a bright, explosive reverb which sounds quite good gated, as does the Rich Chamber. Since it has the same parameters described above for the Concert Hall, there's not much else to say about it here.

To get people into the swing of MIDI-controlled processing, Lexicon has provided ten factory presets in which they have made some basic MIDI assignments, such as the Filter Pan BPM, where feedback is controlled by the modulation wheel and panning by the last note played.

In addition to the processing programs, there is a control program with housekeeping features like MIDI channel, mode, and program change selection, memory protection, autoloading, and

mapping of MIDI program changes to PCM70 user presets. The PCM70 performs self-diagnostics on power up.

Program & Parameter Matrices

With only a few front panel controls and a small display, how can all these programs, parameters, and registers be accessed? This is a very tough ergonomic question, and Lexicon's answer in the PCM70 is the organization of program and parameter information into matrices. The display, however, can only show one matrix entry at a time, so charts of the matrices are provided in the owner's manual.

In the program matrix, the rows are programs, and the columns are presets. Hence, row 0 is all presets of the Chorus & Echo program, row 1 is presets of the Multiband Delays, etc. Some of the preset names reflect the difficulty encountered in trying to saddle some of these incredible and bizarre effects with descriptive but catchy names: Spim (sic) Echoes, Rym in C min bpm, and Swarble, to list a few.

In the parameter matrix, the rows are laid out in approximately the same fashion as the pages on the 224X. In the effects programs, where many parameters can be individually adjusted for each voice, all adjustments for a given parameter are in the same row, i.e., row 1, column 0 (notated as 1.0) is the level master, and parameters 1.1-1.6 are levels for voices 1 through 6, respectively. This means that the effects parameter matrices largely fall together into rows of parameters and columns of voices. The reverb programs don't have as many repetitive adjustments, so they don't come out quite as neatly. The rows of the reverb parameter matrices are basically organized by priority: row 0 has the most often used parameters, row 1 the secondary ones, and so forth.

MIDI

This is where the fun *really* starts. The last row in each parameter matrix is filled with parameters called "Patch." This is how you can assign up to ten parameters to be controlled, collectively or individually, through MIDI. This is accomplished by going to a Patch parameter and using the Soft Knob to select the desired MIDI controller, and the desired parameter (using parameter matrix numbers as mentioned above). Finally, the MIDI controller input can be scaled to attenuate the range of its effect. It can even be scaled negatively, which means that as the value of the MIDI controller increases, the parameter value decreases. More than one parameter may be controlled by the same controller, although each parameter may have

only one controller to which it is assigned. All of the continuous controllers and switches defined in the MIDI specification are available, plus other useful sources like the pitch wheel, last note played, velocity of last note played, etc. Where de facto controller or switch assignments have emerged (controller 1 = modulation wheel, controller 7 = volume, switch 65 = portamento, etc.) they are indicated in the display. Patch assignments are stored along with the preset.

As mentioned earlier, there is also a feature in the PCM70 which allows the user to define what preset will be called for a given MIDI program change number. This short-circuits one of the peskiest problems in MIDI: accommodating program changes between instruments that have dissimilar storage configurations. This mapping feature is selectable, and the alternative is a more or less literal interpretation: MIDI program 21 equals PCM70 user preset 2.1, and so forth up to the 70's last register, 4.9. MIDI program numbers over 49 call factory presets until those run out, and the 70 simply ignores the last few leftover program numbers. Program change commands are the only MIDI data that the 70 transmits at this time. Currently parameters can only be transferred from one PCM70 to another, which is accomplished using a non-MIDI data format, but Lexicon intends to develop alternate methods of offloading parameters which will probably include MIDI.

Programmability

The PCM70 has 50 registers for storing user presets which are accessed by entering the Register mode. Storing and recalling is very simple, and naming can be done by calling 0.9 (name) in the Parameter mode and using the Soft Knob and Load key to create an alphanumeric label up to 13 characters long. In addition to front panel and MIDI recall, a row of registers can be stepped through with a footswitch plugged into the rear panel Register Step jack.

Operational Assessment

Operating the PCM70 is actually pretty straightforward, but the sheer quantity of variables can be overwhelming at first. A typical usage starts out with selection of a program and factory preset. This is done by entering Program mode with the PROG key, using the arrow and number keys to find the desired program and preset, and then pressing LOAD. The program would next be edited. Pressing the PROG key again exists program mode and leaves you in Parameter mode, where you select parameters from the

matrix and then edit them with the Soft Knob. When you finish editing, you may name your preset with parameter .9, then store it by entering Register mode with the REG key, locating an empty register in the matrix, and pressing LOAD while holding down REG. Recalling a register is the same as calling a factory preset, but it is done in REG mode. Simple, huh?

Well, sort of. Once familiar with the unit, these come quickly, but in the meantime, you'll need your program and parameter matrix charts from the owner's manual near at hand. In and of itself, the need for external documentation is only mildly bothersome, and goes away in time as the matrices are learned. Unfortunately, Lexicon has placed the matrices on two non-adjacent pages of the manual, which necessitates a lot of flipping back and forth. You'll be much happier if you make a quick reference card: spend a quarter, copy the matrices, and put them in clear plastic covers. This problem will be lessened somewhat in the future, as Lexicon plans to develop a personal computer interface for the PCM70, which will undoubtedly lead to PC-based editing and librarian software. Making MIDI assignments is essentially the same story: it takes a little while to catch on, but then it becomes quite fast.

However, the real bottleneck isn't figuring out how to use it, it's figuring out what to do with it. Having a strong knowledge of the 224X, I was already familiar with the programs of the PCM70. The programs are capable of so many different things that it takes some time to get past being in awe of its possibilities and actually begin working with the machine.

Even so, I was not completely prepared for the possibilities presented by the MIDI control. Performing artists will have a field day with this. They can call up a sound on their synth and have a matched program come up on the PCM70, then be able to vary the effect subtly or drastically without ever taking their hands away from their instruments. Studio artists and composers can sculpt music with sequenced processing variation, and the unit would be equally well suited for many film and video mixing applications.

Evaluation

The PCM70 sounds great. It was evaluated with analog and digital synthesizers, a drum machine, and tapes of other instruments and urban street scenes. After a period of familiarization and experimentation with the different programs, I got down to some serious fooling around.

Obvious things like putting the drum

machine through one of the "bpm" programs were tried with great success: a simple backbeat came out of the "Bouncing Bpm" (a Multiband Delay preset) with an easy-going double-time feel, as if there was a percussionist filling in the spaces with gourds and shakers. A tape of young girls "double dutching" (skipping rope and singing in rhythm) also made a great source for the bpm programs.

The same girls were again useful in checking out the reverb programs, as some of the recording was done outside and some in a gymnasium. In fact, the "Gymnasium" preset was quite close to the real thing, and with a bit of tweaking it sounded close enough to be used as a substitute.

Another useful recording was of teenage boys hanging out by their cars and jivin' next to the highway. After putting those guys in a tiled bathroom for a while, I got down to putting them in a car. The Rich Chamber was able to get convincingly short enough to be acceptable as a car interior. Finally, these poor dudes were thrown into a mess of resonances. Starting with the Dom 13th preset, I eventually ended up with a patch where the last note played on a DX7 would transpose the pitch master of all the resonances, and the mod wheel would increase

resonance from negative to positive for three voices as it decreased volume for the other three. The effect was like some strange sort of crossfade between two resonant chords. The Stereo Flange preset was also quite spacious and nice.

In fact, the only real difficulty that cropped up in setting up complex MIDI patches was mastering the correlation between MIDI values and PCM70 parameter values. Sometimes it was necessary to offset a parameter value to

accommodate the desired range of MIDI control. This did not prove to be an insurmountable problem.

In general, the sound of the reverb and effects programs was nice, with a smooth, airy high end. I don't know if it's good converter design, good filter design, or just plain good design. In any event, this toy is definitely a winner in a big way, and reestablishes Lexicon once again as an innovator in the burgeoning field of digital signal processing. ■

YAMAHA REV7

by Oliver Masciarotte

When I was a small child I would listen to the radio and wonder how they got all those musicians into a room, one right after the other, so that I could hear them perform. You might say that I lacked a certain technical savvy at the time. However, the same sense of disbelief came over me with this REV7 reverb field test. I don't know how Yamaha managed to cram so much versatility into one inexpensive box, but I applaud them for a job well done.

The Yamaha REV7 professional digital reverberator is a mono in, stereo out, digitally-based device capable of producing a wide range of reverberation, echo, delay, and ambience effects. Three bands of quasiparametric equalization are provided on the front panel to vary the frequency content of the processed signal. Via front panel switches, the user can bypass the processed signal or mute the device's output entirely. Direct control of more than 13 program parameters allows for modification of the 30 factory ROM presets. Sixty non-volatile user memories provide for storage of modified parameters and quick access to "customized" sounds. A small wired remote gives rapid selection of all presets and seven



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The Yamaha REV7

user programs. Finally, programs may be selected from an external MIDI device for that automated masterpiece you've been dreaming about.

The REV7 has input receptacles labeled left and right. An audio signal applied to either the balanced 1/4-inch or XLR input is actively unbalanced. If the input is stereo, both signals are summed to mono. Then, constant Q equalization, if selected, is applied to the signal. The range is ± 15 dB of gain at three continuously variable frequency bands: 50-700 Hz, 350-5000 Hz, and 2k to 20kHz. The information is then low-pass filtered and digitized with metering occurring before conversion. Digitized information is processed according to the selected program, converted back to analog form and low-pass filtered. Conversion, performed by chips of Yamaha's own design and fabrication, is 16 bit linear quantization.

Operation of the REV7 is simplicity itself. The REV7 has two dozen buttons with engraved legends to directly call programs and select specific program parameters. In addition, there are five particular keys to randomly store and recall programs, "enter" and "clear" keys for numeric entry, and a numeric keypad. Another feature is a liquid crystal display which indicates the current program's name or spells out a particular program parameter with its present value. Without referring to the operating manual, I was able to call up all of the presets and change some of the default parameter settings because the alphanumeric display shows the operator, in English, what options are available. Of course, a few of the displays are rather cryptic until you read the manual, which gave me all of the information I needed to put the unit fully through its paces.

The REV7 has five broad preset categories. Once a preset is called, the

operator has the ability to adjust all parameters using the front panel key pad to create new sounds. With the exception of input level and EQ settings, all modified parameters can be stored in memory for later recall from the front panel, remote, or MIDI. The REV7, unlike more expensive devices, has very basic MIDI implementation and only allows selection of a MIDI channel and associated program number. Program parameters are not adjustable via MIDI.

Program categories consist of reverb, straight delay, multiple echo, early reflection effects, and "modulation" effects. In the reverb category there are hall, plate, spring and room programs. When running the reverb programs, RT60 @ 1kHz (the time it takes for amplitude of reverberation to decay by 60dB) can be set from 0.3 to 10 seconds. Delay prior to the onset of reverberation, up to 100 milliseconds, as well as a mono "first reflection" are also available. This first reflection shows up in all program categories with a default amplitude of zero so you may dial in as much as taste and temperament dictate. High and low frequency reverb time (approximately 1k-10kHz and 100-240 Hz respectively) and diffusion, in ten steps, round out the available parameters.

The delay program provides hard panned single delays of the input, with 0.1 to 900 milliseconds of delay. The echo program gives the classic recirculating echo or "spin" (as the Brits call it) with hard panned outputs. Low-pass filtering of the feedback signal is selectable as well. The early reflection effects preset group is a legacy of the Electroacoustical Division's work on the design of actual acoustic environments and room simulations for the development of the bellwether REV1's software. These programs, a dozen in all, provide for up to 18 discrete reflec-

tions or echoes with spacing in time, amplitude damping, and diffusion.

One particular parameter, called mode, gives this collection of programs its own personality. Mode provides for pre-programmed groupings of early reflections to suggest particular acoustic situations. There is a choice of six modes: small or large hall, plate, spring, and random. There's also a reverse mode where the echoes increase in amplitude over time. Graphs of amplitude vs. time for the various modes are given in the owners manual to clarify their sonic characteristics. These modes cannot be altered, but for what the box costs it's great to have these wrinkles hiding in the programs.

Rounding out the program categories are the modulation effects. A tremolo effect, chorusing, stereo flanging and phasing and phasing with reverb are included. Delay, modulation depth (width) and frequency are all adjustable. For resonant flanging and phasing, feedback gain is also provided within this category.

Out of curiosity, I hooked the REV7 up to a test set and found that it met or, in the case of distortion, noise, and output level, exceeded factory specifications. Processed information was conservatively down 3dB at 12.06kHz relative to 1 kHz due to the 31.25kHz sampling rate. The signal path for direct audio is more than up to par with frequency response of +0, -1dB from 8Hz to 30kHz and the processed signal path has an equally robust low end response.

After raking the poor thing around on the bench, I decided to give it a less tortuous trial with, gulp, real music. So I gathered some folks with ears I trust, hauled out some acoustic and electronic material recorded on 2-inch, 30 ips tape and proceeded to listen to my temporary ward. In terms of ease of use, the REV7 was a winner. Few

pieces of complex outboard gear are this simple to manipulate. Unfamiliar operators had little trouble finding a pleasing sound quickly without referring to the manual. As for sound, everyone agreed that this box is great. The REV7 had a big, open sound without being excessively airy. The internal EQ gives the user versatility and convenience in choosing the exact timbre that is desired.

One of the first things someone asked me when presented with the REV7 was whether the processed output could be mixed back into the input. He wanted to create syncopated echo patterns with his Linn 9000. Calling the echo program, we shortly had a deep mass of contrapuntal rhythms swirling around us. Also important to him was the subjective quality of the straight delay program. Granted, we didn't have acoustic bells and real violins to use as test material, but there was no subjective difference between the source and its delayed copy. I was particularly excited by the early reflections (E/R) program category since this type of effect is not available from many reverberators. I found some great "live" sounds for ambience synthesis, and by picking the mode to suit the material, I got some nice, thick sounds to fatten a dry synth track. I love big, live drums and this is the place to

look! Though overused these days, Yamaha has included the reverse E/R mode for "backwards" reverb. To add interest to a percussion track, I layered a decaying reverb from a tube plate with a goodly amount of predelay over the REV7 in E/R backwards mode. By adjusting the plate pre-delay, the combination produced a nifty drum sound that rapidly built up, then gradually died away.

The range of parameter adjustment in the modulation effects category is wide enough to create useful effects as well as some really awful sounds. Minor adjustments on one modulation preset resulted in sweeping phasing fit for a remake of "Itchycoo Park." Heavy modification of the modulation presets, as with the operation of most pieces of outboard gear, requires some small amount of judgement. The REV7 is able to flange deeper and better than most digital devices and is on par with analog methods. An unusual program I found useful is flanging with reverb. On acoustic guitar, it gave a wide movement to the sound while allowing me to place it back a bit in the sound perspective.

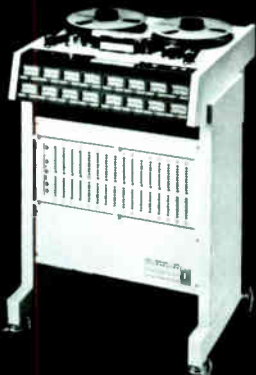
Among the myriad presets in ROM are several in each program category that have evocative names like "kick" and "strings." One rocker on the evaluating panel gave a nod of approval

to the kick preset which made his drum machine sound "really huge." I was not as excited with most of these targeted presets but their default settings were good starting points for serious modification.

Since every manufacturer has its own idea of how reverberation should sound, it was difficult to evaluate sound quality from a strictly objective viewpoint. Subjective impressions from listeners revealed that some of the REV7's reverb programs, with equalization, had a slight "nasal" quality. However, since the built-in EQ has continuously variable center frequency, it was a simple matter to locate and correct this problem. Generally, the reverb programs, as with all the rest, were of excellent character. Incidentally, in most instances I found that the diffusion parameter in the reverb programs had little effect, regardless of setting.

In the opinion of the panel of judges, both engineers and artists, the Yamaha is a hands-down winner at its price point. That the REV7 is a killer machine is an understatement. It provides a broad range of signal processing and effects in a compact, well-made package and represents an amazing value for its price (\$1,195 including remote control). The REV7 would make a fab addition to any outboard rack, regardless of class. ■

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New Studer A820 Versions

The Studer A820 analog 2-track mastering recorder is now available in half-inch, and 1/4-inch stereo with center-track time code versions, in addition to the standard 1/4-inch stereo configuration introduced over a year ago. As its name implies, the A820-2-1/2" model is a half-inch, 2-track recorder designed for high quality music mastering applications. The A820-TC (pictured here) features the center-track SMPTE time code system first introduced on the Studer A810. Two separate heads are used to record and reproduce the time code, keeping audio/code cross-talk at better than -90dB, and a microprocessor-controlled delay line compensates for the offset created between code and audio heads for exact coincidence at all speeds.

Features include: 14-inch reel capacity for longer playing times at high speeds; four speeds (3.75, 7.5, 15, 30 ips)—all front panel selectable; microprocessor-controlled operation of transport, audio parameters, and 40 user defined functions; and a dual thumbwheel control for fast editing. The A820-2-1/2" is priced at \$11,000; the A820-TC is \$11,500; and a choice of transformerless or transformer inputs/outputs is offered.

Circle #087 on Reader Service Card

The Hook™

Techworks of San Francisco has introduced The Hook, a simple, convenient solution to handling reels of leader tape during editing. Previously, engineers have dealt with this problem by taping pencil stubs to the tops of tape machines or installing bolts into recorder side panels.

Made from solid steel, The Hook is nickel plated and comes with adhesive-backed fabric fasteners that attach to tape machines, effects racks, consoles or any smooth surface. The hook-and-loop fasteners allow The Hook to be moved from one location to another, and in addition, the unit can be rotated 90 degrees, facing upward, to serve as a spindle for the rapid unreeling of tape or handling machine-to-machine tape loops. The Hook is priced at \$10, and can also be used to support other useful studio paraphernalia such as headphones, empty reels, flanges, cables, etc.

Circle #088 on Reader Service Card

Force Sensing Resistors

Interlink Electronics of Santa Barbara, CA, have introduced a new low cost electronic component that gives electronic keyboards and drum synthesizers the ability to respond like an acoustic instrument. Force Sensing Resistors (FSRs) are capable of sensing variable force proportionate to the amount of pressure applied. Interlink FSRs, available in custom or standard configurations, can also be used to give variable response to controllers and control panels. A data sheet with a free FSR sample is available from the company. A sample kit containing a variety of FSR device formats in five resistance ranges may be ordered from the company for \$34 ppd. An FSR Drum Kit is available for \$18 ppd. Both kits are designed as an introduction to this new technology and permit easy evaluation for use in a variety of potential applications.

Circle #089 on Reader Service Card



OMS CD-ROM Sound Bank

Optical Media Services of Aptos, CA, has announced the development of the first Compact Disc-Read Only Memory for the professional audio recording industry. The product, which consists of a CD-ROM disc drive, special interface and a CD-ROM disc called "The Universe of Sound, Volume One" works with the Emulator II digital sampling keyboard system. The disc contains hundreds of complete digitally sampled sound banks. Each complete sound bank (approximately 512K Bytes) can be accessed and transferred directly into the Emulator II in less than ten seconds versus 24 seconds from a floppy disk. The access control is either through an Apple Macintosh or a special direct interface between the Emulator II and the Sony CD-ROM drive. Optical Media Services is also accepting CD-ROM data preparation and mastering contracts from customers seeking assistance in developing CD-ROM programs.

Circle #090 on Reader Service Card

Albrecht MB 51 Film Recorder

The Albrecht MB 51 magnetic film recorder/reproducer is now available in the U.S. from Audio Intervisual Design of Los Angeles. The sprocketless MB 51 utilizes capstan drive and microprocessor control, and can be used flexibly in post-production, dubbing, and mixdown studios with projectors, editing tables, film scanners and videotape recorders. A simple plug-in head assembly accommodates 16, 17.5 and 35mm mag film, in all standard formats from mono through 6-track, with multiple equalization pre-sets included. Film speed can be continuously controlled up to a maximum of 750 frames per second for 16mm and 300 fps for 17.5/35mm film. Since the system is entirely servo-controlled, wow and flutter specs are exceptionally low. An electronic film counter reads out in feet, meters or in minutes, seconds and frames.

Circle #091 on Reader Service Card

versions include an op-amp layout for an eight-pin single, or the 2520 (or 2525) discrete amplifier for systems that require gain in the fader, such as replacing VCA faders. Circle #092 on Reader Service Card



API Motorized Fader

API Audio Products, of Springfield, Virginia, has introduced a retrofit console fader system designed to replace existing VCA automation faders. Since the new units communicate to the existing computer (on a 1V/20dB relationship) in the same manner as VCA faders, a facility can update its system without disturbing mixes in progress or previous mixes. "Hard" and "soft" switches allow the selection of various automation modes: Safe, Write (with variable glide), Relative Update, Absolute Update (with variable glide), Mute Write, Group Select, and Independent.

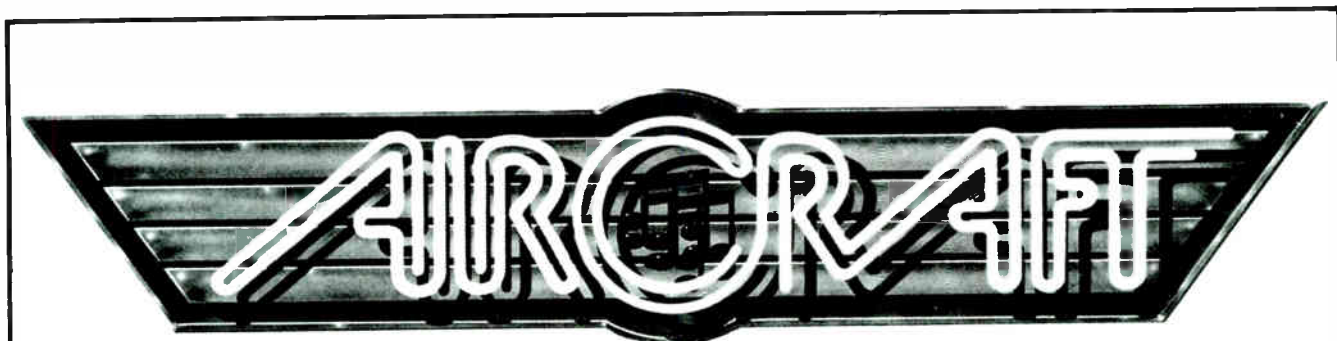
According to the manufacturer, the system (to be available next month) combines speed, accuracy and zero fader offshoot with a high degree of compatibility. Standard

Digital Production Library™

Digital Production Library, of Dallas, TX, has introduced an all-new library of production music in the Compact Disc format. The 15 CD set includes over 1,000 individual tracks recorded specifically for the library since late 1984, with hundreds of themes in a variety of versions and lengths. Numerous incidental cuts are also provided, ranging from a tympani roll to minute-length selections.

The library is available for a \$3,000 licensing fee, including all materials and one-year usage rights. Radio and television broadcasters may also use the library, but costs for these subscribers vary according to market size.

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World Radio History

PART 2

THE SMPTE-MIDI CONNECTION

by Bruce Nazarian

I hope you weren't confused by last month's overview of SMPTE time code. If you're not really certain that you understand all of the concepts we covered, it might pay for you to reread the column and get it down. In the next few months, we'll take a look at the amazing flexibility SMPTE provides in computerized production.

Direct Tempo Generation

As we have seen, both TTL and FSK sync-to-tape methods have one com-

mon bond: the sync signal is encoded with the tempo at which the sequencer or drum machine is supposed to play (Fig. 1). That sync signal can then be recovered directly from the master tape, and played into the appropriate unit to sync it up. There is a snag, though—if you want your track to speed up or slow down at certain sections, you'll either have to have a sequencer with programmable tempo shifts (not always possible), or program the clock variations in when you lay down the sync track (tedious, at best).

Either way, it isn't an elegant solution. SMPTE, on the other hand, provides us with the elegant solution: indirect tempo generation. Simply put, this means the tempo you desire is not encoded in the SMPTE time code, but is generated later by the clock box reading the time code (Fig. 2). Tempos for MIDI and TTL clocks are computed according to instructions programmed into the clock box. Since you are the one who programs the "timing map" that the clock box uses to determine tempo, you have the luxury of chang-

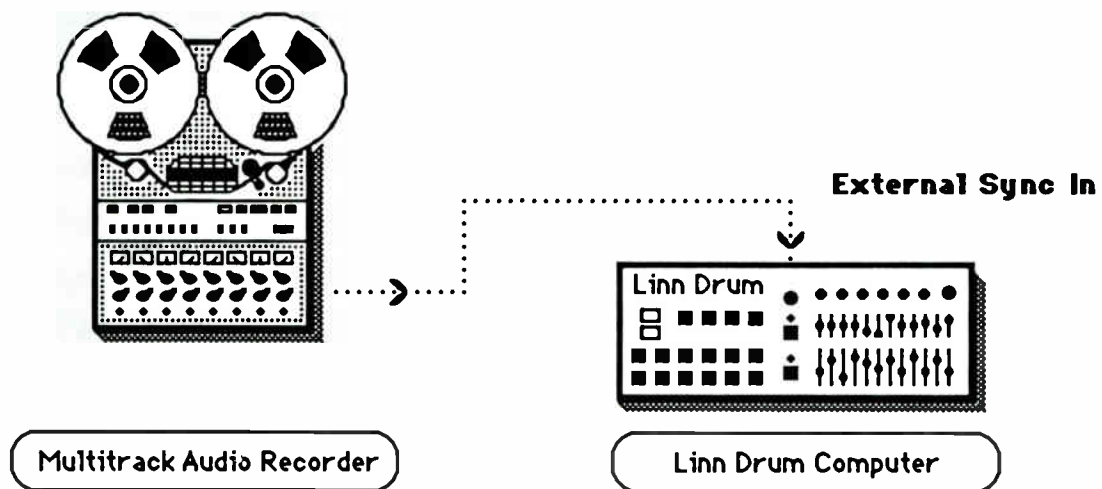


Fig. 1 - TTL Clock Recovery from Tape
 Clock signal recorded on tape has tempo encoded in it.
 Signal can be used directly off of tape.

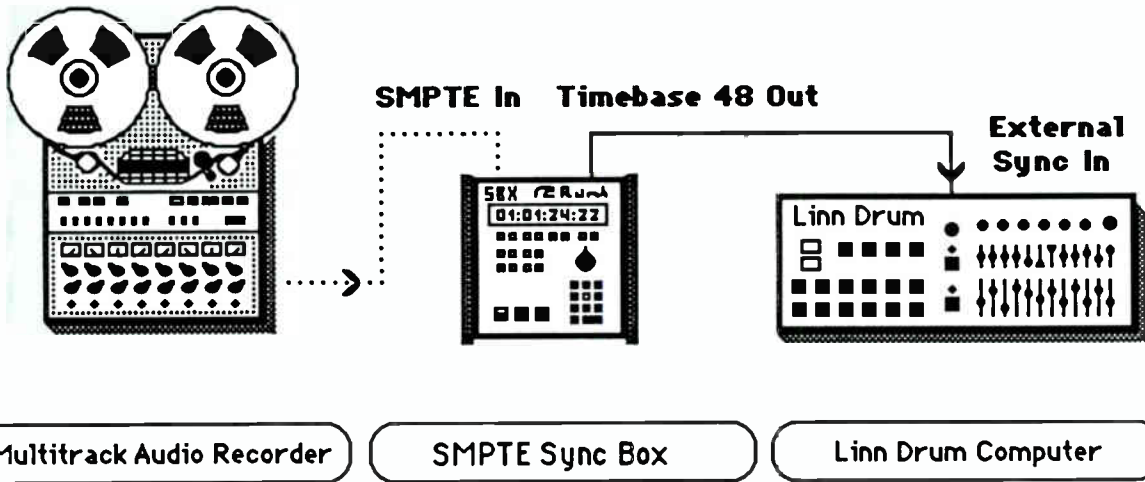


Fig. 2 - SMPTE Clock Generation from tape

SMPTE signal recorded on tape has no inherent tempo encoded. Sync Box constructs a clock signal from SMPTE Timing Info.

ing the tempo of your sequencers at almost any time. Unlike most TTL or FSK sync tracks, the clock box can be programmed to change the SMPTE-derived tempo at almost any point in the track. This makes switching tempos or time signatures in the middle of

a song a snap! There is another advantage to this system. Sync tracks generated by TTL or FSK systems, usually require that they be replayed into an identical unit in order to recover the clock...i.e., a Roland MSQ700 won't sync to an FSK tone not gener-

ated by a similar unit. Although devices like Dan Garfield's legendary Dr. Click and other clock interface boxes have helped smooth out this problem, there still are some hitches in using non-compatible equipment. (Try playing a Linn sync signal into an

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Oberheim DMX tape sync input and you'll see what I mean!). SMPTE clock boxes eliminate this problem, as most of them can generate the three clock standards that are commonly used: MIDI, TTL and DIN Sync. With just these three connections, 99 percent of most sequencers or drum machines can be properly clocked. End of problem.

Once More From The Middle

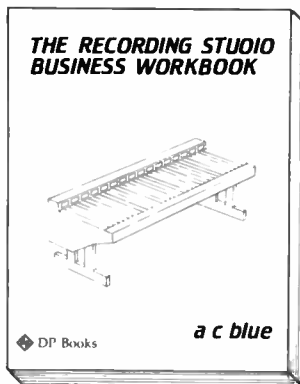
One of the other benefits of using SMPTE to clock your computers is the ability to "drop in" at almost any point in the track and immediately sync up at the correct beat of the correct bar. This is possible because SMPTE encodes a specific, unique address for every location on the tape. The clock

box deciphers the current time code location, compares it to its internal timing map, and calculates where the sequencers should be, in measures and beats. If your sequencers are programmed to implement the MIDI Song Pointer message, the clock box can tell it which beat of which bar to locate to, prior to issuing a play command. As anyone who has used a TTL sync track can affirm, it's a blessing to be able to pick up sync in the middle of a track, without having to go back to the top. The more sophisticated drum computers, like the new Linn 9000, are going one step further, and have provisions for an optional SMPTE reader interface that can eliminate the need for an outboard clock box.

The Gremlins

As with any synchronizing system, there are a few things to watch out for. In the case of SMPTE clocking, there are two: tempo, and offset. One nice thing about TTL or FSK clocks is that even if you forget what tempo you cut the sync track at, the unit will still synchronize and play correctly. With SMPTE, you must remember to program the clock box with the correct tempo to enable it to play the sequencers properly. One mistake in the timing map, or an incorrect tempo program and goodbye sync! Offset sounds tricky, but really isn't. Offset is simply the time code value at which the clock box will begin generating the tempo you have programmed. Without an exact match of the offset value, the sync will never lock up to your existing tracks. To make it easy to remember your offset points, you might try starting your time code track to give you ten seconds of preroll code before an even hour value. For example, the code track could start at 00:59:50:00, and the clock would start generating at 01:00:00:00. This type of technique makes it easy to remember what your offset value is. (One caution—if you are working on a track that will eventually be mixed down using some form of SMPTE-based automation, remember to give yourself enough preroll code to keep the system happy! You may need 20 seconds or more, depending on which automation system you will use.)

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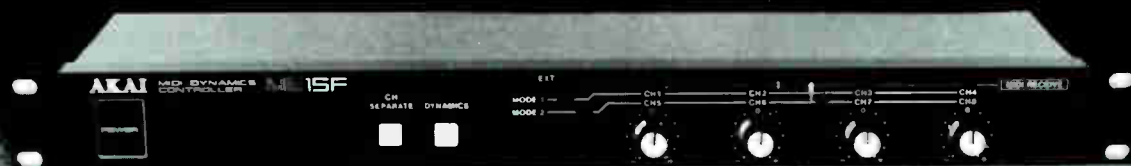
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—FROM PAGE 59, HEALTH

ler. TTS is characterized by a ringing in the ears (also known as tinnitus) and a difficulty understanding normal levels of speech. "With repeated exposure in susceptible people, as the cells die they actually collapse, and at that point the hearing loss is irrevocable," said Dr. Miller.

(A susceptible person is defined as someone with any hearing damage or impairment to start with, or someone who might have a hereditary susceptibility to deafness. Doctor Miller estimates that about 10 to 15 percent of the general population in the United States fall into this category. And statistically, women are less susceptible than men.)

The damage caused by noise can be compounded by certain substances that in and of themselves seem rather innocuous. Some antibiotics, some high blood pressure medications and chemotherapy agents can exacerbate noise damage. Even aspirin is a villain in this instance. "Aspirin is the number one ototoxic medication in the United States," cautions Dr. Miller. "If you are taking a large amount of aspirin, a lower level of noise exposure will be injurious . . . than exposure to the same noise level without aspirin."

Dr. Miller pointed out a recent finding by the Egyptian Cancer Society indicating that cigarette smoke also worsens the effect of noise on the ears, and that its significance was even greater on hearing loss than the effect of aging.

(Another observation, even more arcane, is that people whose eyes are blue are more vulnerable to hearing loss from noise exposure than those with brown or green irises. So, says Dr. Miller, "If you have blue eyes, smoke heavily and take a lot of aspirin, you're not doing yourself any favors by being in a loud environment.")

What is loud? Sal Roberto, an industrial hygienist with the Occupational Safety and Health Administration (OSHA), says his department has a set of guidelines. They were originally developed for industrial environments, but they are applicable to any high decibel situation. According to these guidelines, exposure to 90 dB for eight hours, or to 95 dB for four hours, is the legal limit. These exposure-versus-decibel figures are regarded by the agency as constituting "100 percent exposure." Any exposure that exceeds 130 percent is a violation, according to Mr. Roberto. However, the exposure must be continuous, which is rarely the case in studios. Even a ten minute break during an eight hour session at these levels would still be within OSHA's guidelines. Therefore, even though studios and live concerts fall

within the administration's jurisdiction, Roberto explained that they are never checked, because the exposure is non-continuous. In fact, he said, "As a matter of policy, we stay away from them."

Engineers mixing sound at live shows have less control over volume than their studio counterparts, and may also have to go through extended soundchecks in addition to the shows themselves.

Doctor Miller made some suggestions to mitigate the effects of high decibels, the first being the obvious: turn it down. Assistant engineers who don't have control over monitor levels may want to try earplugs on extended sessions. For primary engineers, these may be impractical, since earplugs cut out portions of the frequency spectrum. Doctor Miller pointed out that their use may necessitate acquiring a new set of audio cues to compensate for this loss. (Although it should be acknowledged that an engineer wearing earplugs might not inspire confidence in a client.)

Another alternative, he said, is longer rest periods. "It'll take a longer time for the same levels to affect hearing, in contrast to it being continuous." He recommended that engineers have their hearing tested immediately if they experience any symptoms, such as ringing in the ears, or if friends mention that they appear not to hear casual conversation, or if you find yourself lip reading. Otherwise, it's prudent to have your ears checked annually by an audiologist. Ask your doctor for recommendations.

Where there's smoke . . .

The hazards of smoking are well-documented at this point. But if you are a non-smoker and you're pulling long days on a project with smokers in a small room, it might have some long-term health implications for you. According to the American Lung Association, second hand smoke, as it is called, can affect your judgement; tests showed it impairs performance on certain psychomotor tests. Seated next to a smoker, the levels of carbon monoxide in a non-smoker's lungs doubles in the first hour and doubles again during the second.

Further, a study of non-smokers exposed to tobacco smoke in the workplace for many years showed a dysfunction in the small airways of the lungs of non-smokers. This has been hypothetically linked to chronic lung diseases like emphysema.

In many instances it's difficult for an engineer to ask clients or artists to refrain from smoking. One solution is for the engineer to bring an air purifier into the studio; they're inexpensive and effective. There are also a

number of "smokeless" ashtrays available on the market. These have small fans which suck up the smoke before it drifts into the air. Tact is important, but remember that you have a right to protect your lungs, so speak up if it bothers you.

Stress

Stress, put quite simply, is the way you react to change. Big changes in your life, like career moves or marriage, are obvious. But the little changes, the small day-to-day crises, like getting stuck in traffic on the way to the studio or a piece of equipment failing during a take, all have a cumulative effect on mind and body. Letting them build up without resolution can lead to some very personal equipment failure.

Dr. Matthew Fried is a psychologist who has worked both as a musician and with musicians and others in the industry in a professional capacity. He says stress becomes a problem, "when the body still continues to be in a stressful state after the stimulus is gone, or the stimulus continues beyond the point to which the body can tolerate it."

According to Dr. Fried, some of the symptoms of stress are organ dysfunction, rapid heartbeat, elevated blood pressure, stomach and intestinal distress, "But all these symptoms depend to some degree on genetic predisposition and weaknesses in the body," he continued. "The most insidious thing about stress is that it exploits and exacerbates mental and physical weak spots."

Stress is essentially the "fight or flight" syndrome, and when stress gets too heavy the fights and flights can become exaggerated. "One way people handle it is with drugs or alcohol," noted Fried. "They try to numb themselves. But that just creates secondary problems."

One of the keys to handling stress is to identify the stressors, the causes, and to try to deal with them rationally. Other methods include meditation or yoga, any form of relaxation that works for an individual. Exercise is another proven method. "The most important thing is to build some time alone into your schedule," said Dr. Fried. "Don't go from one stimulating environment to another. Instead, build bridges or transitions between them."

The best defense against stress becoming debilitating (and it can become very much so) is awareness. Learn to recognize your body's signals telling you that it's time to back off for a while. Ten minutes or so every now and then with some simple breathing exercises works wonders. Also, try to avoid "binging" on vacation time. Some people will work till they knock

themselves out, saying, "I'll make it up on that vacation." You can actually be too tired to enjoy the respite. Vacations are important, but make R&R an integral part of your overall plan for health, not a reward for nearly killing yourself.

Sufficient sleep is another important way to fight off stress. As a matter of fact, sleep is one of the body's natural defenses against it. Try to stick to a regular schedule for it, since your brain has its own rhythm, and irregular periods of sleep produce the same effects as jet lag. Also, too much sleep over a prolonged amount of time, coupled with a dread of getting up to face the day, can sometimes be an indication of the onset of depression.

And speaking of depression, researchers have recently discovered a link between sunlight and so-called "seasonal" depression. During winter months when less sunlight is available, some people experience a transient, yet at times severe, melancholia. Treatment consists of exposure to artificial sunlight during the winter months. Something to think about given the dearth of windows in control rooms.

Insurance

Some studios offer health and life insurance plans, others don't. But since

many engineers tend to move around from studio to studio, it might be a good idea to maintain some insurance on your own.

There are three major types: life, health and disability. Life insurance can be obtained from a number of sources, including savings banks and the major carriers, usually at a nominal cost, depending upon the payoff amounts. Health—generally major medical—covers hospital bills, surgical procedures, doctor's office visits, medication and sometimes psychiatric care. Annual premiums vary according to local costs and the type of plan you want. Individual plans can be pricey, but are well worth the investment, no news to anyone who's spent even a weekend in a hospital. After a pre-determined deductible, they generally cover up to 80 percent of costs. Since group plans are less expensive, you might try to get together with a few freelancers and get a group policy. You usually need a group of five or more. The bigger the better, since if one person drops out, you can still maintain the favorable rate.

Disability policies can be the most expensive of the bunch. They provide an annual income based on your previous earnings should you become disabled at your profession. If you can

afford it, do it.

According to Peter Wolff, of Banner Life, a New York City insurance brokerage firm, engineers should have no problem acquiring any type of insurance since the profession has no bearing on mortality rates, according to the underwriters' tables. However, his advice is to get as much as you can afford as soon as you can, since premiums are based on age and current health. Any disability or ailment of a permanent nature will result in a waiver—or non-payment—on claims resulting from it. "No company wants to buy a claim," he cautioned.

The Bottom Line

There are a lot of other aspects of your personal health that we haven't gone into here: You've eaten enough greasy burgers at three in the morning to know that neglecting your diet has its consequences; you've hunched over enough consoles to know that that isn't the most natural position for your spine. These and other aspects require a little knowledge and a healthy dose of common sense. Engineers are professionals who spend a long time learning and honing their craft and art; take a little more time and learn to protect your investment in yourself. ■

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—FROM PAGE 42, MICROPHONES

playback. When I started doing digital recording, I started noticing the little differences between microphones and realized that they weren't the weak link in the chain: it was the analog tape.

I've been using fewer microphones on drums. I would use a mic under the snare drum to get more snares, because the crispness of the snare is one of the first things to get lost in an analog recording, but I don't do that anymore. Also, the digital medium is so quiet that noisy cables stick out like a sore thumb. I like using the newer Mogami cables that have the two leads for each conductor, and are wound so they're less susceptible to outside magnetic fields and noise.

Quiet mic cables are essential, as are quiet microphones: with digital, you can really hear the "frying" tube mics. One of my favorite new mics I started using for digital is the gold AKG ["The Tube"] tube mic. I like tube mics because they are nice and warm—they accentuate the even harmonics, as opposed to digital or transistorized equipment that seem to accentuate the odd harmonics. Using a tube microphone with digital recording really makes a vocal or sax solo warm and nice, but most of the older

tube mics are just too noisy. The AKG mic, which combines both tube and '80s technology, is nice and quiet. I used it for vocals on the Frank Sinatra album with "L.A. is my Lady" on it, and also on John Denver's *Dreamland Express* album. I've heard people tell me that they don't like the microphone because it's noisy, but if you can't turn off the phantom power supply at the console, it "fights" with the power supply in the microphone, and there is some noise.

What techniques do you suggest when miking for sampling devices?

With sampling, you have to keep as much of the room noise out as you can, because extraneous room noises are pretty random. If you listen to someone playing a snare drum over a long period of time, you'll find that the random noise that's happening the first time he hits it isn't the same as what happens the fourth time, and so on. If you sample that snare, and it's repeating over and over, you'll have that same pattern of noise repeating and it really sounds mechanical. So to get rid of that, you either have to cut the snare before it decays all the way—which sounds unnatural; or gate it to get rid of all the noise completely,

which also sounds unnatural. The best thing is to mic it carefully, closely, and then later add whatever ambience you need to make it blend with the tune.

What microphones do you use for drums?

I usually use a Shure SM56 on snare; my favorite kick drum mic is still the Electro-Voice 666, which used to be a garage band vocal mic in the '60s; U87s on tom toms; a little Sony electret condenser mic on hi hat; and I like [AKG] 414s for overheads. My overall philosophy is that the microphones are the least of the problem: usually when I go into a studio, I let the second engineer pick whatever microphones he wants to use.

I'm a firm believer in changing the sound of the source—changing a snare drum, drum heads, the bass strings or bass—before I'll touch the EQ or use anything external. If you get the source sounding good, and it sounds good in the room, just put any professional microphone in front of it and you're 80 percent there. If you start with everything perfect, then it's easy to make little changes, and the mics are not as important to differences in sound quality as people want you to believe. ■

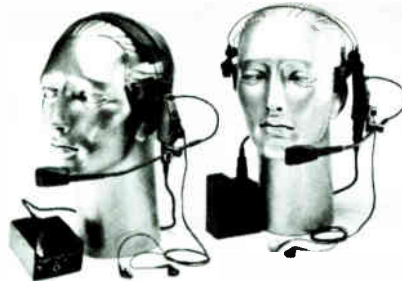
—FROM PAGE 42, HEADSET MIC'S

ordered. The design of the HeadMic allows custom fitting to any performer by trimming the headband wires, and the mic boom/windscreen comes in either tan or black to match skin or beard.

Nady has recently unveiled the HeadMic III and IV, two new versions of the original HeadMic, which are designed for use with either their economical 49LT wireless system (HM III) or hardwired (HM IV). Both are priced at \$49.95.

The HME-410/MI from Sennheiser is an earphone/microphone combination that uses their HD 410 Open-*aire*™ headphones in conjunction with the MKE-2 ultra miniature lavalier. The unit, powered by Sennheiser's popular K3U modular supply, can be used as a single or double muff monitor by swiveling one of the earpieces backwards. Headphone parts are user replaceable, and the HME-410/MI is priced at \$300, less power supply.

Originally introduced as a mic for the broadcast industry in the late '70s, Shure's SM10A has since also found favor with performing musicians. The SM10A, priced at \$134, includes a headband, windscreen and mic—the cable termi-



TOA HY1 (left) and HY2 (right)

nates with a standard XLR connector—as well as hardware for attaching the unit to a headphone mic mount, such as that found on the Koss Pro-4AA.

However, if internal monitoring is required, several cousin versions of the SM10A are available: the SM12A has a single in-the-ear receiver, the SM14A has two; the model 512 is low-cost (\$117), and uses the same mic capsule, but fastened to a pair of lightweight foam cushion headphones; and the newest entries in the line are the SM1/SM2, having the same capsule but including either single or double padded full-ear cushions.

The Telex PH-20 is an electret condenser headset mic which can be powered via an outboard phantom supply or the PS-10 power sup-

ply (included with the unit) that uses a 1.4 volt calculator-style battery. A PH-22 version, for direct connection to Telex wireless systems, is also available.

And last, but certainly not least, is TOA's line of headset mics which is the most sophisticated such system introduced to date. The HY1 and HY2 are essentially similar, the only difference being the headband design: the HY1 is made for extended wear, while the HY2's lightweight band can easily be concealed in the user's hair. The HY models feature a phantom-powered condenser mic element which is interchangeable: a capsule tailored for male/female tenor vocals and another for communication usage is available, in addition to the supplied general vocal element. An LED on the mic lights when the unit is powered up and the on/off (cough) button is on.

The TOA HY series also includes a supplied control box, with monitor mixing (to the system's in-the-ear stereo phones) and balancing between the mic's output and a +4dB stereo/mono line input jack. A male XLR mic output is also provided, and this signal is unaffected by the monitor control box. ■

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Tom Whisner (owner) MANTICORE

In the Laboratory The Carver PM-1.5 was rigorously tested by Len Feldman for MODERN RECORDING (February 1985). His laboratory test results also prove that the PM-1.5 really delivers. The following quotes from the Lab Report are reprinted with permission of MODERN RECORDING & MUSIC:—

"The first thing we noticed when we began to work with the Carver PM-1.5 was the ease with which the amplifier delivered almost limitless power to speaker loads which we had previously considered to be difficult to drive to loud levels. This is the sort of amplifier that just refuses to quit!"

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by Craig Anderton

Some Notes From Musicom . . .

Musicom 85, held in Utrecht, the Netherlands, again presented its unique combination of manufacturer's exhibits and educational offerings (I was on hand for the latter, overseeing a booth that gave hands-on demos of MIDI, SMPTE, and synchronization). One of the stars of the show was the Fairlight Series III. All those who expected Fairlight to come out with a downscale model were totally off the mark; the successor to the Series II costs around \$60,000, but that brings you CD-quality 16 bit sound and outrageous sampling times (the version I saw did two minutes and 30 seconds at full bandwidth). Sure, this isn't for the casual musician—but then again, when the first Fairlight was introduced, few people realized how little time it would take for 8-bit sampling to become an affordable part of the contemporary musician's bag of tricks.

Speaking of affordable sampling, I also had a chance to spend some time with Sequential's Prophet-2000. This machine is somewhat of an enigma. Fortunately, I got a demo from *Electronic Musician* author Terry Fryer, who knows the machine well enough to make it do some very nice tricks. In his hands, the Prophet-2000 seemed like an extremely capable machine; in the hands of those who have not learned its intricacies, it seems rather arcane. After spending about a day with it, I had two distinct impressions: first, 12-bit sampling does sound really nice—clean, crisp, and quiet; second, although you can do a lot with the 2000, it demands a real commitment to learn how to use it to the fullest extent. I think the results would be worth the effort, though . . . at a \$2,500 price point, it's hard to beat.

Ensoniq was showing their rack-mount Mirage, which seems very much at home sitting on top of a DX7 to add "real" sounds in with the FM technology ones—the combined sound is indeed quite powerful. The idea of the expander module is really

catching on, and why not? As Ensoniq's Tom Metcalf said, "the concept of a particular sound being associated with a particular keyboard is rapidly becoming obsolete."

Akai showed the ME25S MIDI Note Separator, a new rack-mount MIDI modifier. This takes any non-splittable MIDI keyboard and gives the option of sending out note data over four MIDI channel splits (sort of like the Oberheim "zone" concept). Each split puts an adjustable MIDI note range (from 0 to 127) over any of the 16 MIDI channels. Each split can be octave shifted, and MIDI controls (modulation etc.) may be separately enabled or disabled. This looks like just the ticket to transform your existing MIDI keyboard into a "master" MIDI keyboard.

For those with a more nostalgic bent, Drawmer showed a vacuum tube dual compression amplifier (guitarists, are you listening?) with stereo link as well as the usual threshold, attack, and release controls. Finally, Dutch manufacturer Synton created quite a lot of interest with their Syntovox SPX 216 vocoder. This single rack space, 14 channel vocoder with true stereo outputs features a built-in noise generator, built-in VCO with doubling circuit, and a very useful up/down/normal formant shift switch. Formants can be shifted up for munchkin sounds, or down for Darth Vader-meets-Godzilla effects; although other vocoders can provide this function, they usually require some time-consuming patch cord changes. For those who like to mess around with signal processors, there's also a multi-pin rear panel connector that gives access to 30 control inputs and outputs for customized or unusual applications.

Upon arriving back home, I found my desk covered with press releases (these people *never* let up!). Apple IIc owners will be happy to know that J.L. Cooper now offers a IIc-to-MPU-401 interface. Roland's MPU-401 has become one of a few "standard" interfaces in the industry; the Apple IIc retrofit, designed for installation by qualified computer or musical instrument technicians, provides a plug that connects the IIc to the 401. And while we're on the subject of Roland and interfaces, they have another sync box—the SBX-10 reads click, MIDI, DIN-sync or 24/48/96/120 ppqn clock signals, and translates these into outputs at two MIDI Out connectors,

two DIN-sync jacks, and two time base out jacks. Like the SBX-80, this "little brother" also features a "beat map" capability for programming complex, non-regular tempos—such as those required for doing commercials, where specific beats have to cue up with specific visual events.

The great computer battle continues: Atari was first out of the box with the 520ST, and already has some decent software support; Commodore's Amiga has the glitz, glamor, and technology, but software is slow in coming; Apple is dropping hints about open-architecture, color, and Megabyte memory Macintosh computers; and PC-compatible clones have hit the under-\$1,000 mark. Meanwhile, back in the real world, the Studio Master hardware/software package for the Mac adds total recall to any console by sending calibrated tones through the console and noting the readings in the Mac. When you need to recall settings, you just twiddle your mixer dials until the current readings match your original set of readings. The software also includes track sheet management, graphics, and invoice programs. I don't think anyone is debating any more whether a computer is a necessary part of today's music; the real question seems to be which of the many capable computers out there best fits your intended application?

We'll close out this month with something completely different. Shure Brothers has come up with the HTS 5000, an under-\$600, multifunction video sound processor that's intended to bring a new dimension to home entertainment. It decodes Dolby audio into five separate output channels suitable for driving surround speakers (thus re-creating the ambience effects associated with sophisticated theater sound setups) and also includes a DDL for enhanced spatial effects, stereo ambience recovery/stereo synthesis from mono, electronic crossover for connecting a subwoofer, and handheld remote for adjustment of all parameters. Add one of these to a big screen TV, VCR, cable TV, and a home computer, and I imagine you would have quite an audio/visual center.

That wraps up another month of MI Update. As always, send your cards, letters, rumors, and whatever else strikes your fancy to Craig Anderton, Mix Publications, 2608 Ninth Street, Berkeley, CA 94710. ■



The result was, predictably, that I was hardly allowed to eat anything, so by the time I arrived with an apple and a rice patty, my poor stomach was making all these strange noises. Then we get in the studio, and the engineer says he can't record because he's picking up some weird rumbling sound coming from my direction.

"Of course, I was way too thin then, and it was all pretty ironic considering the subject matter," she adds, laughing again. Today, the singer has regained a lot of those lost pounds, and while she'll never be exactly beefy, Mitchell looks in no danger of fading away anymore. Quite the contrary in fact, for this normally reclusive artist is also eager to talk—on just about any topic, and particularly her new album, *Dog Eat Dog*.

For anyone at all familiar with Mitchell's work over the past 15 years or so, from her early folk days through her collaboration with jazz great Charlie Mingus and beyond, this fourteenth album might come as quite a surprise. For one thing, it's tone is angry and overtly political, a far cry from her last album, the ultra-romantic *Wild Things Run Fast*. For another, it's full of hi-tech sounds and textures, courtesy of a Fairlight, and features contributions from such an unlikely source as British synthesizer expert Thomas Dolby, who's also credited as one of her

JONI MITCHELL GETS TOUGH

by Iain Blair

Joni Mitchell is in quite a feisty mood these days, though you probably wouldn't guess it at first. Sitting in her manager's office on a cool Los Angeles afternoon with the sun shining in her hair, the famous songstress is hooting with laughter as she recounts her involvement with "Northern Lights For Africa," the Canadian version of Band Aid that teamed her with the likes of Bryan Adams, Neil Young and Oscar Peterson.

"I know it sounds ridiculous, but I was literally starving when we did the session 'cause my yoga teacher—this is all California nonsense," she giggles, "had sent me to a psychic dietician who, while rubbing her chin and swinging her arm around in a circle, had diagnosed a lot of food allergies.

co-producers (along with Mitchell, bassist/husband Larry Klein, and engineer Mike Shipley).

The tone and sound of the album has certainly surprised a lot of people. Yes, well, it's certainly not what most people expect from me, and it's totally different from anything I've ever done for sure.

Was it an easy transition from the last album?

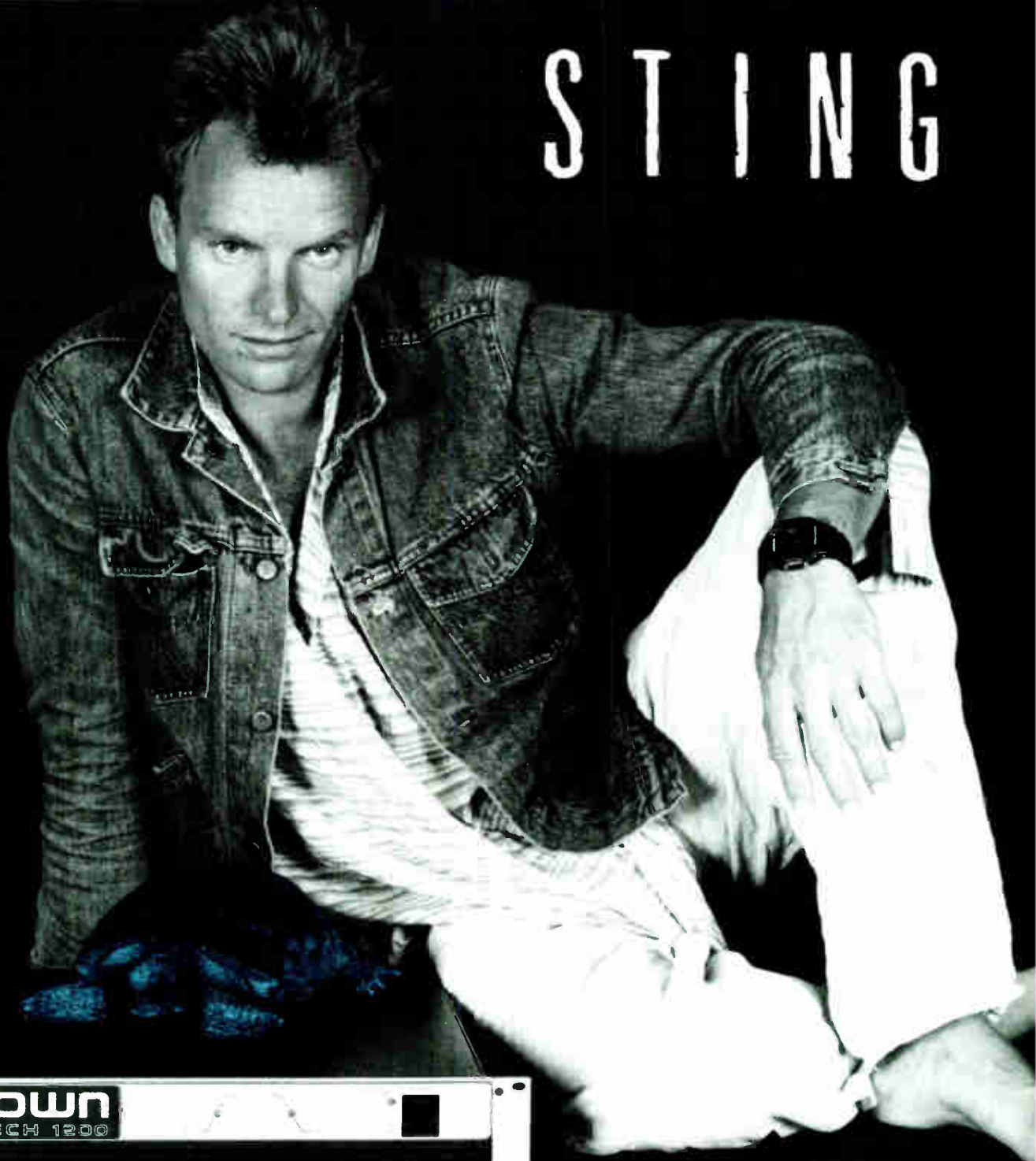
No! [laughs] In fact, it was really a labor of love and the hardest record I've ever made... there's a lot of blood on those tracks.

It's quite politically outspoken on a wide range of public issues, whereas most of your previous work is far more personal in tone. Why?

Well, quite simply, I suppose I feel these are dangerous times and I suddenly think I have a sense of responsibility to speak up now or forever hold my peace. Yes, it's outspoken and political, and no, I've never been particu-

On *Dog Eat Dog* she moves from the problems of the heart to the troubles of the world.

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PHOTO JOEL BERNSTEIN

(L to R) Joni Mitchell, Larry Klein, Michael Shipley (co-producers of Joni's Geffen album *Dog Eat Dog*).

larly political before, or felt that it was that important. Traditionally, musicians have always been politically very naive, although they may demonstrate a lot of heart and goodwill. Look at what happened with events like the concerts for Bangladesh and No-Nukes—the funds never got to the source from either show. But we're learning—Live Aid and Northern Lights and all those other benefits are far better organized, and right now we all need to take a stand and fight over issues that are threatening not only our freedoms in this country but the entire world.

Can you be more specific?

I'm talking about everything from the insane arms race to the current attempts by various right-wingers to censor lyrics. Basically, I feel that a lot of strides were made in this country during the '60s—equal rights, feminism, freedom of speech, etc.—but under Reagan's new conservatism, much of that's being eroded and undone. For instance, I think all these censorship attempts are really dangerous. I hate to see this country backsliding into extremism, and that's exactly what's happening today, sadly. Sure, this album has a lot of "adult language" in it—there's a "fuck" here and a "fuck" there—but then that's the way we talk. Why can't songs be reflective of our everyday culture?

In tracks like "Tax Free" and "The Three Great Stimulants" you sound particularly angry.

Well, there's some irony and humor there as well, hopefully, but you're right. I mean, the rock and roll lyric issue is just the tip of the iceberg. Look at the whole church and state issue. That was the idea behind using Rod Steiger in "Tax Free" as the Moral Majority-styled evangelist who's crusading against rock and roll and advocating the invasion of Cuba. The fact is, the church is very aligned with the right wing today, and Russia and communists are the enemy cause it plays into all their Armageddon prophecies. And now they have access through the media to a lot of public brainwashing, and that's very dangerous, because if you can't criticize the president without being branded a commie, you're on the verge of witch-hunting. They haven't gained quite enough power for persecuting yet, but they're playing with the idea, and there's a lot of pushing and testing, as with the lyric issue.

The overall sound of the album is also a lot harder, presumably the reason for pulling in collaborators like Thomas Dolby?

Yes, well, as Elliott Roberts, a dear friend and ex-manager pointed out to me so succinctly before we started recording, "Joan, not everything you do is great!" At that point he tried to stick a producer on me, and I've never been produced you know. Really, I'm unproduceable, used to letting the projects take their own eccentric and, for better or worse, making my own mistakes. But this time, in order to

make the technological leap which I did 'cause the music I've been listening to and enjoying lately has been made in this manner, I needed assistance. So there's Larry Klein, my husband, Mike Shipley who also engineered, and Thomas Dolby.

How did you hook up with Thomas Dolby?

Well, I liked his stuff, and it turned out he was a big fan of mine, so we called him in, mainly as a technical assistant and a player, although he'd opted for the position of producer earlier. So anyway, we called and met with him, and I said, "Thomas, there will be no producer on this project, but we need you if you're interested to help us get the sounds we want quickly and efficiently, because the machine is infinite and we're still sort of sluggish on it—we can do it, but it'll take us far longer." He said that he was sick of people always looking to him for the answers. Well, I took him at his word and hired him, but at the back of my mind was that old line from Rudyard Kipling, "If you can do this, you're a better man than I am Gunga Din"—meaning that if you're used to being in the spotlight, it's hard to change and go back to the chorus line, so to speak. As it turned out, I was right, really.

So there was a clash of temperaments?

Yeah, we clashed! I'm very fond of him, but *man!* He was very quiet—and stubborn—and when we disagreed, we'd have these discussions and he'd say, "Well, I'm not getting anything out of these adult talks, Joan," and then I'd say, "Well then, neither am I," and we'd be stalemated. The main problem was that in all my records, I've never gotten to a point where I'm building a structure—the structure's usually laid down by acoustic guitar first, or piano. Then there's the sweetening, when I start bringing in other players and give them the freedom to just blow and counter melody against what I've done. And sometimes I edit them, and other times I take these parts and move them around, and spin 'em in over here or there, after they've gone rather than just saying, "No, no, I don't like that." So basically I gather all this stuff and then collage it all in afterwards. It not only keeps spirits up in the studio, but it also saves me from having to give a lot of verbal instructions.

That's the way I'm used to working, so when Thomas would come in and just start building a track, it'd drive me crazy! I'd say, "You know why you were hired, to set up the sounds—now please get off the keyboards and let me play." And sometimes it would

THE COMPLETE DRUM INTERFACE.

There are a lot of drum interfaces on the market that can do one or two things extremely well. However, no other drum interface comes close to matching the complete range of features found on the new MTM from Simmons.

MTM is an eight channel fully programmable interface unit that converts drum pad, tape or acoustic drum signals to trigger both MIDI and non-MIDI electronic sound sources under full dynamic control. Its signal processing capabilities are a result of extensive research and development by Simmons Electronics culminating in unique applications of existing interface technologies combined with totally new innovations.

Designed primarily for use with

Simmons electronic percussion synthesizers, the MTM enhances the dynamic range and performance of the SDS5 and SDS7 by placing a computer between the drum pads and drum brain. MTM will also act as a fully assignable MIDI interface that can produce unlimited melodic, harmonic, tonal and rhythmic effects via drum pad triggering when used in conjunction with MIDI sound generators.

MTM has many other applications as well. For example, it can be used as an interface between acoustic and electronic drums, acoustic drums and MIDI

equipped synthesizers or in the recording studio for converting audio signals on tape to MIDI code.

As the complete drum interface, MTM allows creative flexibility for programming several signal processing parameters, each of which is independently adjustable.

SIGNAL PROCESSING CAPABILITIES.

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signals while allowing a controllable time period for each channel during which MTM will not recognize an incoming signal as a trigger or generate an output.

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MTM's MIDI capability is designed for full programmable implementation including note assignment, channel assignment as well as

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Repeat Echo, Sequencing and Note Layering are just a few of the MTM's programmable on-board effects. Repeat Echo is a single note retriggering effect that is adjustable for echo decay and echo speed. The Sequencing function allows programming of sequences up to sixteen notes on each drum per program. Pitched and non-pitched chords under full dynamic control are made possible by MTM's Note Layering effect.

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● OUTPUT PROCESSING

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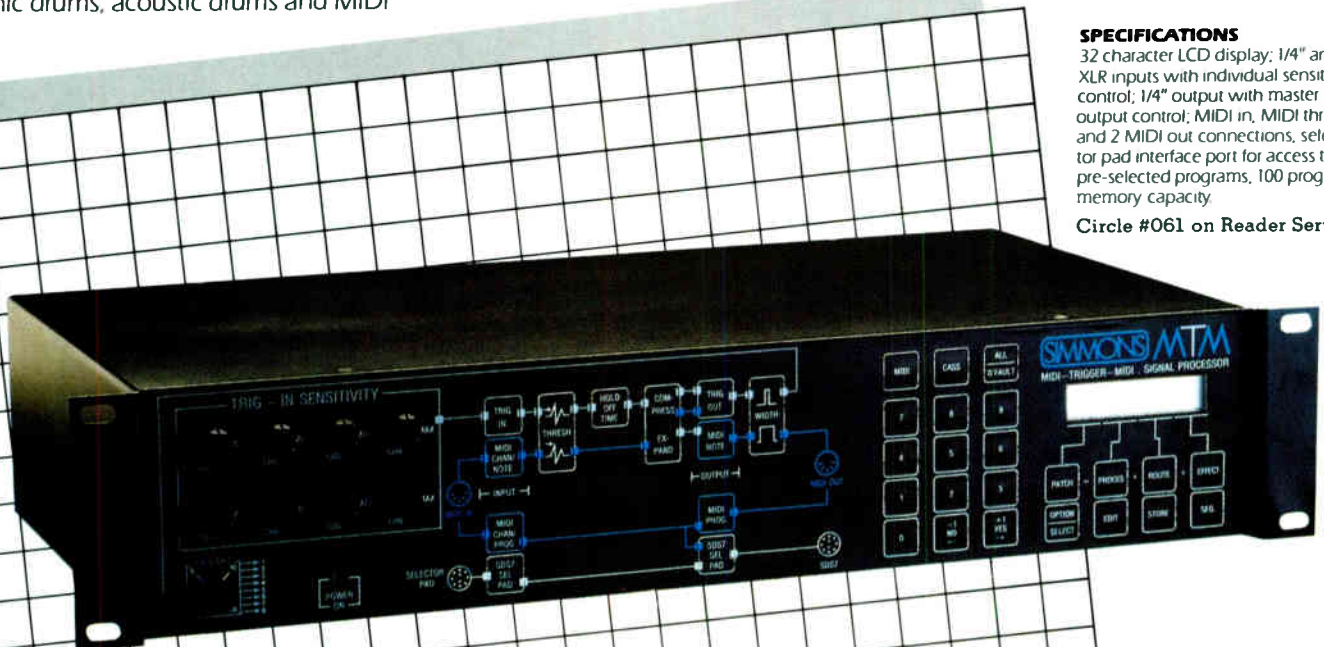
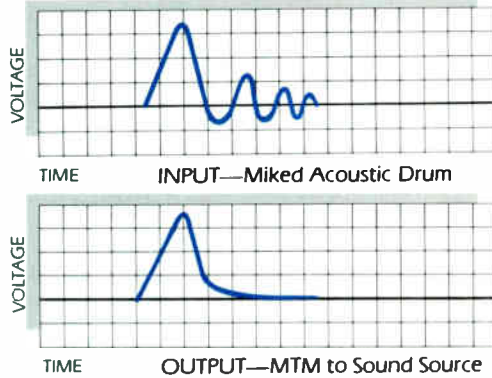
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just fall on deaf ears, and he'd just build and build, and we never used it cause I just couldn't work that way. I couldn't give over that much territory, I wasn't that experienced.

How did all this affect you?

Well, I felt very mixed up about it, I must confess, in that on one level I thought perhaps I'm not being very cooperative about it. But on another level I thought, "No, this is composition, and if my structure is radically altered at the beginning, I don't want to be interior-decorated out of my own music." The thing is, I've always had the luxury of making my own mistakes, and that's something very important to protect.

Did you resolve the conflict?

Yeah, in the end. It's difficult, cause I had to keep prying him off the keyboards, and we actually put him on a beeper towards the end of the sessions, just like a doctor or dope-dealer! [Laughs] It's true—we'd beep him wherever he was and he'd have to come on down to the studio. Eventually, we worked out a lot of the bugs, and I think it's a good record for it. Everything that's on it is something I like, and all the contributions definitely do express where I'm at musically in 1985. Of course there are some things on it I'd already do slightly differently, but then that's always the case—it's the nature of the beast.

You mentioned earlier there'd be no producer, yet the album credits four of you.

Well, if I had my way there'd be no producer listed at all, but instead of doing that we ended up putting down all of them, and then tried to indicate for those people who want more specific information the dominant contributors track by track, by changing the order. So sometimes there'd be three co-producers, as with "The Three Great Stimulants," while sometimes there'd be just one name, as with "Smokin'." Then on other songs, like "Fiction" and "Tax Free," the music would be basically written by my husband and I'd have less input regarding the track. He'd set the tempos and all the changes. I then added vocal ideas and wrote the lyrics. I also obviously had strong opinions regarding the arrangements, but for the most part I just let them carry on with those pieces.

What about Rod Steiger's cameo appearance on "Tax Free"?

That was my idea, along with all the chorus work. But the chord changes and all the colors selected to voice those changes, was pretty much Larry and Thomas on those tracks. Whereas



PHOTO: NORMAN SEEFF

Joni Mitchell

on a cut like "Three Great Stimulants," it's nearly all my concept, and I'm also playing most of the parts on that song, so you'll notice that my name comes first in the credits.

Apart from Thomas Dolby and Rod Steiger, you also have more "traditional" credits listed.

Yeah, [laughs] a bunch of old friends dropped by to help out. I did a duet with Michael McDonald on the first cut, "Good Friends," and he also helped out with back-ups on "Tax Free," along with James Taylor, Don Henley and Amy Holland. The basic band we used consisted of Larry on bass, keyboards and some synthesizer, Thomas on keyboards, Fairlight and programming, Mike Landau on guitars, Vinnie Colaiuta on drums, and Michael Fisher on percussion. I played Fairlight and assorted keyboards, and did vocals and vocal samples, and we also had contributions from Steve Lukather and Wayne Shorter on a couple of tracks, as well as some horn players. Quite a change from the old days of just me and a guitar!

What about your writing methods? Do you go into the studio with finished ideas or are you still experimenting a lot?

It really depends. For instance, "The Three Great Stimulants" was written originally as a guitar song—I could sit down and just play it for you. And I also knew I was going to be using a helicopter playing straight eights in the background, as well as this sound I'd captured on Super-8 film of a guy

hammering and a burglar alarm going off while I was in New York once, and it was just perfect to go into the chorus. On the other hand, in this new way of recording, you sample various sounds, or re-distill them. But I'm still a fan of spin-ins and drop-ins, and salvaging sound in a different way, and to me it works just as well, especially in conjunction with other sounds it all starts to meld together. So of course we had an argument regarding that sound I'd found in New York—the team decided the fidelity of the sound wasn't good enough, and that maybe we should recreate it on the Fairlight. Well, to me that meant a lot of extra time, but I said, "Fine. If you can get it *exactly* like that," because what I had was perfect to me, I wouldn't change a nuance, and whatever imperfection they were hearing simply didn't matter to me. Of course, when we finally got that section built, it worked and we all agreed it worked.

What about some of the sounds on other tracks, "Smokin' " for instance? All the tracks on Dog Eat Dog were done at Solar Records' studio on Cahuenga in Hollywood, except for "Smokin' " which was left over from Wild Things Run Fast because it didn't really fit into the album's "love" theme. Anyway, we recorded that at A&M studios and there was a cigarette machine in the parking lot, and the guy who maintained it didn't maintain it, and so first my favorite brand went and then my second, and then third—until before you knew it, all you had were Kools! So one night I took a long cord out of the studio, and just stuck it into the back of this machine. Everyone thinks it's sampled, but it's really the acoustic pattern the machine makes when you push the button down. Then I added two little vocal overdubs bringing out the melodic squeal of a couple of the gears, and [guitarist] Steve Lukather playing one thing, Larry on bass, and then just a few more voices—that's it.

What about the voices on "Ethiopia"—How were they done?

It was the same process as on "The Three Great Stimulants." The background boys' voices on the third verse, the women—those very primitive flat voices on the chorus singing, "Little garden planet aahh," and the fluttering sound in the second verse—they're all salvaged from African folk records and then spun in randomly. So the sounds are collected and randomly inserted until, to your excitement, you discover that these kids who were recorded singing in their village ten years ago are singing *exactly* the right chord changes for the part about African children.

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—FROM PAGE 104, MITCHELL

You obviously rely a lot on the intuitive process.

Yeah, 'cause when it happens like that it's like a gift, you know? That's the kind of stuff that really makes me feel like the muses are smiling on me—the lucky accident in the studio.

It's also very removed from recording processes using equipment like the Fairlight.

You're right, because most of the time, working with the Fairlight you have to tell it exactly what to do and what you want. You can still discover things, but a lot of the time the process is intellectual rather than intuitive. It's really only dealing with the known because you have to program it in its own language. It's more like written composition in that sense.

It sounds like you weren't totally happy using all the new hi-tech methods?

I must admit that the whole process really went against my natural inclinations. So when we got to working on the last three tracks—"Lucky Girl," "The Three Great Stimulants" and "Ethiopia"—I just insisted that we go back to my older methods and all those random processes, in order to get that sense that there were spirits hovering around us, wishing us well. I like things that come up on record dates that no one thought of, that no one can claim—the happy accidents—and the more that happens on an album, the better I like it.

Do you think you can reconcile both methods of working?

I think so. They just need to be balanced out more. The thing is, I've now got my foot in both camps. I'm still fighting for some of the old ways, but I don't want to stay still or throw the baby out with the bathwater. So that balance is very important to me 'cause I can't entirely turn my back on my previous experience, especially in light of a song like "Good Friends," which is a good example I think. It was born on piano, and the keyboard part was then simplified for Fairlight and fleshed out with counter-rhythms and counter-sounds. It also features the only synth bass on the album, and that was Thomas' contribution. But the most startling thing about the whole song to me is that there's a line in there—"Sometimes change comes at you like a broadside accident/There's chaos to the order/Random things you can't prevent"—and *right* after that was written, we got hit by a drunk on the Pacific Coast Highway; that's the wreck of our car on the back cover. Sometimes lyrics go through several

drafts, and sometimes they all pour out in one piece, and the first draft of this was actually "Sometimes change comes at you like a broadside accident/ You get minor cuts and bruises, that's all/ You can hammer out the dents." Well, that's exactly what happened to us, and considering the speeds and the way the car was hit, we really got off light. I went into the windshield, but fortunately I hit it with the hardest part of my head—I destroyed the windshield and didn't even get cut, so we were incredibly lucky.

You'd better be careful just what you write in the future.

I know, it certainly makes you stop and think...

Looking to the future, do you ever see a day when you might give up music for painting—you've mentioned the possibility before.

Funny you should ask, but when it came to signing this contract with Geffen, at that time I wanted to quit—I was ready then to stop and just pursue the painting which has definitely become a bigger part of my life over the past five years. In fact, when we last went out on tour in '83, they actually had to threaten me to put my paints away and go into rehearsal! I'd much rather have just stayed home and continued painting, although once I got into it and then out on the road again it was OK. But the moment I got back home, I went straight into the thick of the pigments again. I've painted more in the last three years than in my entire life, and I've been painting all my life. I only became interested in music much later on, in my late teens. Still, I'm looking forward to touring again next year, and I'm glad that in spite of the fact I'd rather paint, the music is still growing.

Is that why you've kept such a low profile over the past few years?

[Laughs] Well, I'm dancing as fast as I can! It takes time to write and record a really good album, and then do all the artwork etc. And then if you go straight out on the road after its release, what are you going to do—write on-the-road-songs forever? And it's all just putting out, putting out, and no input. So after all that, you *need* a year or two of just living and being a normal person to fill up again. People tend to say, "Oh, you've been laying very low recently," but the thing is, to be a writer you *need* to be invisible, and you need to live and go where ordinary people are. To be a "star" means that no longer are you the watcher—you're the watched, and when you're being watched it's very hard to create. I'm more of a watcher. ■

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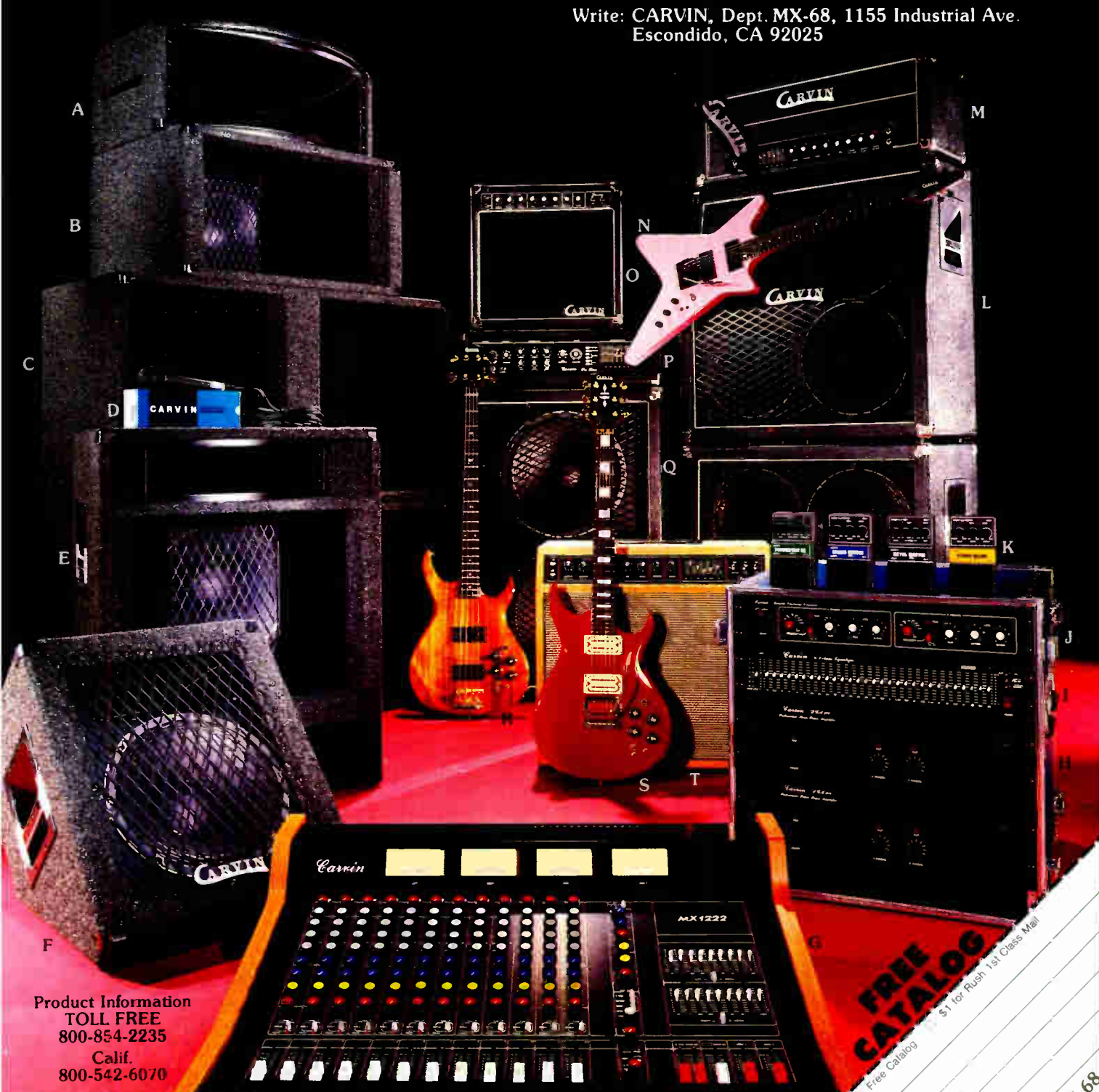
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Wang Chung Finds That Delicate Balance

by Robyn Flans

When Wang Chung (a.k.a. Jack Hues and Nick Feldman), were told by their manager that William Friedkin (of Exorcist fame) wanted them to score his latest film, *To Live And Die In L.A.*, the duo turned it down. It seemed Friedkin wanted the assignment completed in a week.

But Friedkin had heard Wang Chung's *Points On The Curve* album, and he felt that "Wait" had the tension and drama his film required. So he persisted.

"Billy Friedkin personally phoned up and, in his inimitable way, encouraged us," Hues laughs. "So I said yes. I could feel it was something we really should do. I can remember, though, getting this sense of 'What the hell are we going to do? How do we write 90 minutes of feature film music in a week?'"

"We just sort of drove each other through it," Feldman explains. "I think Friedkin was very clever because he sensed that would happen when he said, 'I want it spontaneous. I want it in a week.' It set the tone for the thing because it created that tension. It was an intense session and we rose to the occasion."

It was actually just what the doctor ordered. Wang Chung had completed about half of a studio album, but it was turning out to be an album they didn't want to make, Feldman asserts.

"It was looking like a five-track-a-side album, and it was fairly unremarkable in its format. I think what we wanted to do was something much more interesting and ambitious. This film project allowed us to expand what we were doing by a million miles, so we branched out into instrumental music and also carried on with the songs as well."

"We had reached a point in our studio album where there was this instinctive feeling that there should be a long track or something kind of experimental and a bit dangerous," says Hues, the classically-trained musician of the duo. "The film just focused that



Nick Feldman and Jack Hues of Wang Chung

PHOTO: BONNIE SCHIFFMAN

for us. We had a song which I was trying to distill into a three- or four-minute pop song, and that became 'City Of The Angels.' I think it works as a ten-minute instrumental track, and if we had tried to condense it into a four-minute pop song it wouldn't have worked. It's a harmonic progression that needs time to unfold itself.

"In many ways, I think, the film saved us from many problems we were having."

One of the difficulties of writing the score was that Hues and Feldman didn't see the film until they had nearly completed their work. They merely volleyed various mixes of their work from London to L.A. The title track is actually the only song written after they had seen a portion of the movie.

"When we went to see the first four reels of the film in July, we were completely knocked out by the way Friedkin put [the music] into the film," says Feldman. "It really was very powerful, and perfectly timed. In some ways it looks as though we actually sat in front of the screen and scored it."

Wang Chung used a lot of machinery on the soundtrack, as they are wont to do. They used a DMX, drums sampled into an AMS and triggered by a Linn; an Emulator II was used for the choir and strings.

"In the actual performance of things, I like to sit back and listen to what Jack is doing, so there is a sense of judgment and criticism," Feldman says of their roles in the project. "Jack plays a lot of the keyboards and guitars and I play bass, so he can tell me when I'm playing a lot of rubbish."

"Our writing varies," Hues continues. "For example, on 'Wake Up Stop Dreaming' I did the lyrics, but musically, it was riffs and ideas of Nick's that we basically stuck to. I mapped out the actual instrumental soundtrack stuff as architecture, but then once we got into the studio, we started doing it together very much. I'd play some stuff and Nick would say, 'That's not working at all.' I'd play some more and he'd say, 'That sounds good and probably if you did that...' As Wang Chung

has decreased in size, there's more and more for each of us to do," Hues says, referring to the fact that after *Points On The Curve*, drummer Darren Costin left because of musical differences. "And I think with that has come a greater understanding of what each of us is about."

The two Englishmen are currently working on a new Wang Chung album with revitalized enthusiasm. "There was all this pent-up frustration from what we were not achieving on the last album," Feldman observes. "When the soundtrack came along, it sort of exploded to this *Live And Die In L.A.* record. It just poured out, really. I think that's opened up a creative floodgate

to a large extent and given us confidence."

"Confidence is the main thing, since we produced more than half of this soundtrack ourselves," Hues adds. "And I think it's the best thing we've ever done. That means we can carry on that track. There's a potential for working in that area and bringing it into the mainstream and making it so it appeals to everybody, rather than just thinking we have to bring more commercial elements into the music. I don't think there's that same pressure now. The whole impetus of the band is to strike a position which is perfectly balanced between commercialism and pioneering." ■

THE FAR SIDE

By GARY LARSON



Knowing how it could change the lives of canines everywhere, the dog scientists struggled diligently to understand the Doorknob Principle.

Fishbone: Those Crazy Kids

by Moira McCormick

Oh, these kids today... Ask Fishbone, punk-ska-funk-rock-grossout sensations from L.A., how long they've been playing together, and you get a smartass, "Since the dawning of the Age of Aquarius," from bassist Norwood Fisher.

These second-generation rock and roll brats were still being breast-fed during the Age of Aquarius—at last

count none of the six had yet turned 20—and there's nothing vaguely psychedelic about the full frontal assault of Fishbone's music-cum-street-brawl.

Fisher and keyboardist/trombonist Chris Dowd are hanging around in the dressing room after a characteristically bacchanalian set at Chicago's Cabaret Metro, the only Fishboners who cared to talk to the press (how's that for impertinence?) The air is steamy and there's naught but 7-Up in the cooler, as these guys are under age.

"I betcha if we were Ratt or something, we'd have beer back here," mutters Dowd. "I'll bet Def Leppard gets beer wherever they play."

The legend of Fishbone began some three-odd years ago when its six soon-to-be-members became acquainted while riding the bus from their inner-city L.A. homes to high school in the San Fernando Valley's Woodland Hills. "But it's not like we got on the bus, and our eyes met, and we decided music would be the rest of our lives," Fisher points out. "Actually, we played a little football, and had a few fights, and tortured a few teachers. We were mean little kids; we used to kick ass.

"Eventually," he says, "we all found

—PAGE 137

Fishbone (L to R): Fish, Walter Kibby II, Kendall Jones, Angelo Moore, John Fisher, Christopher Dowd



PHOTO: JOHN SCARPATI



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Kronos Quartet (L to R): John Sherba, Hank Dutt, Joan Jeanrenaud, David Harrington

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The Kronos Quartet:
Twentieth Century Players

by David Gans

Sitting and standing in a tiny studio while their radio program is being copied for satellite distribution, the members of the Kronos Quartet listen carefully, commenting now and then at an imperfection or an especially pleasing passage in their performance. When the music stops and their speaking voices are heard on the tape, the musicians respond more self-consciously. "We're so serious," says one.

"Sounds like a classical radio station," someone consoles.

"Oh, don't say that!" laughs another. At the end of the tape, the measured tones of announcer Sedge Thomson: "The Kronos Hour is produced by the Kronos Quartet, which is solely responsible for the content of this program in the interest of having a good time, playing for you, and showing how 20th

Century string quartet music is the place to be."

The next program begins, and Thomson intones the introduction: "Four . . . four . . . four . . . four. The Marx Brothers. The Beatles. The Four Horsemen of the Apocalypse. Now another fabulous four: John, Joan, Hank and David—the Kronos Quartet. You found the Kronos Hour by intent or accident; doesn't matter. Welcome to the world of Kronos—20th Century players of 20th Century music. . ."

The Kronos Hour is, strictly speaking, a classical music program, albeit with a decidedly iconoclastic bent. There's more to the Kronos than irreverence and humor, though. By treating the string quartet as a living thing rather than as museum fodder, these four musicians have breathed new life into a more-or-less dormant form and demonstrated the depth and range of human expression transmissible through contemporary classical music.

To say the Kronos "specializes" in 20th Century music is to say the Kronos doesn't specialize. While the general image of "classical" music is of

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stuffy traditionalism, and "contemporary" music is considered by many to be tuneless and unlistenable, the Kronos Quartet avoids both undue reverence for established forms and the anti-historic posturings of some avant-gardists. Their repertoire sprawls triumphantly across stylistic boundaries from atmospheric to jagged, gentle to jarring, encompassing the works of Bartok, Shostakovich and Berg, Terry Riley, Philip Glass and Frank Zappa, Thelonious Monk and Bill Evans. Even Jimi Hendrix has found his way into the Kronos repertoire, via a transcription of "Purple Haze."

"I think we're providing a certain kind of direction for the whole art form," says first violinist David Harring-

ton. "It's a real charge to be in a position of playing some of the most recent things for our audience. They come and expect to be pleasantly surprised—or, in some cases, not so pleasantly surprised. We're not expecting total agreement all the time."

It might be tough to get a Kronos audience to agree totally on any given subject. The only adjective that can be used to describe the crowd in the lobby of San Francisco's Herbst Theatre during intermission is *variety*. So many popular performing arts audiences are peopled with clones—rendered more identical by their T-shirts and intoxicants of choice, or by their tuxedos and can-you-top-this *couture*—but the Kronos audience is a plaid

paint-splash across the demographic chart. Male and female are equally represented, more racially varied than at most pop events, ranging in age from school age to dotage. There are middle-aged hippies, art-school types, a shockmerchant or two; berets and bankers' domes, purple streaks and cultured pearls, outdated suits and outrageous jeans, and even what appear to be a couple of unreconstructed San Jose shitkickers. Interesting faces, animated with talk inspired by the music of Kronos—people who think for themselves. These are not *imposed* identities; Kronos neither instructs its audience nor prompts its responses.

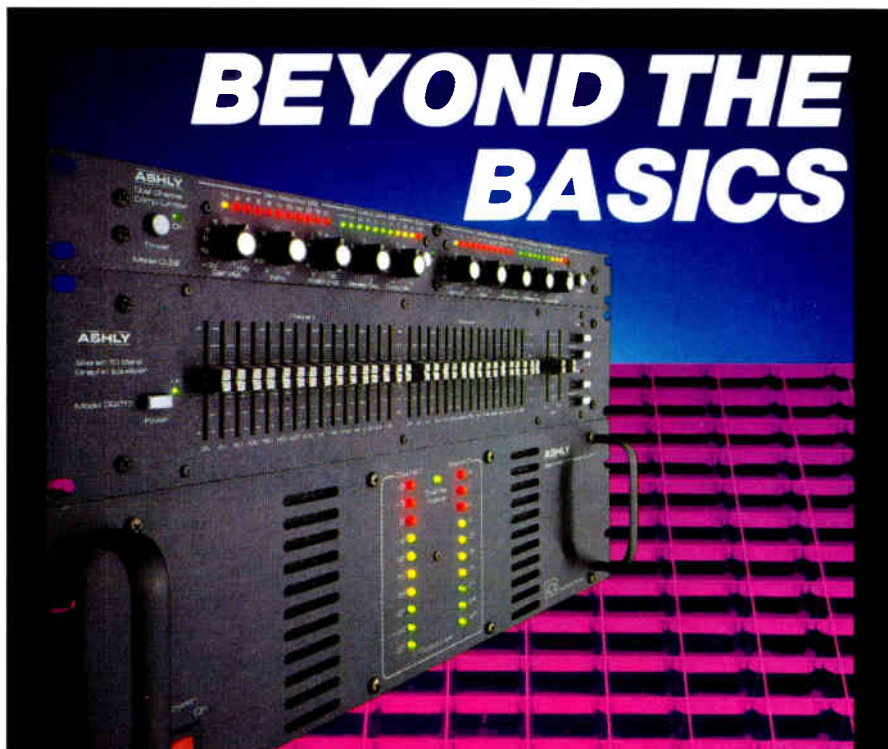
Inside the auditorium again, the concentration is complete on both sides of the proscenium. Communication among the four musicians is entirely musical; rarely if ever do their eyes meet, and even between selections hardly a whisper passes their lips.

What quartet music lacks in mass is more than made up in intimacy and flexibility. Harrington focuses the eyes and hearts of 900 spectators on the delicate sound of his violin, ever so lightly bowed, as he draws a note out into a silken thread for several moments and then eases it toward silence—into which come Dutt and Jeanrenaud like circus tumblers, with big, bold *ostinati*. The dynamic interplay is marvelous, palpably spontaneous despite the notes on paper; these players are adjusting to each other's nuances, giving this performance a character all its own, perhaps warmer than the last reading of the piece, maybe a tad reckless when the energy is coming.

Out of another legato lull, a flurry of notes rises like startled birds from a wire and quickly form patterns in the air, pairing off and rising, stalling and falling, in sharp detail against the sky. Then the four join together in broad, rich harmony before breaking up into percolating pizzicato just a little like a rock and roll rhythm. When these musicians share their open minds, the love of their mutual instrument and the world of music at their fingertips, together they fill the room with instant, universal magic.

"There's more diversity in the music that's being written today than ever," notes second violinist John Sherba. "If you want a jazz-oriented piece, you can get a good one. There are a lot of very tonal, melodic pieces—so many different styles being written now." What makes the Kronos unique among string quartets is their commitment to expanding, rather than jealously guarding, the literature of string music.

These are not musical swashbucklers plundering the compositional high seas and skewering musicologists with violently novel ideas, however. They



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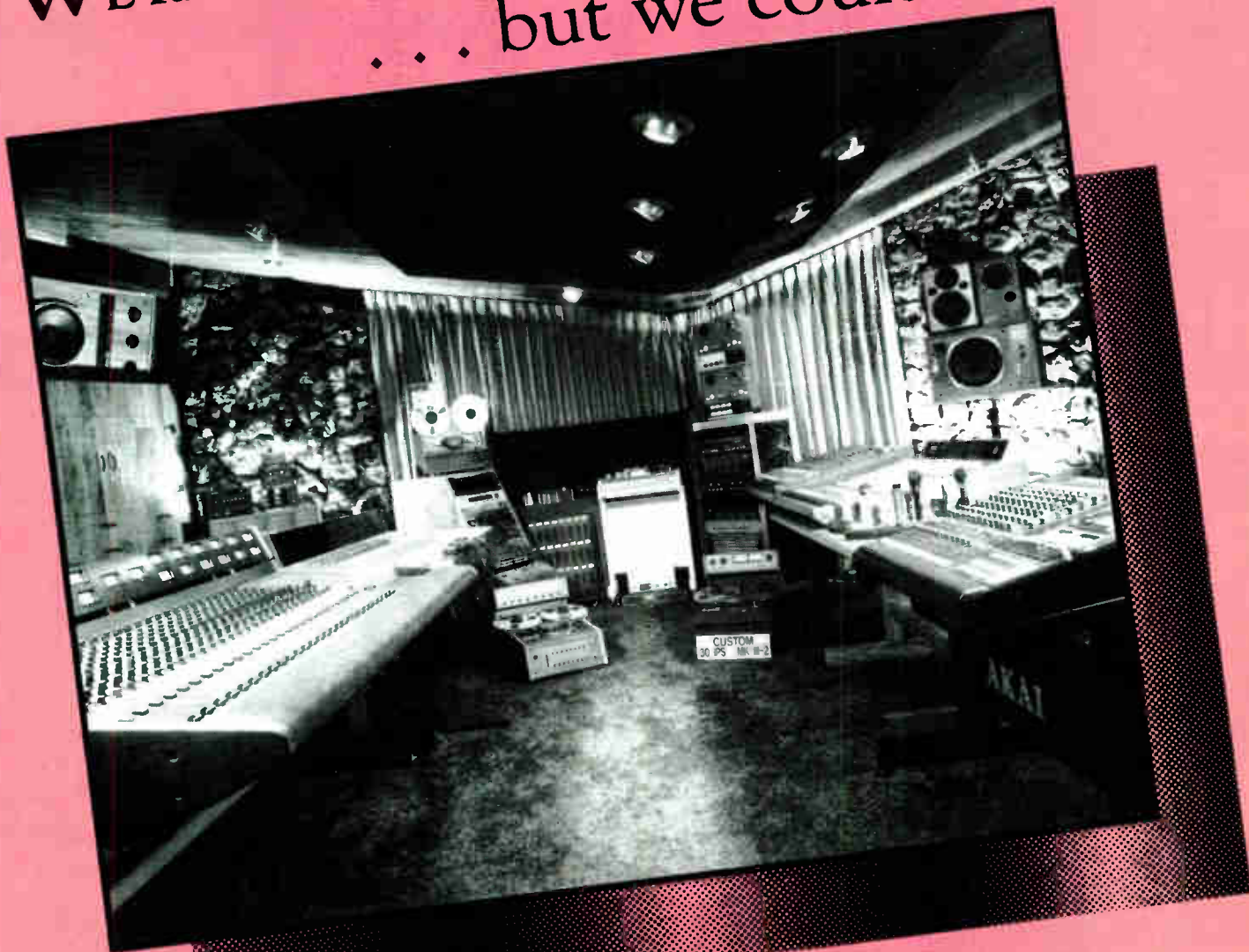
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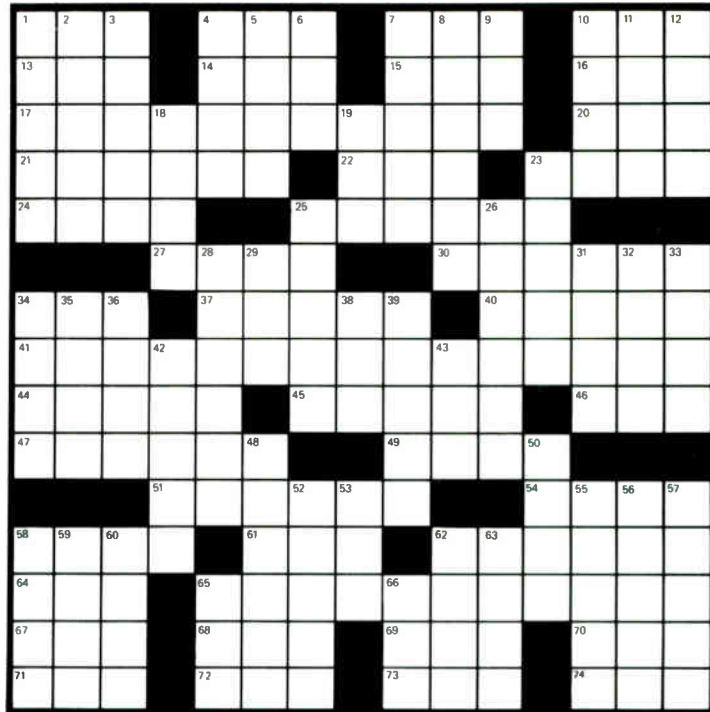
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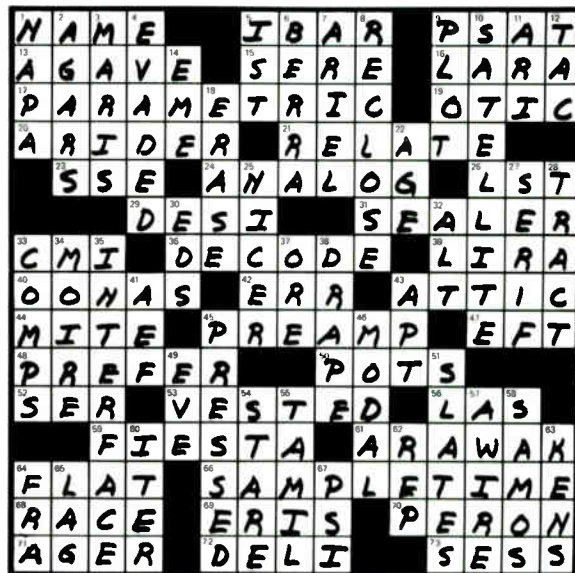
ACROSS

1. Rodent
4. Mr. Tafari
7. Fire's remnants
10. _____ Without Hats
13. Conductor De Waart
14. Belonging to the alien
15. Regret
16. "_____ Been Everywhere"
17. One way to save the session
20. Push the pedal
21. Inventor of recording
22. Bon _____
23. Knowledge
24. Marathon
25. Northern lights
27. "Duke of _____"
30. Play again
34. Rear, to Spock
37. "You've got a _____ give..."
40. Ms. Starr
41. Promise heard in demo studios
44. Boredom
45. Newsmen's angle
46. Guitarist's need
47. Gazes steadily
49. Saxman's necessity
51. Fit for ingestion
54. Formerly Texas Western College
58. Measures
61. Kid _____, Cleveland jock
62. Calm
64. 4A, in Mexico
65. A promise to improve vocal tracks
67. _____ Angeles
68. Hill dweller
69. Chou En-_____
70. USA for Africa organizer Kragen
71. Oriental new year
72. Peter, Paul, et al. (abbr.)
73. He followed HST
74. Family man Stone

5. Memo abbr.
6. Whispered exclamation
7. Metal plating
8. Gentleman caller
9. Curse
10. Spanish painter
11. "If _____ I See You Again"
12. Swiss mixmaster
18. "_____," said the blind man
19. Digital wizards of Santa Cruz
23. Jacket feature
25. Section of the choir
26. Ford play
28. Joined up (with)
29. Singer Stewart
31. Napoleon's retreat
32. Astringent
33. Thermal measure (abbr.)
34. Pirate's affirmatives
35. Baptismal basin

36. Hot _____, Airplane spinoff
38. Circuit design principle
39. Midwestern nexus
42. Fishing aids
43. Compass pt.
48. Soundless
50. "Any Major _____ Will Tell You," Steely Dan tune
52. Cinches
53. Artist/Producer Creme
55. Carpet fasteners
56. Mrs. Mertz
57. Flower
58. Depart in a hurry
59. Popular skin-care ingredient
60. Musical pause
62. Northern plains state
63. Warhol protegee
65. "And She _____," T. Heads hit
66. "The Greatest"

SOLUTION TO JANUARY



DOWN

1. Send around
2. One running shoe?
3. Poisonous
4. "Biggest Little City in the West"

are talented, dedicated musicians and strong individuals who have chosen this difficult path because each of them feels a need to do something orchestral musicians are not generally able to do: to affect the world of music in the 20th Century. Together David Harrington, John Sherba, Hank Dutt and Joan Jeanrenaud are giving voice to the string quartet the way *they* hear it, and they continue to work—every day of their shared life—to maintain their independence from a classical music establishment that doesn't embrace experimentation with the same hearty curiosity other musics do.

Tradition doesn't support the maverick. Players in a typical string quartet, suggests pianist/composer Tom Constanten, "are almost all conservatory-trained and very conservative-minded. They're trained into a cookie-cutter approach to the string quartet, like they all want to be clones of the Budapest Quartet. It's very rare that you find adventurous ones, and they stand out when they happen. Kronos is unique, even among avant-garde quartets, in that these guys will venture into pop areas."

Harrington is *not* a cookie-cutter musician. He fell in love with the violin of his own free will when he was nine years old. "Something in that sound touches me like no other sound," he says, "and something in the way it feels and the way it looks. . . horsehair, rosin, varnish and wood—all these natural things." This love affair "never had anything to do with being a fan of anything else. I felt that way the first time I heard Bessie Smith. Elvis, same way."

His discovery of the special magic of the string quartet was "a total fluke. I had joined the Columbia Record Club, and one of the records they sent me was the Budapest String Quartet playing Beethoven's E flat major quartet, Opus 127. Those opening chords *still* strike something in me."

The experience that set Harrington on the path he still follows resulted from his good fortune in having a composition teacher who wasn't an embittered composer-manque. He joined his first quartet at age 13, and was involved in the premiere of a piece by Ken Benshoof, whose relationship with Harrington and Kronos continues to bear fruit today. "That was the thing that really got me cooking. There was one time when I thought something should be played some way other than the way he'd written it. I suggested it, he tried it, and he liked it.

"Forming a string quartet is not the easiest of tasks. I invented the idea of the quartet and had some gigs arranged before I had the quartet," Harrington admits with a laugh. "I found three other crazies, and we just went

for it even though it was totally impossible financially. The one thing we did right away was make it a full-time job." The group managed to put on more than 50 performances in that first year in Seattle.

There were many changes of personnel between 1973 and 1978, when the group coalesced into the current combination. In 1975, the Kronos left Seattle to be the quartet in residence at the State University of New York at Geneseo. "We did a lot of performing around the east coast," Harrington recalls, but soon he "got bummed out with the idea that where it was at was anywhere other than where I was. The outlook and the music we wanted to play didn't have a lot to do with the dyed-in-the-wool academic musical attitudes I was coming up against. Looking around, we realized we felt more comfortable on the west coast, so we decided to go to San Francisco."

The quartet's violist didn't want to make the move. A friend recommended Hank Dutt, who was finishing up his degree at Indiana University when he was asked to audition for the Kronos. "I always thought I would get a symphony job and eventually retire to a college position and play quartets, which is what I really love to do." The audition led to an invitation to join, and although Dutt says he "didn't really have a bent toward contemporary music, I was young and wanted to take a chance."

A residency at Mills College in Oakland provided basic security, and the Kronos Quartet went through the dues-paying years of slings, arrows and outrageous good fortune. As the group's identity became more clearly defined, so did the edges and angles and recurrent clashes that invariably upset all partnerships and more than quadruple when the marriage is four-sided. Crises came and went, losses and gains were tabulated and reckoned with, and the Kronos Quartet learned its strengths and weaknesses.

"It was really hard in the beginning, when we were all new to each other," says Dutt. "You're basically experimenting, learning how to work with other people. A quartet rehearsal is such an intense situation, because you're always criticizing or being criticized for something. You're not just colleagues—it's really a marriage among four people. You see them at their worst and you see them at their best. You know more about them than you want to know."

In 1978, Harrington and Dutt found themselves in search of new partners after the married couple they'd been working with departed for reasons Harrington would rather not discuss. Dutt called on Joan Jeanrenaud, with whom

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he'd played in quartets at Indiana.

There weren't very many cellists in her native Memphis, so Jeanrenaud was doing session work and substituting with the Memphis Symphony by the time she was a junior in high school. She enjoyed playing chamber music at summer camp during her school years, so when she went to Indiana University she signed up for it every semester even though only two were required.

Jeanrenaud earned her music degree and had spent a year in Switzerland studying privately when she got the call from Hank Dutt to come to San Francisco and try out for the Kronos. "I was thinking, I've studied long enough—I've really got to get a job

now.'" Jeanrenaud was a confident player, but "I was really afraid I was going to run across problems in auditioning for an orchestra. I knew I could play well, but I didn't think I auditioned very well. It looked like it was going to be a long, painful process.

"I found that I was never a soloist, because I didn't have the personality to be out there totally on my own, where you have to carry the whole thing, but I wasn't somebody who could sit back and enjoy playing a part that so many other people are playing. It's nice to play chamber music, where you have that interaction with other people. A lot of people have a hard time getting along in a quartet, but that never seemed to be a problem for me."

Midwest-born John Sherba joined the Kronos Quartet at the same time as Jeanrenaud. "The cellist I was playing with was originally from San Francisco and knew what was going on in the area. He heard there was an audition for Kronos; we both went out, and I got to stay. It was the first time I had ever been west of the Rockies."

Sherba had had two days to prepare the audition material, and once accepted into the group he was "immediately thrown into an incredibly difficult schedule, learning all the new repertoire." But he was ready to accept the challenge. He had started playing violin at age four, went to the conservatory, studied at the University of Milwaukee, and had "a very traditional violin training—scales, etudes, the standard concerto literature. but I was always interested in 20th Century music."

At 13, he had discovered Mahler, "and from there my tastes got wilder and wilder. When I was around 17, I started listening to more avant-garde music—but my teachers still gave me the traditional pieces. That's pretty much the way it goes in universities.

"Fortunately, there was a contemporary chamber music program at the university," Sherba notes. "They had a lot of composers, so I was exposed to a lot of wild, wild pieces. The interaction of working with the composers really hit the spot for me. You could talk to them and get their reactions immediately, and you could try and sway them if you had ideas about the music.

"In the quartet, sometimes I might have to blend my sound a certain way, but nobody's telling me, 'Get this type of sound here,'" says Sherba. "In the orchestra, you can be playing away and nobody in the audience is going to hear what type of sound you have, whether you're playing in tune or out of tune. I like the more personal approach of playing in a quartet. All the care that I try and put into the parts—or sometimes *don't* put into the parts—people are going to hear. It's my interpretation, as part of the group's."

All four of these musicians have chosen a career that gives them a say in their destinies and in the course of new music. Is this any way to make a living? "Obviously, we're really underpaid to symphony players," says Jeanrenaud, "but then again, this is a lot more enjoyable for me. Nobody's getting rich off this. We're hoping to make more money, but it is a secondary thing."

"The main thing is that I'm having a great time," Sherba proclaims. "To me, that's a great way of making a living. The Quartet generates excitement. We're presented in a way that makes an audience remember it and enjoy it, and I think that's rare."

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"If I were in the Symphony and had to play the same repertoire over and over again, it would be really tiring," says Dutt. "In the Kronos, we can play a really way-out piece by Xenakis or Cage, then play somebody like Philip Glass, which is really tonal and pretty, and then go to a jazz piece by Thelonious Monk. That's quite a variety of styles, just in one concert. I find that really exciting."

"A lot of people have the mistaken notion that playing music is *playing*, something you do after school," says Harrington. "We rehearse five or six hours a day. There's a lot of interaction, tolerance, and acceptance of each other's rates of putting things together. At any one concert, we may be doing six or eight different techniques of playing. We've even done some singing and playing percussion instruments, things we've learned on the spot with the composers."

"Endurance is the difference between the Kronos Quartet and the other dozen contemporary ensembles that have risen and fallen into obscurity since they've come to the Bay Area," observes John Geist. Faced with "countless really horrible discouragements"—financial struggles, personal and musical differences, the random intrusions of life upon the goals and plans of team members—"flexibility and toughness is an extremely unusual combination in any person or organization, and they've got it."

"These are exactly the right people to be doing what we're doing," Harrington asserts. "There are a million ways to play any piece of music, so to come to one way for a specific performance requires a lot of give and take. This is not a matter of playing 30 minutes of music a year in constant beat—this is putting together 40 or 50 major works of art in which we're frequently working together on incredibly intricate timing."

"We change interpretations every night. We never play anything the same. In fact, one of the reasons for rehearsing as much as we do is to gain that flexibility. Somebody shapes a note a certain way and that suggests a whole different world for the way the rest of the notes are going to go. What we do is quite athletic, in the sense of fine training."

The Kronos' visual presentation has evolved gradually, to the point where their hairstyles and clothing are definitely beyond the pale for string quartets, but all insist it's essentially beside the point. "I think we're rebelling against the idea of classical musicians being so fuddy-duddy," says Jeanrenaud. "If we're playing contemporary music, why look like everybody else? Too many classical musicians look

alike, so why not have it reflect what we're doing? And besides that, maybe more people will pay attention.

"It's not like a rock band; you can't get up and jump around. You rehearse and put all this energy into it, but when you sit there, there's only so much you can move."

"We have a lot of different hairstyles at our concerts," says Dutt. "We have sort of a mixed audience, an older crowd as well as the really young crowd that's more interested in what's going on in contemporary music." Some New Music events are plagued by audiences too concerned with making the scene and displaying the correct attitude, but the Kronos audience seems genuinely concerned with the

music.

"We have a lot of artists—choreographers, jazz players, ballet dancers—and there are a lot of people who listen to rock but are really interested in the new stuff that's happening," says Jeanrenaud. "We have great audiences. They really listen, and they have opinions. They're really involved in the music; it's important to them."

A new album on Landmark Records, *Monk Suite*, is a collection of music by Thelonious Monk (plus a pair of Duke Ellington pieces as interpreted by Monk), has brought the Kronos Quartet to the attention of some listeners who might not have heard string quartets before. "That's always been our thing, to reach out and get

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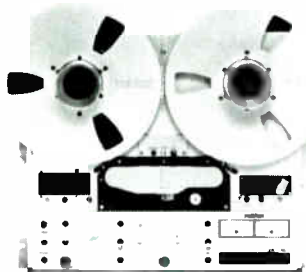
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as many different genres as we can," says Jeanrenaud.

"Our responsibility is to go deeper and deeper," adds Harrington. "It's a matter of finding those aspects of life that enrich your interpretations. It's a very interesting process, aging with this profession. I'm enjoying it tremendously. This is a way of life—looking for the center, trying to get right to the essence of a piece and live in that. There's a whole world there, and we have to find it. We're in it for the long haul. This is a way of life.

"There's nothing I've experienced in the music field that has higher highs, and I wouldn't tolerate anything else. There's no question: It's Kronos or nothing." ■

Stars and Studios Unite To Honor Dr. King

by Brooke Comer

New studios can take a tip from New York's Quad Sound. The two-room, 48-track facility beat the odds against a new studio's chances for success, a real feat in a metropolis as competitive as Manhattan. In the few years since it opened, Quad has attracted an incredibly broad range of clients on a steady basis. Owner, operator and engineer Lou Gonzalez is a major reason for Quad's success. The electrical engineer-turned-recording engineer did sessions for the Stones (*Gimme Shelter*) and Hendrix before settling down behind his own SSL. It was his reputation for no downtime and nearly infallible equipment made him—and his studio—a natural choice to be one of several NY studios to tackle Phil Jones' "King Holiday" project—a 12-inch featuring 15 artists, celebrating the Martin Luther King national holiday.

Quad Sound is right in the heart of the midtown theater district, but its ambience isn't urban. That's because Gonzalez grew up on a farm in Maine, playing keyboards in a country-western band, and that's the atmosphere that works for him—and his clients. "I grew up milking cows and bailing hay, never dreaming for a minute that I'd wind up in the recording business," he reveals. But Gonzalez did dream of becoming an electrical engineer, and after a program at the University of Maine, he went to work on NASA's Apollo project. "But I'd worked my way through school as a technician and DJ in a radio station, and I couldn't let go of that life. One day I got a call from the station. They needed a chief

engineer and they got me."

From engineering to studio design to sound design, Gonzalez diversified his skills. "I was engineering at NYC's WADO, and I got a call from Miro Sound asking me to send over our best man to help with some design problems. I hung up and went right over," he laughs. Gonzalez built Hit Factory, parts of Regent Sound, and more studios before he began to build his own. "I got tired of seeing other people make money from my designs," he says. "I'd had some luck as a Broadway sound designer—all my shows were hits—so I could afford to finance Quad Sound."

Not only did he design his own studio, Gonzalez also designed his own console, though he prefers to work on equipment that's familiar to all. "People aren't interested in what you built yourself; they want to work on something they know about. When they turn a knob, they need to know they can turn the same knob in three other studios down the street and get that same sound. I could build a better piece of equipment than anything else on the market. But the bottom line is to have the best of what everybody else has, which boils down to SSL, Studer, AMS and Steiner pianos. I woke up to the fact that I had to compete, and I've



PHOTO: BROOKE COMER

Phil Jones, Dexter King, Lou Gonzalez

been on a roll ever since. Having an SSL gives people all over the world the expectation of quality equipment that they'll know how to run."

The "Holiday" project, with its multitude of artists and 35-member choir (requiring 23 vocal and 20 music charts), challenged an assortment of studios and engineers before Jones

and executive producer Dexter King (son of the late Martin Luther King) took the project to Gonzalez. "You could only mix this on an SSL," declares Jones. "We had 48 tracks, two of which are SMPTE, and 16 or 18 belong to the rhythm section or musical overdubs. The problems come from each artist needing a different place in the

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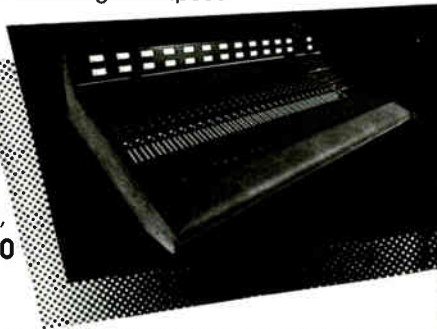
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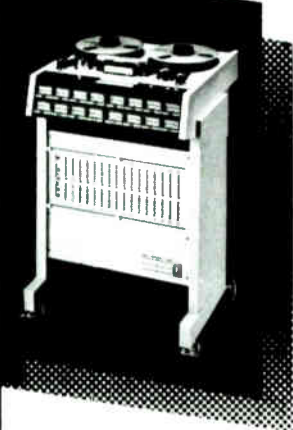


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song." Despite the difficulties of working with a lot of tracks and slave tapes, both producers credit Gonzalez for "an incredible job. Lou is the most unbelievable technical mind I've ever seen," adds Jones. "He can smell a problem early, and he knows exactly how to troubleshoot."

Gonzalez admits that "Holiday" was a "technical nightmare" when he listened to the material Jones brought him, but he took it all in stride. "Phil and Dexter traveled in and out of the country to record all of the artists on the record," explains Gonzalez. "They didn't have everyone in one room like 'We Are The World.' So I was dealing with the product of many studios and engineers." All of the musicians—including Kurtis Blow, Stacy Lattisaw, Whitney Houston, the Fat Boys, Teena Marie, El DeBarge, New Edition and Menudo—the record company (PolyGram), and mastering house (Sterling Sound) and engineers all donated their services to the Martin Luther King Foundation for non-violent social change.

"King Holiday's" technical trouble actually enticed Gonzalez. " 'Holiday' started out as a rap tune, but now it's an incredible blend of rappers (The Holiday Crew), singers (The King Dream Chorus), and go-go, which I've never heard before." One of the difficulties Gonzalez faced was that "someone had forgotten to leave room at the beginning of the song for the lock-up to lock before the downbeat of the tune. Whoever made this tape had left three seconds of time. If you don't get the start mark of each tape in exactly the right place, and press 'go' at the right point, the downbeat happens and the machines aren't locked up yet. I was forced to extend the code in reverse directions and create 30 seconds of false time code before the downbeat on the master and slave so there would be room."

Though the SSL was invaluable to Gonzalez during his work on the project, "even an SSL doesn't like it when you rewind five or ten seconds before time code in the middle of a mix," Gonzalez adds. "Once you've got the tapes locked up, you don't edit them. But I edited them. There were times when I'd be asked to add a verse, or insert another chorus. When I got the tape, it was five minutes long, and now it's seven minutes and 30 seconds long."

The tape was originally done on 24 tracks before moving up to 48. "The 24 tracks were a real mess," says Gonzalez. "The tom-tom tracks had music lines in the middle of them. It was all crazy. Each musician had used a different drum machine, so the drum sound changed in the middle of the

With the roster of chart-worthy artists lined up to perform on "Holiday," Jones had all the makings of a hit single.

song. I went in when nobody else was around and gave each artist and musician their own track to sing on and play on."

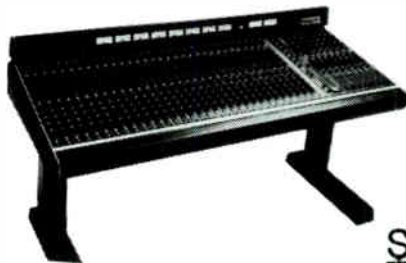
Producing a project that unites such diverse ingredients really put Phil Jones' production talents to the test. "Dexter [King] came to me with the idea of putting out a record for his father's birthday, which was just made a national holiday. We'd collaborated musically in the past, though not on this scale. Our first idea was to do a rap record, so we contacted the King of Rap himself, Kurtis Blow. Kurtis put us in touch with Melle Mel, Run DMC, and the Fat Boys. Before we had any idea of a song, Kurtis and I got some drum pattern ideas by laying tracks down. He'd program one drum machine and I'd program another, and we'd hook them up together to get both a Roland and a DMX sound."

With the roster of chartworthy artists lined up to perform on "Holiday," Jones had all the makings of a hit single. "What we needed," he explains, "was an incredible sound and focus to pull it off. So many projects lately have featured the collaborative style—Live Aid, Band Aid, etc.—and the last thing we wanted to do was to come in on the tail of that." Dexter King provided the focus, "to reach out to youth, and use post civil rights-era entertainers, who had not been participants in the '60s, but the beneficiaries of the movement led by Dr. King," Jones explains. "We incorporated new music elements into the sound and song, avoiding the negative elements of racism in the '60s. We wanted something small and sweet for kids, not something that was saying, 'Finally we're getting this holiday,' as though we were getting back at somebody. The celebratory sound of this record will offend no one."

"It's a positive record," adds Kurtis Blow, whose career is moving from premiere rapper to film star after his recent splash with movie stardom in *Krush Groove*. "I deeply and sincerely love the record." Part of the celebratory sound comes from the actual music, and perhaps more is derived from the content of the message itself."

—PAGE 137

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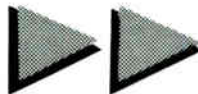


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PHOTO: KOOS FASEL

Wire Train back home in America (L to R): Kevin Hunter, Anders Rundblad, Brian Macleod, Kurt Herr.

WIRE TRAIN: Making Tracks Overseas

by Linda Johnson

BETWEEN TWO WORDS
Columbia BFC 40129

Produced by Peter Maunu; engineered by Ken Kessie; recorded and mixed at Motiva Studios, Vienna, Austria; mastered by Greg Calbi at Sterling Sound Studios, New York City.

Perhaps *Between Two Worlds* would have been a more fitting title for Wire Train's latest album, *Between Two Words*, as the band members left their San Francisco homes far behind last year to record in the distant land of Vienna, Austria. Here's a young, jangly-sounding rock band that only five years ago was practicing in the basement of an old, run down San Francisco movie theater, and today they've

"We were socially retarded. The only way we could communicate was through music, so we would just burn in the studio."

just finished recording at the beautiful, cathedral-like Motiva Studios in Mozart's home town.

The resulting album reveals a more confident, perhaps grown-up band. Next to the 1983 debut, *In a Chamber*, with its adolescent, "gnawing" sound that almost seemed to smother it in an effort to be enigmatic, *Between Two Words* expands a great deal. In using fewer words, more open structures in melody, and a slowed, less choppy rhythm section, the album exudes a refreshing "mobile" feeling.

"We wanted to get something more pristine, something cleaner, something more *religious*," explains singer/songwriter Kevin Hunter. "Most music here [U.S.] sounds a little bit over-produced, a little flat. We wanted things to ring out and speak more, so we went to a studio that had never had a rock band before; they were used to recording

classical music."

Producer Peter Maunu had previously recorded at Motiva Studios with his band, Group 87, and highly recommended the facility. And after checking out the facts and figures, the members of Wire Train realized that going abroad would actually allow them more creative and economic freedom than if they'd recorded locally. Thus, following one solid month of rehearsal, Hunter, his three bandmates—guitarist Kurt Herr (since departed), drummer Brian Macleod, bassist Anders Rundblad—along with engineer Ken Kessie and producer Maunu, all packed their bags and headed for a country known for its Sound of Music.

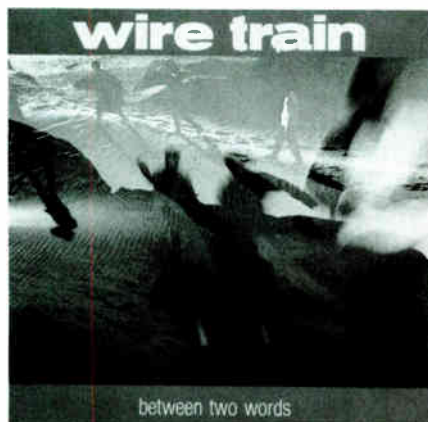
Arriving with nothing more than a few guitars, some smashed up cymbals, and a couple of pieces of outboard gear, the Wire Train assemblage began what would prove to be an educational seven weeks of fun, as well as frustration, both in and out of the studio.

"The whole feeling in Vienna was 'us against them.' We felt like a team," says engineer Kessie. "The album wouldn't have been as good if we'd done it in the U.S. because the band would've been going home every day to their friends, and we wouldn't have had the personal unity that we got overseas."

Personal unity indeed. All four members of the band, as well as Kessie, lived in the same apartment for the 51-day stay in Vienna. This, coupled with the fact that none of them spoke German, made for a very tightly-knit group.

"We couldn't communicate to any other people," laughs drummer Macleod. "The city was so calm and everyone was so reserved, and when we showed up, we were just loud and obnoxious American kids. We were completely removed. We were socially retarded. The only way we could communicate was through music, so we would just *burn* in the studio."

Though classical music can be dynamic at times, it seems rather doubt-



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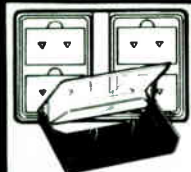
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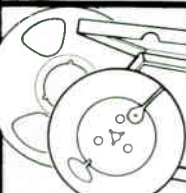
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PHOTO: LINDA JOHNSON

Kevin Hunter in a reflective moment
 onstage.

ful that the staff at Motiva had ever experienced musicians "burning" in their studio. "All the guys there were freaking out!" Macleod laughs. "Ken [Kessie] was pegging the meters, recording everything incredibly hot. All the Austrians were used to recording violins and stuff, and here I was hitting the snare drum 'PAAAAH! PAAAAH!'—and everything was completely pushed. They were very nervous, and eventually most of the staff

just kind of left the studio because they couldn't handle the way we were working."

Thus Wire Train, Maunu and Kessie were left in the state-of-the-art, 24-track studio, pretty much on their own. Had they been in an American studio, the session would most likely have proceeded smoothly, but before anyone could even strum a chord or bash a beat, several steps had to be taken to make the studio and equipment suitable for the recording.

"We walked into the studio the very first day," says Kessie, "and the first thing we did was listen to the monitors—NS-10s, which are pretty standard speakers in every studio. They sounded *completely* different, and we said, 'Oh, no!' We would play records from home that we were used to, and they had no top end, no bass, no headroom; this made us very nervous about what we were doing."

Kessie spent several hours tracking down why the monitors were sounding so bad, and found that they were driven by a tiny power amp with just 15 watts. Once this was remedied, the next feat was to rent guitar amps, a bass amp, and something very necessary for Macleod's sound: an entire drum kit.

"It is difficult renting because it's just not their own piece of gear," says Kessie, "and who knows, it could've

KEN KESSIE: OVERSEAS TRAINING

Ken Kessie has been an engineer/producer/musician since the mid-'70s. He worked as a second engineer at San Francisco's Automatt for several years, and has since worked independently with such artists as Herbie Hancock, Frankie Goes to Hollywood, Journey, Romeo Void, and Ronnie Montrose. And though his main interest is now production, Kessie still enjoys engineering, and was pleased to be requested for the Wire Train project in Austria.

"They had another engineer in mind," says Kessie, "but he couldn't leave at the last minute. That engineer recommended me, and because I had always been a Wire Train fan, I jumped at the opportunity."

Though thrilled that the project would take him overseas for the first time, Kessie had no idea what Vienna's Motiva Studios would be like, and because he had little time to prepare for the trip, he found out the hard way that European studios and equipment just aren't like the ones back home.

"We were closer to the Iron Curtain than to spare parts, common supplies, and 'taken for granted' audio gear," he says. But through the complications and mishaps he encountered during the making of *Between Two Words*, Kessie learned some of the do's and don'ts of recording abroad. Among his observations:

1. "Plan ahead. Don't assume on these foreign trips that the studios will have *anything* you're used to."
2. "Bring your own alignment tapes! I can't stress this enough, because people everywhere in the world have different reference levels. Also, bring any piece of onboard gear that you absolutely have to have for your sound."
3. "Compose a list—complete with serial numbers—of all the gear you take *before* you go over, and turn this in to the government so they don't try and charge you for it when you come back home."
4. "Never assume it will be okay. Be prepared to improvise—a lot!"

been dropped off a truck or something. And even if it does work, it's still not the guy's own equipment. So it holds the sound back a bit. I compensated for the problem through good engineering, by really sweating it out on the sounds. Sometimes when the band would say, 'Let's go—that's good enough,' I'd say no, and spend more time making sure the sound was right."

In fact, for the first several days at Motiva, Kessie and Macleod spent most of the time just moving the drum kit around the studio to locate the areas with the best acoustics.

"The studio was very bizarre," says Kessie. "All these arches and things, and at first I got fooled. I put the drums in a real live spot in the room, but there was just no tightness to the sound. So even though this was a rock session, we had to move the drums to the tight sections of the studio. We actually found a sweet spot. It had a big mirror across the back wall [see photo], and it made everything sound very bright and nice. Once we had it, I used this spot in the drum sound, the guitar sound, and in the vocals. This helped blend everything together."

A good meshing of sounds on an *album* is all good and fine, but when cutting *basics*, each musician would—in most cases—hear his own instrument ringing loud and clear in his



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headphones. At least that's the way they do it in the U.S.

"They only had *one* monitor mix!" says bassist Anders Rundblad, incredulously. "That was a very, very, very big problem. We laughed at them and told them they were crazy, a studio can't have only one monitor mix. And

they said, [with an accent] 'Vel, in Austria ve only haf vun monitor mix.' So what we ended up doing was putting things in stereo and lifting one side of the headphones off our ears. It was really crazy, but there was nothing we could do about it except go home, and we didn't want to do that."

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"You just have to do the best you can," says Kessie. "You can't say 'I'm not going to work.' I was paid to use the gear that was there, and to do the best with it." He pauses. "It was good, because I had to be more creative and work harder. Engineers can fall into style bags, where they always use the same things. This way I had to be a little more adventurous. The being nervous and sweating helped everything turn out well. It wasn't just going out and recording; we really had to work hard to get everything right first."

With the technical bugs ironed out, the band began cutting basic tracks, recording in an ensemble situation. The drums were then saved (except the toms, which Macleod later overdubbed in a different area of the studio, making for an interesting separation between the toms and the rest of the kit), and almost everything else was recorded later.

"Brian is an amazing drummer," says Kessie, "so the hardest thing for me was just to capture his dynamics and energy in the studio." Though a drum machine was used at first as a metronome, it turned out that Macleod was so precise that, in most cases, the band was better off without the machine. "When we turned it off, the whole band came to life," says Kessie.

Once the drum tracks had been



PHOTO: LINDA JOHNSON

Bassist Anders Rundblad

successfully cut, the rest of the instrumental recording went smoothly. Rundblad put on bass tracks, providing a solid yet thoughtful complement to Macleod's roomy drum sound. Producer Maunu was in charge of capturing

Herr's guitar parts, according to Kessie, who adds, "On every song, Peter would go out and work on the amps, and fine tune the guitar sound. He's a master with guitars, and he did a much better job than I could've done on my own." Maunu also added a touch of keyboards, bringing an unobtrusive and delicate elegance to the music.

At this point in the project, "the quality was coming out so good," says Kessie, "that we took a lot of time and care with the vocals." But before any vocals could be cut, Maunu had to send one of Motiva's engineers out to get a pair of pantyhose to use as a windscreen on the microphones.

"They had never heard of that in Vienna," laughs Rundblad. "When Peter told Gerhard to go out and buy some pantyhose, Gerhard just laughed, like it was a joke. And when he actually had to go out and buy some, he was so embarrassed. He'd never done anything like that before."

Once supplied with the proper lingerie, Kessie recorded lead vocalist Hunter using two mikes, each separately EQ'd and compressed.

"Kevin has a wide vocal range," he explains, "and I really wanted to capture the dynamics of his singing." Feeling that the first record didn't do Hunter justice, Kessie chose to bring



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the vocals much more up front on *Between Two Words*. "I also spent a lot of time encouraging Kevin," says the engineer, "because he's a much better singer than he gets credit for."

Hunter's technique?

"I'd have six liters of beer, and then I'd scream like this, 'AAGGGGGH-HHHHHHHH!'—for about a half an hour, and I also did Louis Armstrong a lot," he says. "And when my throat was completely trashed, I'd start singing, and I'd sing all night. At about six in the morning, we'd start getting takes."

With all the recording completed, Kessie was left with nine days for mixing, less than one day for each of the ten songs on the album. Had he been on his home turf, this probably wouldn't have been any cause for alarm, but America was thousands of miles away, as was proper leader tape, 12½-inch reels, and mixing boards with more than 32 inputs.

"I've always worked on big boards, so when we had to rent this outboard mixer with ten inputs, it was new to me," recalls Kessie. "But it all actually worked out fine. It was no big deal."

Considerably worse though, was the predicament the engineer found himself in next.

"It was a nightmare," he laughs. "We mixed the album down to half-inch analog tape, which is pretty standard in America. Well, in Austria this was almost *unheard of*. So the maintenance guy at Motiva had to make up a rig where he cut 2-inch leader tape into half-inch strips using three razor blades. He pulled miles and miles of the 2-inch tape through by hand! They also didn't have any half-inch reels. Americans would've just had this stuff all over the walls. So we just had to improvise—a lot."

Because of these complications, the project ran one day past schedule. The last few nights were long ones, as songs were put into sequence, personal cassettes and safety copies were made, and slightly different versions were mixed for TV shows and the French-language version of "Skills of Summer."

"I had a train to catch," says Kessie, "and we were still putting the album together!" As it turns out, Kessie managed to make both trains, the lateness of one allowing the completion of the other.

Since the release of *Between Two Words* last year, the feedback has been mostly positive nationwide. *Rolling Stone* called it "a wonderfully enjoyable record bursting with sincerity, talent and exuberance," and *Billboard's* college radio top 10 charts listed the album for several weeks.

But regardless of whether *Between Two Words* becomes a chartbuster, those

involved in the project expressed satisfaction with the final product, and all consider the trials and tribulations of the trip abroad to have been an integral part of the finished album.

"One of the best things about going to Vienna," says Kessie, "was the fact that, even though it wasn't comfortable actually living in one place, I got to know these people really well. Every night after recording, we'd go home—together—and sit in the kitchen, and we'd really talk about the music. We'd talk about what each song meant, and because Kevin's lyrics are kind of oblique and deep to me, I would try to figure out what the emotion was that he wanted to bring out in each song. And for this reason, I found that I got a lot out of being abroad with the whole band, living with these guys for seven weeks straight.

"There's a lot of depth in this project for me," he concludes, "and I'd do it again in a second, regardless of the problems and complications involved." He pauses, smiling. "It was worth sleeping on the floor for!" ■

SESSION EQUIPMENT FOR *BETWEEN TWO WORDS*

MICROPHONES

Bass drum: Sennheiser 421
Snare drum: Shure SM57
High hat: AKG 451
Overheads: AKG 451
Room ambience: Neumann TLM 170
Toms: Sennheiser 421, AKG 451, Neumann TLM 170
Guitars: Beyer M 160, AKG 451, Neumann U87
Guitar ambience: Neumann U87, Neumann TLM 170
Vocals: Neumann U87, U89, AKG 451, Shure SM57
Background vocals: Shure SM57, Neumann U89
Acoustic guitar: Neumann U87

RECORDING GEAR

Keyboard: Ensoniq Mirage
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VIDEO NEWS

by Elizabeth Rollins

Quote of the Month:

"I grew up before video clips—when we used to just do drugs and close our eyes..."

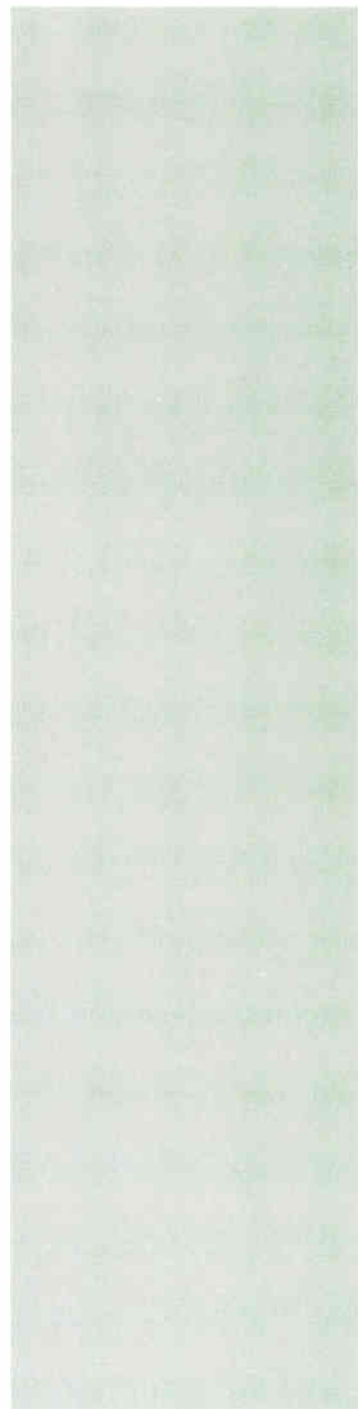
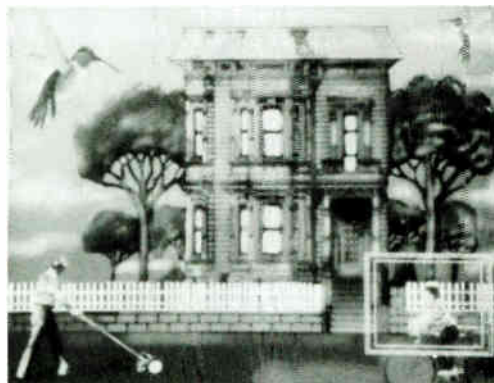
—Greg Kihn, musician, speaking on the "Artists" panel at the Billboard Video Music Conference, 1985.

First, a Hit Of Hardware:

Ampex is now competitive in the video painting/graphics race with the new **AVA-3 system**, which began shipping early this year. If that name rings a bell, the AVA-3 has been demonstrated at trade shows for more than a year; it's been up and running at several European facilities during that time. Stateside, **WHAS-TV, Louisville, Kentucky** (which also houses a commercial production company called Louisville Productions) has played test site for eight months. Artist **Kathy Galvin**, who uses the system daily, describes how the AVA-3 helps her turn out sophisticated graphics for three daily newscasts, plus promo material: "It's not really just a paint system, though I use it in the way people might use one of those. It's a video manipulator. I especially love one mode—the Layout mode. You can create data bases of graphic frames, and they can be modified within one minute—color, shape of the picture elements, composition—you can pick individual components of layout and re-shape, re-size and re-color almost immediately," she explains.

With an impressive resolution spec (708 visible and 768 total pixels per horizontal line) the AVA-3 can create irregular-shaped keys without a raggedy-edged look, according to Galvin. "Some people might argue that on TV, it doesn't matter if you've got 500 pixels or 700 pixels per line. That it doesn't matter by the time the picture gets to the home TV screen. But I just think the higher resolution does make a difference, especially if your company does high-end graphics for non-broadcast, too."

The AVA-3 was designed to talk to other Ampex creatures. For example, the artist can remotely control an Ampex VPR-3 one-inch video tape recorder from the keyboard. At WHAS, the AVA-3 is hooked up to an ESS-3 still store system. Galvin says these inter-



Four samples of the extensive graphics and image manipulation capability offered by the Ampex AVA-3 system. Resolution is rated at over 700 pixels per line.

faces save significant time, particularly under tight news deadlines.

Some other important features include: 3-D ADO-like perspective capability, unlimited color palette and picture magnification of up to 64 times.

Bosch's Quartercam finally to ship:

If you've been holding your breath for the *Quartercam*, you probably turned blue sometime in mid-1984, and may have finally passed out in an empty shrimp boat at NAB 1985. More than three years ago, *Bosch* first demonstrated this quarter-inch *Line Plex* format, which combines camera and recorder in one piece. Yes, you long-suffering hand-held cameramen, it's a dream come true: 15 pounds total weight with a cassette nearly as small as an audio cassette. *Bosch* says it takes pictures that compare with one-inch video.

According to *Bosch's Al Jensen*, the *Line Plex* format itself is a component recording technique which uses time expansion and compression, followed by time division multiplex of the luminance and chrominance; a twin channel system records one field for every 180° rotation of the scanner head wheel. The quarter-inch tape has two audio tracks and a separate time code track.

Jensen promises that at this year's NAB (April 13-16 in Dallas), *Bosch* will actually be taking orders on the floor instead of projecting shipping dates.

Now for the Software: Video Subscription Services Expanding:

Splashing around in the *Rockamerica* video pool... we are relieved to report that now one can combine two of the most popular passive pleasures of American life: getting that California tan indoors, and watching mu-vids. Furthermore, one can eat, shop, lift weights, fly, and presumably, sleep to the tune of customized clip programming.

Music video subscription service *Rockamerica* and foreground music supplier *Audio Environments, Inc.* have allied to produce and distribute this programming to tanning centers, restaurant chains, fashion outlets, airlines and athletic clubs. (We can't wait to have something to watch in the elevator on the way up to the penthouse.)

"This agreement expands the number of places where music videos can now be seen to include a whole new segment of the marketplace," according to *Rockamerica* president *Ed Steinberg*. His company has heretofore supplied monthly clip service to clubs nationwide.

Rockamerica will package the soft-

ware for these estimated 1,700 new retail and service environments, while *AEI* will consult subscribers on hardware installation and effective display.

Meanwhile, as rival vid-pool *Telegenics* celebrates its third birthday this month, president *Chris Russo* announces new original product, and plans for market penetration into Canada.

If you're a funky club-hanger-type, you probably have already seen some of the 17 hours of ambient video montage programming *Telegenics* sells to a broad range of clubs nationally. There's "Mystery Night," "Comedy Night," and "The Three Stooges," comprising film and cartoon footage, for example.

Last year, *Telegenics* experimented with a half-hour dance club video called *116 IPM* (Images Per Minute). A synchronized rhythm track thumps along at 116 beats per minute to give the VJ a constant track to mix and stretch tones that don't have video. The images are mostly your basic gut-level-recognition pop culture icons: Marilyn, Ronnie, Bugs, Felix the Cat, plus some graphics.

Russo says 116 IPM was a marketing test, and that when the results were in, he and partner *Tom DeIeso* used the feedback to produce the second piece: *130 IPM*, which is available this month.

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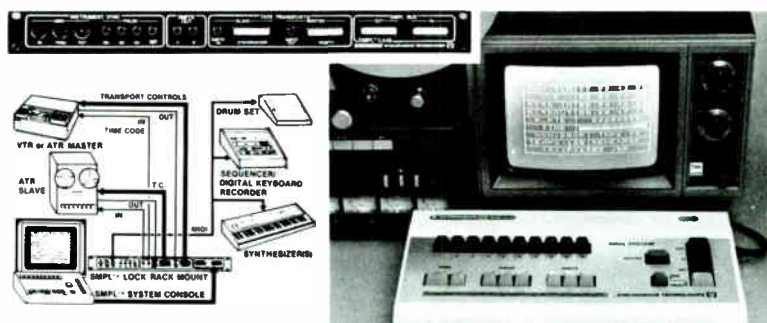
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actual dance track instead of a bare-bones beat track, according to Russo.

"There are lots of clubs out there with expensive video screens and there are a lot of records with no video," Russo says. Clip burn-out, or just plain bad clips can drive a VJ to peel off that stale video track and slap on some flashy new visuals.

But hey you Contemporary Adults: Telegenics has new programming for the more conservative club environment. Enter *Lounge-o-matic*, a three-and-a-half hour tape of AC/CHR muvids designed for the club owner who targets that crowd, and who doesn't have a VJ.

Another main clip subscription service, *Wavelength*, has unusual news. On December 1, 1985, Wavelength lowered its monthly service fee from \$200 to \$125 for a single one-hour tape, and \$200 for two separate one-hour compilations. Why? 1985 banner year business, according to the company's newsletter.

Environment programming is gearing up to offer increased marketing options for a variety of short-form entertainment product. Four years ago, video pools may have appeared to some to be shoestring start-ups offering esoteric club fodder. Now, each of the main services appears to be developing distinctive programming ideas with

targeted marketing plans. Hang onto your sub-conscious—programming is everywhere!

Update: Facilities, Production Companies:

You've heard of kid vid. Now there's pre-kid vid. *The David Tower Company* of Portland, Oregon is posting a four-program series called "*Toddler Video*," distributed by *Vestron Video*. Before a three-year-old decides she wants to be a fireperson, she gets to look at a variety of occupations to see what a pilot, policeperson or an astronaut does on the job. Target age group is two to four years.

Michael Nesmith's 12-year-old *Pacific Video Arts* of Carmel, California has dropped *MCA Distribution Corporation*, and has created a new nationwide distribution network. Their first test of this new system is last month's release of *Hank Williams, Jr. — A Star Spangled Country Party*. Williams' first home video was shot live aboard the USS Constitution, and features appearances by *Waylon Jennings, Jessi Colter, Earl Thomas Conley, and Gus Harden*.

Los Angeles-based music video production company *Flora Films* announces representation in New York City by *Geoffrey Ingalls of Ingalls, Inc.* Flora Films offers such directors as: *Jules Lichtman* (Jeffrey Osbourne, Gary

Morris), *Mary Guida* (Night Ranger, The Commodores) and *Sherry Revord* (REO Speedwagon, George Clinton).

Producer/director *David Marsh* just finished shooting one of the first features to use BetaCam exclusively. *The Lords of Magick*, destined for television and home video release, will rely heavily on video post-production techniques to be done at an unnamed facility in Los Angeles. Marsh claims the project incurred fully half the expenses of a comparable 35mm film.

Prime Time Ticket Network, a national cable sports network that went on line in October, has selected L.A.'s *The Post Group* to handle all post-production. The network is a joint venture of *Jerry Buss* and *Bill Daniels*, and operates six nights weekly from 5 p.m. to 11 p.m. (Pacific time). Coverage includes basketball, hockey, soccer, boxing, tennis, and a variety of college sports.

Sacramento, California has a new video post-production facility. Last September, *Phase 3* began offering 3/4-inch on and off line editing. Phase 3 is capable of generating computer graphics for logo tags, some animation, charts, and graphics. Multi-track audio sweetening features effects such as digital delay, parametric EQ, and reverb. Post-editing pleasures include a sauna and jacuzzi. ■

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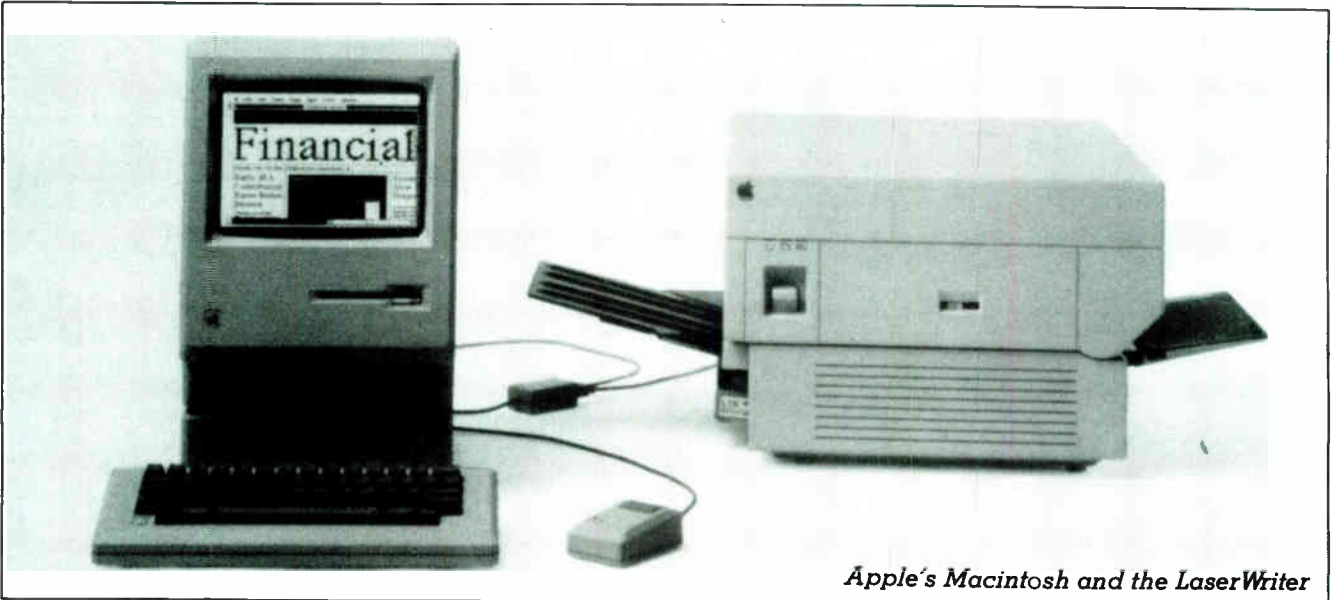
What's more, there's an eleven key, slide-out, mini keyboard to enter or read data and check system operation, plus a seven segment eight digit LCD readout.

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Apple's Macintosh and the LaserWriter

WORKING WITH THE MACINTOSH IN THE VIDEO STUDIO

by Lou CasaBianca

Overview

The promise of the Apple Personal Computer has ripened into the Macintosh, "The computer for Everyone else." There are currently two contemporary standards in personal computers: the Fortune 500 business standard is the IBM-PC and its clones; number two is the Macintosh. Beyond words and numbers, the Mac has opened up art and drawing on the personal computer to the private person and the production studio. Mac supports some of the most innovative hardware and software designed for creating and producing music, graphics, and business management. It's a compact system that can be programmed to become a typesetter and printer for desktop publishing, a calculator, a camera, a projector, a T-square, an animation stand, a music notation system or a video production

controller. Its 9-inch, black and white high resolution video screen and 3½-inch microfloppy disk drive keep the Mac compact. It weighs 20 pounds and is packaged in a 10"x10"x13" case.

Systems Under Mac's hood is the impressive circuitry of the Motorola MC68000 Chip. Mac's brain works eight times faster than computers like the Apple II (See the November 1985 *Mix/MVP* for more details). Mac's screen has more picture elements, or pixels, than any other personal computer - 175, 104 (512 pixels high by 342 pixels wide). Square pixels help Mac provide a better display with greater clarity and a sharper image. The ability to handle color was built into the Macintosh, but not made available in the initial release. The computer can send color information to printers and to color monitors. Over 500 program routines are stored in the Mac's ROM (Read Only Memory) core permanent memory. Its RAM (Random Access Memory) capability can be

upgraded from 128k (the Standard Mac) or 512k (the Fat Mac), to one megabyte (the Mega Mac) or two megabytes (the Monster Mac). Easier and safer to handle than the typical 5¼-inch traditional floppy, the Mac has one internal 3½-inch disk drive. It can handle an additional external drive and/or hard disk. The more additional memory, the more power and speed. The rest of the Mac package includes the mouse; the keyboard; imagewriter printer I or II; external or internal hard disk drives; 300 and 1200 baud modems; carrying case; and optional hardware and software.

Pictures, Text and Numbers

Apple and independent developers have designed software for creating pictures, numbers and text. Application programs such as MacPaint and MacDraw are for sketching, storyboarding and drafting. MacWrite is Apple's word processing software and comes with the Mac along with MacPaint, a quick reference manual and an audio cassette-floppy disk guided tour designed to help get you "up to speed" on the system within hours. MacWrite provides electronic typesetting. Variable fonts, style, and sizes can be used to create a business plan, advertising copy or a rate sheet. MacPaint is like an electronic easel and palette. It provides all the tools needed to create a logo design or black and white artwork. MacDraw is an electronic drafting table; it utilizes a size and proportion variability, structured graphics editor, and rulers and grids for layout

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MacWrite, MacPaint and MacDraw are complementary programs that work with each other and most special application packages. New versions of these programs are released periodically incorporating upgrades and enhancements. There are some limitations in speed or capacity, but in general no computer operating system is as inviting. The Clipboard and the Scrapbook features help move data from one program to another. The audiocassette Guided Tour of Macintosh is all you need to get started.

Word Processing

Starting-up the system and organizing files and disks is the first step in a learning curve that includes: text and file manipulation, transferring files, copying disks, the "Disk Copy" utility, renaming disks, files and folders, write-protecting disks, erasing disks and files, disk space management, preparing working disks; and managing documents.

MacWrite In the process, you'll learn how to move files and images around: moving data from MacPaint to MacWrite; moving data from MacDraw to MacWrite; moving data from MacDraw to MacPaint; and moving data between documents of one application. Microsoft's Word is a more sophisticated text processor. Features include multiple windows, a glossary, automatic foot noting, a merge facility and reading of MacWrite files. On most computers, word processing is little more than electronic typing; with the Mac, word processing can become typesetting, allowing you to totally design the look of any document.

Graphics

The treatment of graphic design for custom and generic applications is one of Mac's most appealing capabilities. Understanding the differences in the tools available to handle the application you have in mind is the key to getting maximum productivity from this computer.

MacPaint, developed by Bill Atkinson for Apple, is the essential Macintosh graphics software. To use it you will be learning about: getting in and out of MacPaint; the MacPaint work space; the organization of objects; windows and drawing sizes; dealing with the whole drawing; drawing to scale; changing the size of objects; comparing and contrasting MacPaint shortcuts; the polygon; clear selection; undo and redo; choosing lines and borders; and the trace edges feature.

MacPaint technique comes quickly because of its friendly dialogue box instructions that lead you through your application. Within a short period of

time, you'll be using custom repeating shapes; custom brush shapes; text in reverse; transparency; and fill and refill commands. You can build a library of graphic effects by creating a file of custom patterns, creating custom borders, creating bas-relief, shadowed text, concentric circles, shading, custom lettering, and frames and ornaments. You can "roll film" and animate a storyboard with full frame animation using Hayden Software's VideoWorks. Slide Show Magician can help you prepare and evaluate a slide show.

Macintosh User Groups, electronic bulletin boards, and a number of new Mac publications provide a continuous flow of MacPaint tips and advanced techniques for applications such as moving large MacPaint drawings, and advanced uses of the software.

MacDraw Computer-aided drafting. By using MacDraw's custom rulers and grids you can draw complete design elements. For example, its layering-organization orders shapes; fill, lines, pen; and layout items. Mac's video monitor capabilities allow you to put graphic items together, creating perspective drawings that can incorporate text. Imagine if you or someone you work with were to take the time to learn how to use this package. You could become a creative and business computer graphics "expert" in the many uses of Mac art and technology: graphic arts, logos, business cards, letterheads, announcements, post cards, advertising layouts, advertising flyers, business graphics, graphs, charts, maps, design work, product

(Below) Sample of laser printed copy created with the Apple desktop publishing system. (Right) Sample of the MacDraw software's chart and graphic production capability.

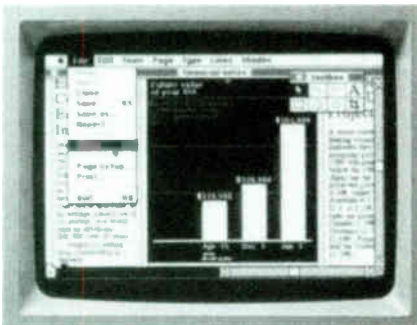


design, engineering design, architectural design, interior design, circuit design, printing and publishing, page layouts, cover design, books and manuals, illustrations, story boards, and slides.

It is important to remember that you do not have to be an artist or an illustrator to use this software. You can work from original artwork, tracing with the Mouse or use transparencies. Once the "technique" is refined, you can establish your own methods. MacDraw is capable of producing a 4-foot by 8-foot drawing, blueprint or project schedule. Large pictures used to communicate projects tasks and schedules are an invaluable communications device. Using camera-generated images permits you to bring in a frame of video, which can then be re-shaped and treated as desired. A digitizer pad allows you to sketch and do "write-ons" and provides free-form access to the screen with an electronic stylus. MacDraw is a phenomenal design tool that is remarkably accessible and easy to use.

Integrated Spreadsheets

Lotus Jazz, Microsoft's Excel (replacing Multi-plan), and Paladin Software's Crunch are the dominant spreadsheet programs for the Macintosh. Lotus is more fully integrated in that it contains word processing, spreadsheet, database, graphic and telecommuni-



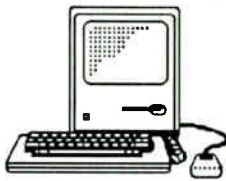
cations capability in one package. Excel is easier to use. It does not have a wordprocessor as part of its integration, relying on Word or MacWrite to handle those functions. However, it does provide significant Macro command capabilities, so that a string of repeated and detailed entries can be easily coded under a macro or single master command instruction. This eliminates tedious, repetitive re-entry of data. Crunch is designed to handle intensive number and statistical manipulation. It is more difficult to use than the others, but provides massive statistical computing power.

Desktop Publishing

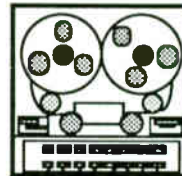
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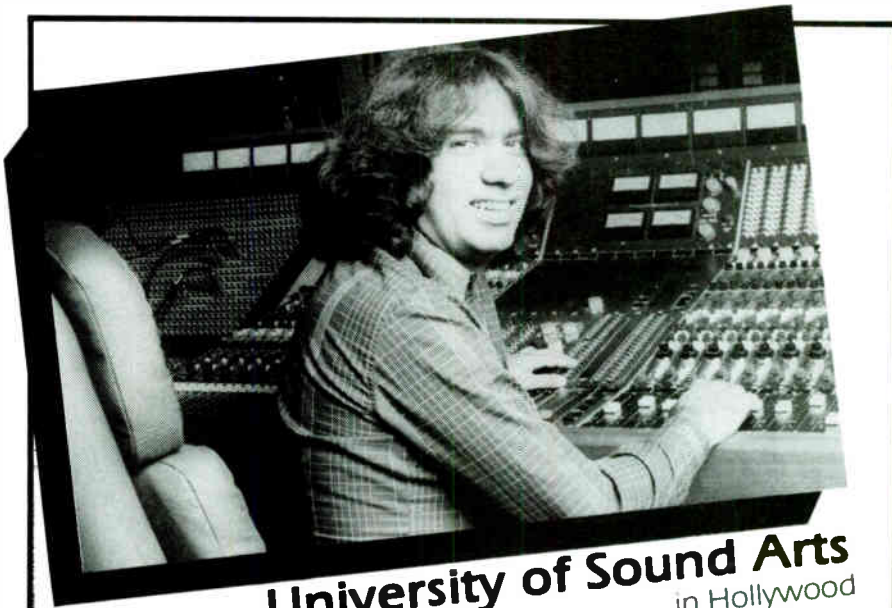


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If you are working on a proposal or a script, for example, you can make high quality graphic presentations, create illustrations, even if you're not artistically or graphically inclined. Use of software like MacPaint and MacDraw for the visuals allows you to combine your pictures with text created by using software like MacWrite or Microsoft Word. The LaserWriter provides lithographic print shop quality. Making changes is accomplished by altering the design on the Macintosh screen, instead of starting your drawing over, reducing the cost of pitches and improving responsiveness to your clients, while reducing your dependency on outside suppliers. Another bonus is that more time can be spent playing with ideas, and less time putting them into presentable form.

Desktop publishing system is both a presentation tool and a creative tool. Let's say you want to see four or five variations on a page layout or a logo. You no longer have to make five or six different drawings. In less time than it would take to rough out one idea the old way, you can use the Mac to make multiple copies of the original, and then alter them, using tools like the on screen pencil, eraser, and paintbrush. Page-composition software, like Aldus Corporation's PageMaker, creates layout pages using the actual copy, and actual typefaces you intend to use, such as Times or Helvetica, with variations on as many different font sizes and column widths as you like. Illustrations in 20 different sizes can be done on the screen, eliminating the need for making photostats. Instead of creating new grids every time you start a new storyboard design, you can store them electronically, so they're always there, in storage and ready to use. You can also store illustrated scripts for each client's project, and easily modify them whenever a new change is made.

When you transfer copy to a page-composition program like PageMaker for automatic fitting into the layout, you can quickly see whether a proposal needs to be lengthened or shortened. You can make the changes quickly, no longer dependent on the typesetter's schedule for revisions, new galleys, and corrections of cor-

rections. You can use MacDraw or Excel software to create charts and graphs. MacPaint and VideoWorks can be used to edit photos and illustrations brought in through a digital scanner, incorporating your visuals into the layout. A print command to the LaserWriter will create high quality output, good enough to distribute in limited quantity or to provide to a printer for duplication.

The LaserWriter prints on almost any paper—from your company's letterhead to plain copier paper—in letter, legal or international sizes. It can print on transparencies, for creating presentation overheads, and on labels and envelopes. So you can create publication-quality printouts of virtually anything you can put on a Macintosh screen: reports, newsletters, business forms, storyboards, proposals, flyers, manuals, presentation overheads, layouts and designs. The LaserWriter comes with four built-in typefaces: times, the typeface used by many newspapers; Helvetica, the standard for business forms and technical documentation; Courier, a typewriter standard; and a symbol font, with scientific and greek symbols. (More typefaces will be available this year.) The fonts can be printed in a variety of styles, such as bold for presentation overheads, italic and underlined, outline and shadow for special effects.

Desktop Publishing may turn out to be one of the most important applications of the personal computer in studios and business. It allows independent consultants and business people with ordinary skills to create and produce extraordinary communications. It saves money and time with maximum creative and quality control. All kinds of jobs that had to be done outside before can be done in-house now, from complicated storyboards, sales proposals, and set designs, to high-profile marketing communications.

Printers

The original Macintosh Imagewriter Printer has been replaced by the Imagewriter II. The difference is that the Imagewriter II is expandable, available with a sheet feeder, can support the AppleTalk local area network connection, and can print in color. It is also available with a 32K print buffer which allows computing capability while printing. The Apple Laser Printer provides the sharpest printed image for the Macintosh. While more expensive, the laser printer provides the capability of a typesetter, even producing inexpensive camera-ready mechanicals of graphics and text. Most Apple dealers make a Laserwriter printer available on a "print-out while you wait" project basis. ■

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LIVE OAK STUDIO

The Dream Comes True



Live Oak owner Jim Gardiner at home in the control room.

by George Petersen

In any endeavor, from starting a business to cutting an album, things rarely come out exactly as one expects them to happen. Such is certainly the case with Jim and Priscilla Gardiner, owners of Live Oak Studio. They originally wanted a small home facility for Jim's production work, but four years later, they now operate a thriving commercial studio in their house, located near the picturesque Live Oak Park in Berkeley, California.

Designed by Randy Sparks of RLS Acoustics (San Francisco) and equipped with an MCI 24-track recorder and automated MCI console, as well as a variety of computers and synthesizer gear (including a Kurzweil 250), it is hard to imagine how all of this began as a small operation. "But what happened," Jim explains, "was that we ended up putting more and more money into the studio, and as word got out, people started calling us about bookings."

In fact, Live Oak is anything but a "typical" basement home studio, and is instead put together as a first-class facility. "We bought the house with the studio in mind," Jim recalls. "It had everything we needed—it's

on a corner lot and we occupy a good eighth of the block—but we had to totally re-do the house. The studio was built into the house's servant quarters, and we had to excavate an extra 13 feet."

While the studio makes extensive use of its computer systems, Jim freely admits that he had some misgivings about the technology at first: "I had never looked at a computer or intended to use one before—I felt that it would take away from being a musician/composer—but because of synthesizers and the way they've changed, you can still keep what you like as a player and let the computers take the place of older sequencers, such as the MSQ and the DMX. The computers are very easy to operate, if you sit down for one day and read: it's all there. It's a learning process."

An Apple Macintosh was chosen to go with the studio's Kurzweil system, for storing programs and patch changes for both the 250 and Live Oak's other synths. The Mac goes far beyond mere librarian functions, Jim is quick to add. "There's some new software, called The Performer, by Mark of the Unicorn (Cambridge, MA). It's a sequencer that works, and works really well. It's beautifully

mapped out; it has unlimited tracks, note swapping, deleting, and control over MIDI parameters. Mark of the Unicorn also has a Professional Composer option, with manuscript quality writing: all of the rests and stems go where they're supposed to go, and the notes actually look like notes."

The studio's IBM system is also kept busy, not only for Priscilla's business operations as studio manager, but also for storing data from their Sound Workshop Diskmix automation, and running a Jim Miller Personal Composer program for notation and quick sequencing duties.

"We're now putting in a synthesizer/computer facility in the attic, about five stories up, with 24 tie lines to the studio. Synthesizer programming on the Macintosh can either be synched or dumped to the IBM in the control room. Plus the attic is enormous: we can probably fit a 15-piece string section up there," Jim adds, obviously pleased with the new acquisition.

"Another one of the things we're working on here is incorporating a modem into the studio, where you can send your programs, mix and MIDI information, and load all of this into the IBM. You could actually phone in a project, and give me your Visa card number (laughs). We can joke about this, but there are actually people out there who are doing this kind of thing: an artist could do a project from his living room, and never have to see a studio."

Yet with all this computerized gadgetry at his disposal, Jim doesn't see Live Oak as being typecast as a synth-only studio. "One of the reasons I built a studio of this size is because I wanted to have people around. Originally this was going to be a synthesizer room, but after spending days in a room with synthesizers, you start to lose that human contact. So these days, it's nice to bring a real person in to do a part even though you could do it yourself with sampling."

This human aspect carries over strongly into Jim's philosophy of running a studio. "The most important thing is being a player, and Priscilla is a player too. The way you talk to players is a little different than the way you talk to businessmen. Someone who owns a studio can say the wrong thing to musicians and turn them off. Players that work here know that what's important to me is being able to make sure that their projects here are successful." ■

WHEN YOU NEED FACTS ABOUT PROFESSIONAL AUDIO EQUIPMENT

There is hardly another business on earth where there is so much disagreement about the tools of the trade.

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World Radio History



PHOTO: BROOKE COOPER

(L to R) Kurtis Blow, Lou Gonzalez and A&R man Tony Prendatt at Quadrasonic Sound Studios.

—FROM 121, HONORING DR. KING

"The record conveys a message to motivate, inspire and educate listeners in the teachings of my father," explains Dexter King. "The lyrics tell you to put your hate away, in an official,

living memorial to my father's ideals. This is a celebration of life, and those who don't know the impact that the civil rights movement had will be educated, while those of us who do know will be reminded." ■

—FROM PAGE 109, FISHBONE

out we liked the same music, liked to go to the same shows, etc."

In true punk spirit, many of the Fishboners (who in addition to Fisher and Dowd include trumpet player Dirty Walt Kibby, singer Angelo Moore, drummer Fish, and guitarist Kendall Jones) at first didn't even own instruments. "Everything happened really slow," Fisher relates. "People would get things, borrow things... Three years ago is when it finally started to pop, and then we started playing clubs two years ago."

Producer David Kahne (Romeo Void, Bangles, Rank and File) caught Fishbone's radical act around the time they were paying their club dues, and according to the boys wanted to sign them on the spot. They were understandably skeptical.

"He wanted to go to parties with us, hang with the fellas and stuff," Fisher recalls. "We kept blowing him off, [because] we were doing crazy stuff."

Kahne did manage one night to come along for the ride when the wild young things decided to drive down to Mann's Chinese Theater in Hollywood "and try and buy tickets in the nude." (They were unsuccessful, as it happens, and "booked out of there" under the threat of arrest.)

Far from being put off by Fishbone's antics, Kahne only redoubled his ef-

forts to sign them. Finally, as Fisher tells it, "We just gave his card to our manager, and had him follow it up."

Kahne got his wish, and Fishbone ended up with a self-titled EP on Columbia Records last spring. They've been touring off and on ever since, exposing more and more folks to one of the highest-voltage shows in captivity.

Live in concert, Fishbone expend enough libidinous teenage energy to power all the air conditioners in their home town throughout the month of August. It's like Funkadelic meets the Specials at Frank Zappa's house and they all go to a Black Flag concert where Judas Priest is the warmup act.

The lads take on Ronald Reagan point-blank ("Ugly"), make some tender observations about romance ("Lyn' Ass Bitch"), fret about the bomb ("Party At Ground Zero"), sneer at their peers ("Another Generation"), and act their age ("Voyage to the Land of the Freeze Dried Godzilla Farts"). They sing, play, scream, dance, collide, go nuts, till the whole thing threatens to go out of control—then pull it back together with an icepick-sharp horn riff, a burst of vocal harmony. In this era of calculated, over-produced, prefab pop, these guys blow through like a tidal wave of anarchy.

Dowd devises an elaborate metaphor to describe Fishbone's crazily layered sound: "It's like making up a bed,"

he says. "You put down one sheet, you put down another. If you want an electric blanket, you put one down there. If you want a comforter, you can put one of those on there, too."

"It's what you make of it. Like the lyrics. If you hear a political message in it, it's a political message. If you hear, 'I want to go out and get laid Saturday night,' it's that for you."

"There's a lot of making fun of ourselves in what we do," adds Fisher. "It's kinda like, look in the mirror and giggle a little bit, y'know? Kinda chuckle at yourself." Would that some of Fishbone's older more pretentious contemporaries would do the same once in a while.

The way in which Fishbone came by their name is a tale in itself. "Robert Guillaume did an episode of 'Good Times,'" Fisher begins, "where he played this wino named Fishbone. In the episode he faked his own death and went to his own funeral as his widow. He never lifted his veil."

"But then somebody lifted his veil and they saw it was him, and everybody got all pissed off and started giving him shit. So he said, 'When I was dead, everybody loved me—why won't you love me now that I'm alive?' and everybody started giving him more shit. Finally he got through to them, and he said, 'Why don't you tell me you love me?', and then everybody started singing this song, 'Fishbone, we love you, we love you, Fishbone.' And we said, what better name for a band?" What better indeed? It's so obvious it's scary...

Unorthodox as they are, the members of Fishbone don't want to be relegated to the nether reaches of cult-dom forever. "We understand that we're not exactly gonna be a Madonna," admits Fisher, "and we don't care to be. All we want to do is create our own Fishbone market."

"We watch other bands, and we don't want to create that same old excitement—we want a different kind," puts in Dowd, who then lapses into his own peculiar tongue: "It's real spontaneous, loosous, miximous—"

"We want," interjects Fisher, "to sound like a locomotive train the size of Mt. Rushmore—"

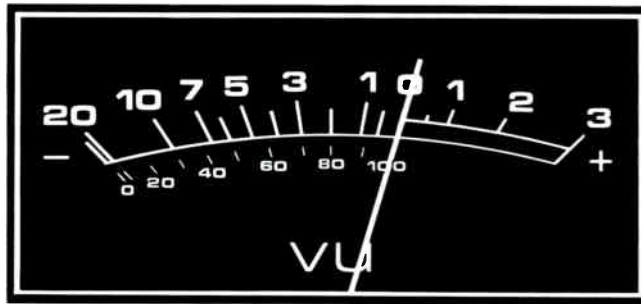
"The Rocky Mountains," corrects singer Moore.

"—just, you know, going through an even bigger tunnel. In a thunderstorm."

"And whether the music be funk, ska, reggae or punk," Moore intones, "it gotta sound like that locomotive. It gotta groove, no matter what kind of music it is, it gotta groove."

"What you see," says Dowd, in a nod to his elders, "is what you get. And you ain't seen nothing yet." ■

INDEPENDENT



ENGINEERS & PRODUCERS

PHILIP ADLER

Engineer

ALL NITE LONG

21 Gartland St., Jamaica Plain, MA 02130

(617) 524-0221

Credits: Live: Pat Metheny, Jane Oliver, freelance around New England. Studio: Face to Face (Epic), independent New England releases, major label demos and pre-production. **Services Offered:** Front-of-house live mixing, remote recording, 8-, 16-, 24-track studio recording and production.

RICHARD ADLER

Engineer & Producer

RICHARD ADLER RECORDING SERVICES

P.O. Box 21272, Nashville, TN 37221

(615) 646-4900

Credits: Dolly Parton, Ricky Skaggs, John Hartford, Neil Young, New Grass Revival, Osborne Bros., John Starling, Shel Silverstein, Tracy Nelson, Natalie Cole, Bill Anderson, Sam Bush, Bela Fleck, Norman Blake, "Doc" Watson, Virginia Squires, Bluegrass Cardinals, Country Gazette, Doug Dillard, The Dillards, Vassar Clement, Patsy Cline, Cybill Sheppard, Ray Griff, Jack Rowland & the Breakers, Steve Christie, Nashville Contemporary Brass Quintet, Blair String Quartet, Telluride Festival Albums (2).

Services Offered: Analog & digital recording and mixing, records, video, film, and Compact Disc. Studio design and construction, over 17 years experience in all phases of audio recording. Remix specialist for album projects, extensive microphone collection and outboard (tube) gear on hand to meet the most demanding situations. Production or co-production for pop, rock, jazz, and acoustic music projects.

CHARLES ALBERT

Engineer & Producer

DRAGON STUDIOS

100 Fifth Ave., Redwood City, CA 94063

(415) 366-5575

Credits: Engineer, mix and/or produce: Slant Slep (EP), Strange Toys (single), Aircraft (LP—Catro Records), Sheets (EP), Access (LP), Tuck & Patti w/Bobby McFerrin (live), Nightstalker (EP), Russel Walker & Ira Stein, Windham Hill Records, Friday Night Music, New Ice Age, Heart City (Soundtrack), System, Tufty, Tommy & the Hots, Tonight.

Services Offered: Owner, engineer, producer. Dragon Studios 2" 16-track facility. Studio/engineering/production packages available—cassette duplication, artwork and graphic design, assistance in record mastering and production. Services available on spec for select projects. Twelve years background as professional musician—guitar, keyboards and flute—available services include LinnDrum programming, synth programming and voicing. Available for independent engineering, production, and session work.

STUART J. ALLYN

Engineer & Producer

ADR PRODUCTIONS, INC.

325 West End Ave., New York, NY 10023

(212) 486-0856

Credits: Hall & Oates, Billy Joel, Aerosmith, Donald Fagen, Placido Domingo, James Galway, Berlin Philharmonic Orchestra, Mel Lewis Orchestra, Lionel Hampton, Toto, Julio Iglesias & Willie Nelson, Maureen McGovern, TV 2000

Following is a list of independent producers and engineers who responded to our recent survey. The information was supplied by those listed, and thus *Mix* is not responsible for its accuracy. We urge other independent producers and engineers to get in touch with us in order to be included on our next update.

(Syndicated), Buddenbrooks (PBS), Tony Awards Show (ABC), Olympics (ABC), Major League Baseball (NBC), Camelot (HBO), etc.

Services Offered: We can oversee your entire project from start to finish or work on one aspect. Our 12 years of experience has covered: albums, videos, concerts, TV, film, theater, radio and advertising. We have associations with large and small studios, musicians, etc. and can supply the following services for any production at the right price: pre-production consultation (budgeting, studio bookings, scheduling, instrument pre-programming, etc.); recording and engineering services (analog and digital); production services (composition, arranging, scoring, contracting, etc.); location recording (audio, video, film); equipment and microphone rental (including our extensive collection of vintage tube and ribbon microphones); location sound reinforcement; mixing; mastering; post-production (video, film); jacket design and layout; plating, manufacturing and more.

GREGORY ALPER

Engineer & Producer

ALPERTRACK STUDIOS

ALTA VISTA MUSIC PRODUCTION

77 Warren St., New York, NY 10007

(212) 349-8095

Credits: Produced, composed, arranged, performed records: Greg Alper Band, *Adelphi* (Billboard Pic); Johnny Copeland, *Rounder*; J. Beck, *Global*; Atlantix, *Wave*; Lovelace, *Lovelace*; Chesno Straiter, *New Leaf*; Healing Gems, *Gem*; Jingles and A/V: Aamco, WPIX, AT&T, Chams, New Jersey, MTV, several independent films.

Services Offered: Sizzling sax solos (a la Jr. Walker, Mike Brecker), composing, producing, arranging in all styles: dance, rock, pop, jazz; commercial and film scoring, drum and keyboard programming. Studios: state-of-the-art 8-track, Soundcraft 24 channel board, Emulator II, digital mixdown, digital reverb, digital delay, digital drums, cuacarracha.

JIM ANDERSON

Engineer & Producer

86 Dexter Ave., Watertown (Boston), MA 02172

(617) 926-6914

Credits: Livingston Taylor, Girls' Night Out, Koodoo, Life on Earth, Young Rationals, Curious Figures, Men and Volts, Native Land, Nephew Brothers, Group Five, Jess Leery, Evan Harlan, Pleasure Pointe, Larry Gould.

Services Offered: In addition to engineering services and record production, I can assist with pre-production, including rehearsals, instrumental and vocal arranging, talent coordinating and session planning.

ANGELO ARCURI

Engineer

A. BABY PRODUCTIONS

18653 Ventura Blvd., Ste. 257, Tarzana, CA 91356

(818) 505-0720

Credits: Dio *Sacred Heart* album and tour, Dio *Holy Diver* album and tour, Dio *Last In Line* album and tour, Black Sabbath *Mob Rules* second album and tour, Bruck Springsteen *Born To Run*, second album, other live tours: Billy Squire, Axis, Angel, Deringer.

Services Offered: Studio engineering.

FRANK ARN

Engineer & Producer

BANTAM SOUND SERVICES

4724 Kester, Sherman Oaks, CA 91403

(818) 907-5181, (415) 945-8031

Credits: Tours with Rare Earth Band, George Benson, Tommy Bolin, Keith Carradine, Parliament/Funkadelic and more. Gold record *In Flight* with George Benson, platinum record *Night Moves* with Bob Seger. Prior education includes A.A. in Electrical Engineering. Certificate in Recording Engineering from University of Sound Arts.

Services Offered: Available for consultations, live show-cases in San Francisco or L.A. area, independent recording engineering and live sound engineering for major tours. Also a full service production for new bands, including buying or renting complete pro P.A. systems, stage production, discounts on instruments, booking/engineering recording dates in various major L.A. studios. Sending band promos and tapes are a must. I can help get you out of the Top 40 circuit and into the studio.

E. LEE ATKINS

Engineer & Producer

ENGLEWOOD PRODUCTIONS

1602 Pine Tree Rd. Ste. 2, Longview, TX 75604

(214) 759-8477

Credits: Paradise *Following Him* (LP); Paradise *God Bless The USA* (LP), Paradise *Fire Escape* (LP). Nominated for two Grammys for previous projects.

Services Offered: Complete album production any studio in Texas, Tennessee, Louisiana. Specialize in Christian music productions/albums. Associated with Crystal Brook Studio, Longview, Texas.

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CLIFF AYERS*Producer***CLIFF AYERS PRODUCTIONS**62 Music Sq. W., Nashville, TN 37203
(615) 327-4538, 361-7902

Credits: Started producing records for his own label Emerald Records in New York in 1951. Through the years he has had productions released on Decca, Columbia, MGM, Discover, MCA and many other labels. Presently owns American Sound Records and produces some 20 artists.

Services Offered: Recording and video productions under American Sound Records and Emerald Records owned by Ayers. Music Town Distributors & Promotions Co. distributes independent labels and The Music City Entertainer Newspaper in its 13th year of publication. It promotes artists and has its own records charts called "HotPops." Cliff Ayers Productions also leases masters for its Emerald Record label.

JB*Engineer*P.O. Box 120803, Nashville, TN 37212-0803
(615) 385-9827

Credits: Dallas Holm, Kenny Marks, Rich Mullins, Amy Grant, Kathy Troccoli, The Imperials, Billy Crockett, Debbie Boone, Shel Silverstein, Morris Chapman, Paul Beasley.

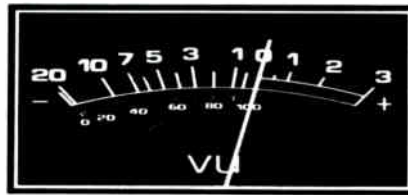
Services Offered: Active and creative recording and mixing. Digital 2-track system.

SUZAN BADER*Engineers & Producers*
D.S.M. PRODUCERS161 West 54th St., New York, NY 10019
(212) 245-0006

Credits: Produced: American Steel, Teresa Burrell, Tommy Goode 1985 (record production); ABC Olympics, Motorola, MasterCard/Visa, People's Bank (commercial).

Services Offered: Complete production services—record, commercial, film, TV, industrial, original music licensing, scoring services. House production staff: Suzan Bader, Glenn Dorsey, Luie Rivera; plus 12 original composers available for all types of music. An in-house development department for artists and composers.

INDEPENDENTS

**DEAN BAILEY***Engineer & Producer*12869 Montfort Dr. #250, Dallas, TX 75230
(214) 386-7783

Credits: Ray Owens, Bergman & Roberts, Rich Gilliland-demos; 6½ years of TM Country; *Golden Moments*, an Olympic Retrospective; simu-filite training programs; in-flight music services; commercial production for numerous advertisers.

Services Offered: Audio engineering including all facets from studio installation, maintenance, tracking, mixing, and producing. Specializing in mellow rock, country, jazz, radio specials, commercial production, and audio visual programs.

STEPHEN BARNCARD*Engineer & Producer*c/o THE SOUND SOLUTION
1211 Fourth St., Santa Monica, CA 90401
(213) 393-5332

Credits: Current: Rave-ups, Babylon Warriors, Zamp Nicall, Circle Jerks. History: Crosby, Stills & Nash, David Crosby solo LP, Grateful Dead's *American Beauty*, Doobie Bros., New Riders, Van Morrison, Brewer & Shipley, Seals & Crofts, Jennifer Wames, Jefferson Airplane, Chilliwack.

Services Offered: I have the gift to guide artist's musical expression into its highest form and record it quickly and efficiently. I possess a keen sense of time and pitch, and can coach and record vocalists and instrumentalists to

their utmost ability. I know the ultimate importance of the song. I feel that if a performer can be in a situation where the technical aspects of recording are moved aside and feedback is provided on a clear, two-way channel, there is no limit to what can happen. Specialities: vocals with feeling, electronic music, acoustic instruments, live and live-in-studio records.

JOSEPH W. BARNES*Engineer***SYNAPSE SYSTEMS**8 Penbrooke Dr., Penfield, NY 14526
(716) 377-5250

Credits: Freelance live engineering, including work with recording artist Duke Jupiter for the last six years, and on tours with R.E.O. Speedwagon, Huey Lewis, Stevie Ray Vaughn, Romantics, David Bowie, and Z.Z. Top.

BART BARTON*Producer***LEMON SQUARE**P.O. Box 31819, Dallas, TX 75231
(214) 750-0720

Credits: Top 10 Canadian record artist Audie Henry, song "Heaven Knows." Many national chart records: Billy Parker, Glen Bailey, Angela Kaye, Audie Henry, and others.

Services Offered: Career development for artists as an artist development company including transition from stage to records, record voice development, record producer including picking right material for artist, arrangements, musicians, studio, etc.

KEVIN K. BEAMISH*Engineer & Producer***KEVIN BEAMISH PRODUCTIONS, INC.**
4615 Stark Ave., Woodland Hills, CA 91364
(818) 702-0265

Credits: Produced and engineered: R.E.O. Speedwagon (4 albums including *Hi Intensity*), Jefferson Starship, Y&T, Saxon, Charlie, Fortune, etc.

Services Offered: World class production and engineering for established artists, yet always looking for the next great new group or song.

MICHAEL BENNETT*Engineer*1020 Carolina St., San Francisco, CA 94107
(415) 824-6192

Credits: Audio engineering for TV show *Below San Francisco*; coordinator for multi-media laser light show "Song of Ages"; club mixing for Dizzy Gillespie, Cal Tjader, Herb Ellis, Barney Kessel, Charlie Byrd, Doc Watson, John Lee Hooker, Earl "Fatha" Hines, Mose Allison, etc.; production work for Jeffrey Ballet, WBAI radio.

Services Offered: Freelance audio engineering; recording, mixing, editing, and duplication. Audio for video/film. Computer and holographic services.

WILLIAM C. BERENDS*Engineer & Producer***TRADEMARK MUSIC**P.O. Box 1259, Browns Mills, NJ 08015
(609) 893-5132

Credits: Recent clients (1985): Philadelphia Digital Sound, John Hodian, Broccoli Rabe Recording Studios, Urban General Marketing Corporation, Sgt. Slaughter, Wendy O. Williams, ESQ Productions, IRA Records & Publishing, and many others.

Services Offered: Full production services. Original music designed, composed, arranged, and produced for film, television, radio, videos, and industrial applications. Very affordable, high quality music for almost any budget. Freelance engineering and production services available as well. In-house demo studio for immediate results.

GLENN E. BERKOVITZ*Engineer*11929 Windward Ave., Los Angeles, CA 90066
(213) 313-2776

Credits: Television/film credits include *Godzilla '85*, *To Live & Die in L.A.* (MGM/MTV), *Max Maven* (Universal), and too many commercial and music video projects. Music credits include ongoing independent album projects, and numerous jingles and demos.

Services Offered: Specializing in audio—production and post-production—for film and television. I bring to my work a thorough knowledge of all systems in use today. From incorporating digital and time code technologies in my production recording equipment and techniques, to helping create full MIDI/SMPTÉ recording and scoring studios. I seek to implement and incorporate all of what is currently going on into my work to produce a more cohesive and satisfying result. Large or small, it has to be good, and, hopefully fun.

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Engineer & Producer
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4540 S. Rural Rd. #F8, Tempe, AZ 85282
(602) 839-5898

Credits: Berry: internationally published composer. Marohnic: internationally recorded keyboard artist, composer, educator.

Services Offered: Specialists in creating high quality, original music for the advertising, film, and video production communities. Experienced with synthesizers. Cost-effective producers. Experienced at many styles of music. In-house 8-track studio is good for finished products or high-quality comprehensive demos.

ARNOLD BIGLER
Engineer & Producer
A.J. STUDIOS

1260 E. Vine St., Salt Lake, UT 84121
(801) 262-6611

Services Offered: Recording services, jingles, commercials, video facilities.

MIKE BILLINGSLEY
Engineer & Producer

STRAIGHT ARROW RECORDINGS
3 1/2 Kent St., Montpelier, VT 05602
(802) 223-2551

Credits: Wood's Tea Co., Chattaqua Symphony Orchestra, Vermont Opera Theatre, Plainfield Village Gamelan, Grupo Aymara, Real Steel, Seleshe Demassae, Africa djole, Pat Metheny, Michael Hedges/Daniel Hecht, Gloucester Sea Life Festival, Vermont Choral Festival, Treacha O'Driscoll, Michel Cuisson/Ike Ueno.

Services Offered: Location performance recordings—live to digital, live to 1/2-track or 4-track; location sound effects and ambience; audio for video/on-location sync digital; multi-track mixdown; album production from performance recordings. Small post-production and demo studio (BACK-TRACKS). Particularly interested in acoustic voice and instrument ensembles including ethnic, classical and folk, and solo voice/instrument performance in good halls; and experimental works, including electronic.

MICHAEL BISHOP
Engineer & Producer
BRIANNA RAE PRODUCTIONS
13678 Butternut Rd., Burton, OH 44021
(216) 834-1350

Credits: Engineered: (records) Fleetwood Mac "Live," Highway Chile, Chicago Symphony, Cincinnati Pops Orchestra, Cleveland Orchestra, Pere Ubu, Michael Stanley, O'Jays, Devo, Kazu Matsui, Robben Ford, Wild Cherry, James Gang, Alex Bevan. Jingles: United Van Lines, Sea-world, Republic Steel, Milwaukee Brewers, Cypress Gardens. Produced: Wendy Warren, Nombres, Bizarros, Unit 5, Pat Dailey.

Services Offered: Recording engineer, producer, mixer, disk mastering engineer and photographer offering services in all phases of studio recording, digital and analog, including audio for film, A-V, records and demos. Over 15 years of pro experience means a lot less headaches and lower costs for the client.

MICHAEL BITTERMAN
Engineer & Producer
MIDNIGHT MODULATION

2211 Pine Lane, Saugerties, NY 12477
(914) 246-4761

Credits: Produced *Woodstock—Moods & Moments*, Five After Eight (OC Records), Denise Finley. Engineered for John Hall, The Band, John Sebastian, Priscilla Herdman, Jules Shear, Tom Pacheco, Jean Redpath.

Services Offered: As a musician/arranger I have worked with Barry Manilow, Janis Ian, Arif Mardin, etc. My musical fields are eclectic but I have been concentrating on cabaret, folk, and jazz. My studio, Midnight Modulation, is 16-track, fully loaded. Being in Woodstock, I have access to many great musicians. I give 100% of myself to my production projects.

JOHN BLAKELEY
Engineer & Producer
DUNCAN STREET STUDIOS

240 Duncan St., San Francisco, CA 94131
(415) 285-9093

Credits: My musical experience dates back to 1964. I have recorded with such luminaries as Van Morrison, Glen Campbell, Jack Nitzsche, Jim Gaines (Journey), Maria Muldaur, The Durocs, and Country Joe McDonald. In addition,

I have also done advertising work with Gary Remal, Art Twain, and Ed Bogus, including a Tone Soap commercial with Roy Orbison. I recently won a CLIO award for a Levi's 501 Blues ad done in my studio.

Services Offered: Currently, I operate the 16-track Duncan Street Studio, a versatile facility that features the newest available equipment. Besides the modern gear, my ensemble includes an acoustic piano, live drums, Memory Moog+ and a large selection of vintage guitars. The Yamaha DX7, RX11 and CX5M are also available. More fundamentally, my personal background gives the studio some uncommon advantages over other similar facilities. Two decades experience in the music industry allows me to give a client "the best of both worlds;" my ear for detail and ability to play parts plus, more crucially, proven ability as an engineer and producer.

CARSTEN BOHN
Producer

LINGO MUSIC
314 W. 53rd St., New York, NY 10019
(212) 582-8800

Credits: C.B.'s BANDSTAND LPs: *Humor Rumor* (Inter-cord), *Mother Goose Shoes* (Inter-cord), *C.B. Radio* (Inter-cord), C.B. and DJ Hollywood: 12 inch *I feel great* (Poly-gram U.S.) plus several productions for children/adventure Records (ca. 35 albums).

Services Offered: Every aspect from the original idea to the final master in detail: composition, arrangement, performance, production, and publishing. I'm a musician at heart, playing drums and keyboards, and I sing too.

REX ALAN BOST & BUDDY BRYAN

Engineer & Producer
EAGLE ROCK RECORDING
Rt. 1, Box 109, Wendell, NC 27591
(919) 365-5511

Credits: Personal and local only... so far.

Services Offered: Complete 16-track facility in a peaceful country setting outside Raleigh, NC. Emphasis on relaxed atmosphere—recreational facilities available. Recorders: Foster B-16, A-8, A-2, Akai; Ramee WR-8816 console; out-board gear includes ART OIA reverb, DeltaLab delays, Symetrix compressors and gates, 1/3 octaves, etc. Instruments include Simmons & Yamaha RX11 digital drums, DX7 with extensive library and computer assistance, etc. \$25/hr. Block rates available.

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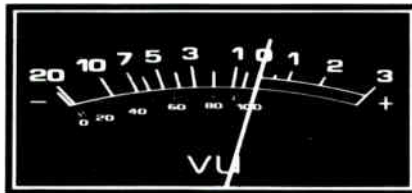
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INDEPENDENTS



STEVE BOYCE
Engineer & Producer
COLORSOUND PRODUCTIONS
7606 Champagne Pt. Rd., Kirkland, WA 98034
(206) 823-1535

Credits: Pat Benatar, Black Flag, Blasters, James Brown, Jack DeJohnette, Stan Getz, Sammy Hagar, Heart, Joan Jett, Judas Priest, Ted Nugent, George Thorogood, Paul Winter
Services Offered: 2-, 8-, 16-, 24-track recording and production; remote/location recording and/or broadcasts, SMPTE audio/video lock.

JAMES H. BOYER
Engineer & Producer
JAMES BOYER COMPANY
P.O. Box 303, South Salem, NY 10590
(914) 763-5086

Credits: Producer: Three-Speed, Rupert Holmes, Peter Cetera, CBS/Multi-artists, Sophie Sara Dekis. Engineering: Billy Joel, Steve Winwood, Patti Austin, George Benson, Chicago, Kenny Loggins, Linda Ronstadt, and Paul Simon. Feature Films: *Places In The Heart*, *Arthur*, *Silkwood*, *Yentl*, *Easy Money*. Have also recorded and engineered music for multiple television and video shows.

JOHN BOYLAN
Producer
GREAT EASTERN MUSIC
6420 Wilshire Blvd., 19th Fl., Los Angeles, CA 90048
(213) 851-2944

Credits: Boston, Little River Band, Charlie Daniels Band, Quarterflash, Linda Ronstadt, various soundtracks: *Urban Cowboy*, *Footloose*.
Services Offered: Production, publishing (contact: Teri Weigel).

STEVEN L. BRENNER
Engineer & Producer
1803 Vista Del Mar Ave. #307, Hollywood, CA 90028
(213) 856-0574

Credits: Albums for more than 20 different labels (including Enigma/Greenworld Records, Freeway Records, JDC Records, Mystic Records, Atmosphere Records, Azra Records, Big City, BYO, etc.) plus jingles for radio and TV, soundtracks for videos, movies, and plays.
Services Offered: The extent of my involvement in your project can be from engineering, and helping you find that perfect drum or synth sound, to full guidance as producer. I can take you through all aspects of your project from concept to manufacturing, and I am familiar with the new technologies available. I'm easy to work with and available for consultation.

HARRY BROTMAN
Engineer & Producer
BROTMAN MUSICAL SERVICES
19010 Avers Ave., Flossmoor, IL 60422

Credits: Recent national airplay: Gene Chandler (Fastfire) final mixes, Big Daddy Kinsey (Rooster/Flying Fish) sole recordist. Local airplay: Eminor, Cloud, Third Rail, Magnum Force. International airplay: Bolivar (Dynamic/Jamaica). TV/radio jingles: Olson Rug, Florsheim/Zodiac, Baby's Room, Friedman's Microwave, Gee Lumber, Honda, Comfortmaker. Industrials: Sears, Motorola, Burgess/Fluidic.

Services Offered: Engineering, co-production, production, analog and FM digital synthesis. Tenth year working in Chicago and beyond. Requestable at many fine 24-track studios, including Startrax, Tone Zone, P.S. Recording, Pnsm, ARS Studio, Sonic Art, Chicago Trax, Seagrape, and newly opened Jericho. Independent bookings may also occur at over nine other 24-track facilities in the Chicago area. Full-service packages are also available in Houston and Jamaica. European near-field monitors/amplifier system goes everywhere. Also, European condenser and ribbon microphones plus various outboards. Custom pre-/post-production assistance on all projects is included.

WHITNEY BROUSSARD
Engineer & Producer
3109 Natchez Ave., San Diego, CA 92117
(619) 569-7810

Credits: A wild imagination, skill and patience.
Services Offered: Complete engineering and/or production for any project. I can get sounds you can't imagine, or recreate those you hear. Willing to travel and fit into your budget. Best of all, I love music!

MICHAEL BROVSKY
Producer
FREE FLOW PRODUCTIONS
1209 Baylor, Austin, TX 78703
(512) 474-6926

Credits: Christopher Cross, Carole King, Firefall, Jerry Jeff Walker, Joe Ely, Guy Clark, Eliza Gilkyson, Mark Hamman's "Cry Wolf."
Services Offered: Full development and production services for records, film and video.

GLENN BROWN
Engineer & Producer
AUDIOGRAPH PRODUCTIONS INC.
2810 Bennett, Okemos, MI 48864
(517) 332-3272

Credits: Commercial/Industrial: Dow, Amway, Upjohn, General Motors, Delco (GM). Albums: Fastracks, Jellyroll, Cave Gods, Dave Collini, over 30 album credits.
Services Offered: In-house 24-track studio w/Studer ABOMKIII, NEOTEK 32 input series II, Emulator II w/extreme library. Perfectionistic approach.

CARL CANEDY
Producer
ROCK CANDY PRODUCTIONS
20 1/2 Madison St., Cortland, NY 13045
(607) 756-7906

Credits: *The Beast is Back*, *Blue Cheer*, *Run with the Pack*, *Helstar*, *Gone with the Wind*, *Rhett Forrester*, *Spreading the Disease*, *Anthrax*, *Out of the Darkness*, *Jack Starr*, *Fistful of Metal*, *Anthrax*, *Thrasher*, *Thrasher*, *Violence and Force*, *Exciter*.
Services Offered: Production, arrangement, writing, drums, drum programming, guitar, bass, piano/keyboards, equipment rental, referrals.

KEVIN H. CARLSON
Engineer & Producer
CARLSON-ATLANA
P.O. BOX 2422, Smyrna (Atlanta), GA 30081
(404) 952-8459

Credits: Sevenfold, Henry Lee Roberts, Vendetta, Legend.
Services Offered: Budget management, financial consulting, technical consulting.

PETER M. CARLSON
Engineer & Producer
HAVE EARS WILL TRAVEL
407 El Salto, Capitola, CA 95010
(408) 475-1232

Credits: Bob Brozman, Lacy J. Dalton, and Patrick Simmons.
Services Offered: Audio engineering for any purpose, production techniques, audio consulting.

STEVE CARR
Engineer & Producer
HIT AND RUN STUDIOS
18704 Muncaster Rd., Rockville, MD 20855
(301) 948-6715

Credits: Bruce Springstone "Live at Bedrock," *Meet the Flintstones* (Billboard Pick Single, Nov. '82), Tommy Keene *Places That Are Gone*, 1984 *Village Voice* Number One E.P. of the Year. Ohio "Change in the Wind" *Musician* magazine Best Unsigned Band in America—first place winner.
Services Offered: Helping musicians reach their goals.

DENNIS A. CARUSO
Engineer & Producer
EDEN GARDEN STUDIO, INC.
27 Garrett Rd., Upper Darby, PA 19082
(215) 622-0477

Credits: Among his credits for production and/or engineering are: Michael Sembello, Richard Fagan, Johnny Caswell & The Crystal Mansion, Denny McCoskey, Buddy Rizzo, Alfonso Johnson, Ralph Dino, Ben Bridges, Don Freeman, Pat Martino, John Sembello, Marietta Waters, Carmen Lauro, Warren Hartman.
Services Offered: Full range of services to music, radio, television, film, and video industries. Multi-track recording, overdubbing, mixing, editing, timing, sequencing, mas-

tering, master mixing-inter cut mixing and editing, sweetening, processing, tape looping, digital drum programming and sampling. Synth and drum synchronizing and interfacing. Multi-track editing and sync to (1/2", 3/4" video). Sound effects, (custom) music and sound scoring for film and video. Voice-overs, jingles, demo and album production, writing, direction, arranging, scoring, complete interlock recording for video. Complete technical maintenance engineering.

DON CASALE

Engineer & Producer

DON CASALE RECORDING STUDIOS, INC.

377 Plainfield St., Westbury, Long Island, NY 11590
(516) 333-7898

Credits: Engineered for: every major label, Aretha Franklin, Donny Hathaway, Delaney & Bonnie, Iron Butterfly ("In-A-Gadda-Da-Vida"), Rascals, Tiny Tim, Vanilla Fudge, Dionne Warwick, Gary U.S. Bonds, Petula Clark, Jackie Wilson, gold platinum records, Grammy nomination, TV consultant.

Services Offered: 24-track recording studio, engineering, record production, publishing, artist management, record deal placement. Looking for top quality writers and artists for major recording contracts. Will review audio and video tapes.

D. PHILIP CHALMERS/CHARLES E. JONES

Engineer & Producer

VAL PRODUCTIONS, INC.

3707 N. Southport, Chicago, IL 60613
(312) 281-2920

Credits: Live and recorded sound engineering and enhancement; proficiency in programming Fairlight and MIDI systems. Experience with hi-tech studio and mixing equipment, digital systems and outboard gear. Five years promotion and production for organizations, professional musicians, aspiring artists and bands in Chicago, Los Angeles, Raleigh and Chapel Hill, North Carolina.

Services Offered: High-quality production at affordable cost: recording, video, live performance and promotional packages. Engineering and programming expertise, state-of-the-art studios and computer based equipment. Specialists in translating your ideas and artistic concepts into audio or visual productions worthy of your talent, with all the enhancements technology and skill can offer. Experienced assistance in all facets of production: project coordination, acoustic and set design, musical arrangements, lighting design and operation, photography, advertising and promotion. We can accommodate most every need and any budget. Call us to discuss your next project; we'd like to make it your best.

JOE CHICCARELLI

Engineer & Producer

1835 Sunset Plaza Dr., Hollywood, CA 90069
(213) 654-2064

Credits: Pat Benatar, Frank Zappa, Poco, Romeo Void, Bangles, Ray Manzarek, Taxis, Red Rider, George Thorogood, Glen Frey, Lone Justice, Stan Ridgeway, Textones, Dan Hartman, Oingo Boingo.

PAUL CHITEN

Producer

NAKED PREY MUSIC

1226 Harper Ave., Ste. #4, Los Angeles, CA 90046
(213) 656-3775

Credits: Worked with Michael Jackson, Tina Turner, Jose Feliciano, Natalie Cole. Music for films: *Witness*, *The Bad Guys*; title song for *Transylvania 6-5000*. Title song for ABC-TV show *Hollywood Beat*. Records for Arista, CBS, Warner Brothers, Motown, MCA, Polygram. Three MTV videos. Focus of a national TV special, *Makin' Music*, which won an Emmy Award.

Services Offered: Producing, arranging, multi-mundo keyboards.

PAUL CHRISTENSEN

Engineer & Producer

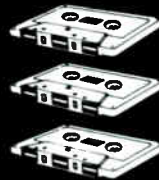
OMEGA AUDIO

8036 Aviation Pl., Dallas, TX 75235
(214) 350-9066

Credits: Johnny Cash, Ben Vereen, Anne Murray, Willie Nelson, Quarterflash, Commodores, Oak Ridge Boys, Ray Charles, Merle Haggard, Helen Reddy, Pat Benatar, Sammy Hagar, Hall & Oates, Art Garfunkel, Al Jarreau, Boomtown Rats, and over 200 major artists in past 13 years.

Services Offered: Engineering and producing services with emphasis on audio for video and film. Specialty is consultation for live video shoots from concept to completion. Extensive experience in digital audio/video interlock, stereo television, video disc and video cassette release both Beta and VHS hi-fi.

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NOLAN C. CHURCH, JR.

Producer

CATHEDRAL SOUND PRODUCTIONS

756S Murray Hill Rd., #222, Columbia, MD 21046
(301) 953-0198

Credits: Soundtrack to "Wheelchair Workout" an exercise program for disabled persons.

Services Offered: Music composition, talent, recording, production under one roof. Quick turnaround for AV (industrial, educational, etc.) productions.

ALEX CIMA

Engineer & Producer

P.O. Box 1594, Hollywood, CA 90078-1594
(714) 680-4959

Credits: Some labels: GNP-Crescendo, Polydor International/Deutsche Grammophon, Chromosome, All TV networks, Select TV, films, trailers, radio/TV commercials and special projects for major entertainment companies.

Services Offered: Audio recording/production, analog and digital music synthesis, project troubleshooting, instruction, original and library music.

LINCOLN CLAPP

Engineer & Producer

52 Bond St., New York City, NY 10012
(212) 673-0394

Credits: Stevie Ray Vaughn, Grace Jones, Al Jarreau, Will Powers, Was (Not Was), The Ramones, Alberta Hunter, Leslie Gore, Change, Carl Perkins, Brian Slawson, Lou Christie.

Services Offered: The full range of engineering and production services are offered with an emphasis on comprehensive vocal engineering and arrangement. Digital reverb, digital delay lines, compressors and equalization are part of my personal, portable equipment. Considerable experience in re-mixing for albums and singles.

MICHAEL COLLINS

Engineer & Producer

THE COMMERCIAL REFINERY, INC.

210 S. Maryland Ave., Baltimore, MD 21218
(301) 685-8500

Credits: Majestic's *Mystical Teaser* (EP), Mission's *The Last Detail* (LP), Mission *When Thunder Comes* (LP), *Greetings from Baltimore* (compilation LP); demos for Clever Lines, Beyond Words, Majestic, Crossfire, The New Standard, Cerebus, Divinity, Southbound Express, Hawkins & Holstein, major market radio commercials for Ford, Dodge, Toyota, Roy Rogers, Merry-Go-Round, and *Washington Times*.

Services Offered: Freelance engineering and producing, live sound reinforcement, radio and off-camera TV commercial production, sound reinforcement consultation. Sample records and demo tapes available upon request.

GERRY COMITO

Engineer & Producer

G.C. PRODUCTIONS

292 Locust Ave., Freeport, NY 11520
(516) 868-2752

Credits: Oona, Billy Falcon, Dave Le Bolt, Virgin Steel, Jack Star, Kangaroo Court, Rock Mitchell, Manny Curallo, PRM Telepictures, Paul Butterfield, Rock Showcase Band, Phil Accardi, Mike Fincken, John Blanco, Billy Milne, (Spies) Fareed Abdul Hagg, Mat La Flor, Anthrax, Quasimoto, Snatch, Kyoto, Nami, Cassanova Burnett, Charles Casseus, Barney Griffin, Jackie Collins, Naggi.

Services Offered: From 2 to 48-track recording, two facilities, state-of-the-art, furnished with only the best equipment and instruments. Studer, Trident, Ampex, etc. Acoustically designed rooms and more. Extremely comfortable atmosphere.

KEN CORLEW

Engineer

270 Tampa Dr., M-1, Nashville, TN 37211
(615) 834-TYGR

Credits: Three gold records for work completed with the Oak Ridge Boys; Amy Grant's Christmas album; *Barbara Mandrell Live*; Barbara Mandrell, *Black & White*; Barbara Mandrell, gospel album.

Services Offered: Recording and mixing two tracks to 64. Jingles and TV soundtracks analog or digital. All types of music.

JEFFREY CROCKER

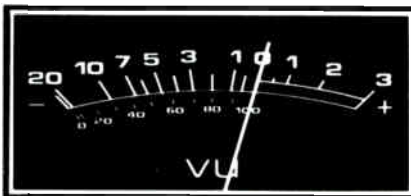
Engineer & Producer

CROCKER PRODUCTIONS INC.

43 Wellington Terrace Dr., Manchester, NH 03104
(603) 627-7896

Credits: Live monitor mixing, on location recording, road manager's trucking services, house sound mixing, sound system repairs, and sound system consultants.

INDEPENDENTS



DAVID DACHINGER

Engineer & Producer

1670 Lucile Ave., Los Angeles, CA 90026

(213) 435-5568 (201) 659-3473 (East Coast)

Credits: Third World, Isley-Jasper-Isley, Mtume, Arnold Schwarzenegger, Jane Fonda, Comsat Angels, Arthur Baker, Silver Spoons (NBC-TV), Pioneer Stereo, Newcleus, Full Force, WPLJ-FM, Alejandro Lerner, Lupita D'Alessio, Diane Keaton.

Services Offered: Musical engineering and production for albums, 12" dance mixes, TV, film and jingles. Drum machine and synthesizer programming. New, fresh sounds.

JON "MR. BIG" D'AMELIO

Engineer & Producer

P.O. Box 120884, Nashville, TN 37212

(615) 883-8086 or 883-9600

Credits: Alabama, Marshall Tucker Band, Charlie Daniels, Earl Thomas Conley, Opryland USA, Tom Dowd, Scott Tuttle Music, Union Station Records (VP of A&R), Alex Zanetti, Merle Kilgore, Terri Gibbs, Mack Vickery, Webb Pierce, Bobby Hardin, Cynthia Clawson, Ellason Castiglione, Jean Sheppard Band, Bruce Henderson, Push, Hopper, Bandana, Norton Buffalo, Susan Marshall.

Services Offered: Record production and engineering, live mixing and recording, demo recording, studio design and management, artist management and development, song plugging, music business consultation, album packaging, video concepts. Studio manager for Jack O'Diamonds Recording Studio (Hermitage, TN). Multi-track and digital studios used include Sound Emporium, Studio 1111, Sound Connection, LSI, Suite 900, Treasure Island, Sound Shop, Pollyfox Grand, and Chelsey.

MIKE DANIEL

Engineer & Producer

MIKE DANIEL PRODUCTIONS

100 Eldorado Ct., Hendersonville, TN 37075
(615) 822-3451

Credits: Mac Davis, Janie Fricke, Bandanna, The Wright Brothers, Tammy Wynette, George Jones, Conway Twitty, Kathy Twitty, Joni Twitty, Mike Twitty, Carter Family, Dobie Gray, Ronnie Prophet, Bill Heley, Merrilee Rush, Wayne Massey.

Services Offered: Full production, publishing, engineering, and studio services. Staff rhythm section, singers, engineers and production team. Specializing in custom sessions, upgraded to majors. Very high placement rate. MANY HITS! For further information contact Mike Daniel (615) 822-3451 or Asst. Denny Knight (615) 824-8453 for publishing co. write to Die Hard Publishing, P.O. Box 2285, Hendersonville, TN 37077-2285.

DREW DANIELS

Engineer & Producer

PRECISION RECORDER

(818) 787-7778 or 893-8411x214

Credits: Current: applications engineer, JBL Professional; past chairman, AES Los Angeles Section; three years applications engineer, Tascam; lecturer, Aspen Recording Institute; lecturer, AES workshops, meetings, instructor, Institute of A/V—Hollywood; mixed live: Procol Harum, Paul Butterfield, Lee Michaels, Iron Butterfly, others, since 1969; opera singer/jazz bassist—sang National Anthem, 1974 World Series.

Services Offered: Musical: basic musical instruction, vocal coaching, repertoire selection, arranging, scoring, copy-ing, contracting, conducting, producing, studio setup and sealing, instrument mixing, recording engineering, overdub specialty recording, mixdown, editing all forms, complete post-production, record mastering, disk cutting, processing follow-up, test pressing evaluation and approval, album art coordination. Engineering: recording individuals, groups through symphonic events; acoustical design—studios, control rooms; electrical design—recording studios, sound system design—restaurant background music to theatrical reinforcement systems; loudspeaker enclosure and system design; engineering instruction in various audio disciplines.

WLADEMIRO FURQUIM DA SILVA

Engineer

VAVA FURQUIM

Rua Clemente Ferreira No. 61 Ap. 1103
Salvador, Bahia-Brazil 40.000

(071) 245-0994

Credits: Live sound mixing include artists: Alceu Valença (Nice, Lisbon, N.Y., Washington, Rock in Rio, Brazil tours 80, 81, 82, 83, 84, 85) Gilberto Gil, Caetano Veloso, Ney Neto Grosso, Simone Fafa de Belem, Fagner, Manna, Elba Ramalho, Moraes Moreira. Records Magico 84 (Wise-lord Studios) and Estacas da Luz (Br 85)—Alceu Valença

Services Offered: Freelance sound reinforcement engineering. Live sound mixing with personal equipment: Klark-Teknik DN60 Analyzer, BSS FDS 340 4-way crossovers, Valley People Dyna-Mite, Drawmer DS201 noise gates, Roland Dimension D, dbx 165 compressor, ART OIA reverb, mic: AKG, Sennheiser, Crown PZM, Shure, EV, BSS active DI.

MAL DAVIS

Engineer & Producer

HEARING EAR

730 S. Harvey, Oak Park, IL 60304

(312) 386-7355, 653-1919

Credits: *The Master & Musician*, Phil Keaggy; *Mourning To Dancing*, James Ward; Jessy Dixon, Ken Medema; Northern Illinois University Jazz Band; *Chicago Jazz*, Roger Pemberton; Hope Publishing; *Brass Impact #2*, Warren Kime, Wheaton College Mens Glee, Resurrection Band; Chns Christensen, Russ Daughtry.

Services Offered: Eighteen years of professional recording experience. Complete music production and multi-track engineering services. Excellent pool of professional musicians and arrangers available. Homebase at Jor-Dan Studios, Wheaton, IL. Augspurger/Edwards design incorporating 20 ft. studio ceiling along with Neve-Studer-AMS control room. Accommodations, complete kitchen facilities, musicians lounge, and health club available to help make your project a creative and comfortable process. I believe in the strength of good working relationships and the pursuit of excellence in all areas.

BOBBY DENNIS

Engineer & Producer

DENNIS CONSULTING SERVICES

P.O. Box 38214, Dallas, TX 75238
(214) 340-7607

Credits: Projects include Jermaine Jackson, Paul Young, Boy George, "The Hot Ones" (syndicated radio show), Karen Bella, Delbert McClinton, Mickey Gilley, Bugs Henderson, Alan Parsons, Johnny Reno.

Services Offered: Multi-track recording/mixing, producer services, recording project/equipment consultations, live sound mixing, sound reinforcement consultations, sales/service/installations, marketing research.

OLIVER DiCICCO

Engineer & Producer

MOBIUS MUSIC RECORDING

1583 Sanchez, San Francisco, CA 94131
(415) 285-7888

Credits: 1985 Grammy nomination: Best Engineered Album (Michael Hedges *Aerial Boundaries*) Zasu Pitts, Windham Hill Records, Darol Anoger, Mike Marshall, Kaleidoscope Records, KQED, KRON, Apple Computer, Ron Thompson, Andy Narell, 700 Club, Eno, Henry Kaiser, Fred Firth, Z.Axis, Alex DiGrassi, Steve Miller, Barbara Higbie.

Services Offered: With over ten years experience working out of our own 24-track studio, we offer a full range of services, including location recording, musician contracting (we have access to the best studio musicians in the area), production, arranging and engineering. We strive to bring out the best in your music.

ROBERT G. DIMIT

Engineer & Producer

PERFECT CRIME PRODUCTIONS

7 Morrison Ave., Somerville, MA 02144
(617) 623-3100

Credits: *Whole New World*, the Outlets (Enigma); *It's Time For...* Jonathan Richman (Rough Trade/Twin-Tone); *Dig Yourself*, Barrence Whitfield and the Savages (Rounder); *Outta Place*, The Real Kids (Star Rhythm/New Rose); *Cold Wind*, Joe Val (Rounder).

Services Offered: Producer/engineer emphasizing heavy pre-production as a means of saving time and money in the recording studio. Working out of Boston, New York.

PETER C. DIORIO

Engineer & Producer

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1481) PRINCIPLES OF DIGITAL AUDIO, Ken Pohlmann This brand new release is a clear and concise overview starting with the fundamentals of d.a. and comprehensively covering recording, reproduction, media, error protection, the Compact Disc and more. The majority of the data, formulas, and illustrations has never before been published, which makes this an excellent addition to the literature in the field. Appropriate for skilled engineers or novices. 284 pp.(P) \$19.95

1560) MULTICHANNEL TV SOUND, Broadcast Management/Engineering The first in BM/E's "deskbook" series, this book offers an in-depth examination of the operational aspects of this new technology, the ramifications of various technological advances, and information about the equipment available to help keep pace. 150 pp.(P) \$39.95

1650) PROFESSIONAL AUDIO & COMMERCIAL/INDUSTRIAL SOUND EQUIPMENT BUYING GUIDE Studio & remote audio recording equipment & systems for stage, concert, auditorium, arena, church, industry, business, school, hospital and hotel sound reinforcement, background music, telephone & telecommunications systems & equipment. 1280 pp.(H) \$95.00

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3580) FOUNDATIONS OF COMPUTER MUSIC, Edited by Curtis Roads & John Strawn This superb reference book from MIT is the most complete overview of the field for serious students and practitioners. In four sections it covers Digital Sound-Synthesis Techniques, Synthesizer Hardware and Engineering, Software Systems for Music, and Perception and Digital Signal Processing. It contains many classic articles in revised and updated versions and should be in every contemporary composer's library. 736 pp.(H) \$50.00

3614) THE COMPLETE GUIDE TO SYNTHESIZERS, SEQUENCERS, AND DRUM MACHINES, Dean Friedman A very useful consumer's guide which details products by category in order of suggested retail price, this well-illustrated book contains complete technical specs, comments based on hands-on use, ease of programmability, MIDI capabilities, performance controls, extra features, manufacturers listing, glossary, and an update on current music software. 112 pp.(P) \$9.95

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Services Offered: Specializing in "purist," on-location recording of serious (chamber and orchestral) music and jazz, we offer the full-spectrum of recording/production services for commercial release, archival or broadcast endeavors from pre-production consultation and A&R to mastering, digital editing and assembly through contracting for artwork, cassette tape duplication, LP-record pressing or CD production. Our master recordings feature minimalist, true-stereo mixing techniques through custom, all-discrete electronics direct to CPDM or PCM digital.

JOHN EARGLE
Engineer & Producer
JME CONSULTING CORPORATION
 7034 Macapa Dr., Los Angeles, CA 90068
 (213) 876-3416

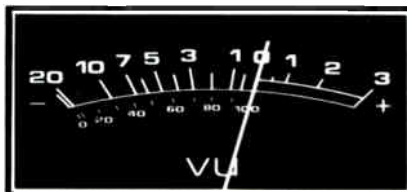
Credits: Engineered Compact Disc releases of: Joe Williams (1984 Best Jazz Vocal Grammy), Mavis Rivers, Chuck Findley & Bobby Shew. Classical CDs: Bejun Mehta and Arleen Auger, sopranos; John Browning, pianist; Robert Noehren, organist.

Services Offered: Location recording and/or producing of classical repertoire; studio or location recording of jazz ensembles.

EBN
Engineer & Producer
MSP MUSIC, INC.
 476 Broadway, New York, NY 10013
 (212) 226-1030

Credits: Credits as producer, programmer, engineer or musician include: Air Race, Richard Burgess, Keith Diamond, EbnOzn, Bob James, Jimi Hendrix, John Luongo, Arif Mardin, Gary Moore, Gary Myrich, Phil Ramone, Riff

INDEPENDENTS



Raff. Scritti Politti, Ravi Shankar, Star Point, Harold Wheeler, ABC-TV (All My Children), MTV, etc.

Services Offered: 24-track music production and recording, Fairlight programming, film scoring. Complete state-of-the-art production facility is available on premises, including Fairlight CMI Series III, Studer A80 24-track and 2-track tape recorders, and a complete line of top quality signal processing equipment, musical instruments, and special effects. Ebn also has one of the most extensive Fairlight sound libraries available in the world.

PHIL EDWARDS
Engineer
PHIL EDWARDS RECORDING
 1522 W. Winton Ave., Hayward, CA 94545
 (415) 784-1971

Credits: Concord Jazz Records, Palo Alto Jazz Records, Edwin and Walter Hawkins.
Services Offered: Record, broadcast and film sound engineering. Remote multi-track engineering.

DEAN ELLIOTT
Engineer & Producer
"REEL HITS" RECORDING STUDIOS
 A DIVISION OF DON ELLIOTT PRODUCTIONS
 15 Bridge Rd., Weston, CT 06883, or
 67 Park Ave., New York, NY 10016
 (203) 226-4200; (212) 679-5670

Credits: Worked for/with Esther Galil, Quincy Jones, Gerry Mulligan, Dave Brubeck, Grady Tate, The Heath Bros., Paul Newman, Phyllis Hyman, Don Elliott, Zack Smith, L. Leon Pendarvis, James Ingram and other various artists.
Services Offered: Jingle producing, writing, arranging and recording; personal management; producing and engineering, live sound reinforcement and recording; fully-equipped 24-track audio/video facility: MCI JH-24, MCI JH-10 2-track, MCI JH-104-track, MCI JH-108-track, Allen Heath Syncon A 28x24; every mic from Neumann to AKG, Beyers, Shure; many keyboards, drum machines and more...

REGINALD ESKRIDGE
Engineer & Producer
GCS PRODUCTIONS
 1508 Harlem Dr. Ste. 202, Memphis, TN 38114
 (901) 274-2726

Credits: We have had the pleasure to serve Carpio, Rufus Thomas, Ms. Millie Jackson, Eddie Mayberry, Homer Banks, George Jackson, Xavion, J. Blackfoot, Carla Thomas, The Townsend Sisters, Valentino, Sound Town Records, Blue Town Records Ltd., Malaco Records, MCA Records, The Tempres, Gloria Suggs, WXSS Radio, Jorel, Vanese Thomas, Stars of Nightingale, Cheryl Fox.

Services Offered: Complete record production and radio jingles. We take your ideas through to radio. We provide you a competitive edge and high performance mixing within budget. Immense song catalog for you to explore. Extensive industry contacts—U.S. and abroad. Your project can be recorded at our in-house studio or at your location. In-house engineers w/current top ten records. Most of our staff musicians have gold record credits. Call us when only the best will do. We'll do it right. We can meet your deadline. Serious inquiries only.

DALE EVERINGHAM
Engineer & Producer
 1300 Arch St., Berkeley, CA 94709
 (415) 540-0177

Credits: Chief engineer at Live Oak Productions (Berkeley, CA); formerly staff engineer at Different Fur Recording (S.F., CA).

Services Offered: Complete audio recording for CD, record and media projects. MIDI sequencing, drum machine programming, and start-to-finish music production to turn your musical vision into musical product.

JIM FARACI
Engineer & Producer
 17625 Palora, Encino, CA 91316
 (818) 788-3084

Credits: Engineering credits include: Ratt, Out Of The Cellar, Invasion of Your Privacy, and MTV video special. Kix, Midnight Dynamite, Streets (featuring Steve Walsh), Crimes In Mind, Airrace, Shaft of Light. Production credits include: Earthshaker; Passion for King records, Japan; City Kidd for Geffen; Poison for Enigma.

Services Offered: No project too big or too small. Have project will travel.

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MICHAEL FAY
 San Diego, CA

MICHAEL FAY
Engineer & Producer
MICHAEL FAY PRODUCTIONS
 4377 Lerida Dr., San Diego, CA 92115
 (619) 582-6948

Credits: 1985. First engineer on jingles for Jet America, Echo Tools, NBC "Stereo" TV, Dos Equis, American Heart Assoc., Robinsons, Panasonic, Nissan Dftrs. of San Diego,

Chevy Dirs. of San Diego, Great American Savings, Central Savings, American Bank, California State Fair, and Cerritos Subaru. Radio and television promo packages for: KTWO, KULR, KCST, KVIA, KEYC, KWCH, WHO, WTXL, WRGT, and others. Other projects include: soundtracks for: PBS' Nova, Fort Worth Chamber of Commerce, and the Schumacher Company. Theme park shows for Sea World and Cypress Gardens; and two albums for the Tremaine Dance Experience.

Services Offered: I have been providing independent engineering, production, writing, and equipment rental services in San Diego for more than six years. This year, in order to improve and expand my services, I made a major investment in "state-of-the-art" outboard/signal processing equipment. The rack includes: AMS and Lexicon digital reverbs, Lexicon 95 and Korg DDL's, Drawmer tube comp./lim., dbx 160X's, Drawmer DS-201 gates, Audio Arts EQ, Garfield Mini Doc, Aphex "B", Symetrix 511-A, AXE DI-400, and Bryston 2B-LP. This package terminates via a custom PRO-CO snake to a 96 pt. TT patch panel—rack mounted in its own flight case. A pair of TOA 265-ME monitors, DX7, Oberheim Xpander, MSQ-700, Drumtrax, and an Akai MG-1212 all serve to compliment the most demanding projects.

GLENN FEIT
Engineer & Producer

GLENN FEIT
6315 Primrose Ave., Hollywood, CA 90068
(213) 467-4827

Credits: New Edition, Bobby Womack, Motley Crue, Gary Numan, Black Flag, numerous independent records.
Services Offered: Production, engineering, computer-assisted pre-production, arranging, consultation. Remixes a specialty.

BERNARD FOX
Engineer & Producer
BIG APPLE STUDIOS INC.

353 W. 48th St., New York, NY 10036
(212) 974-1755

Credits: *La Cage Aux Folles*, *Sophisticated Ladies*, *Singin' in the Rain*, *Grind*, over 100 LPs to credit.
Services Offered: 48-track recording, two Neve/Studer rooms; multitude of outboard equipment; remote recording/mixing; sound consultant to Broadway Theater; digital or analog.



JERRY FULLER
Sherman Oaks, CA

JERRY FULLER
Producer
MOONCHILD PRODUCTIONS INC.
13216 Bloomfield St., Sherman Oaks, CA 91423
(213) 872-1854

Credits: Glen Campbell, Johnny Mathis, Al Wilson, Gary Puckett and the Union Gap, O.C. Smith, Mark Lindsey, Mac Davis, Toby Beau, Andy Williams, Rick Nelson, Roger Miller, Kimberly Springs, Knickerbockers.
Services Offered: Record production, career assistance, 24-track recording facility with Trident Series 80 console, in-house publishing, writer direction, rehearsal facility.

GREG FURGASON
Engineer & Producer
198 Bloomfield Ave., Newark, NJ 07104
(201) 481-0972 (201) 484-9404 (201) 643-6800
Credits: *Wall St. Journal* Report (USA Cable Network), U-68 Stereo Music Television logo and theme (WWHT-TV), Uncle Floyd Show (WWHT-TV), NJ Young Filmmakers Fes-

tival (WNET-TV), Manhattan Coffee Soda (WPIX-TV).
Services Offered: 2- to 24-track analog and digital recording studio, 3/4" and 1" music video and spot production from storyboard to finished master.

JAMES GALLAGHER
Engineer & Producer
6740 Hazeltine Ave., Van Nuys, CA 91405
(818) 904-0578

Credits: Ten years experience, RIAA gold and platinum LPs and singles. Worked with: Michael Sembello, Phil Ramone, Stevie Wonder, Gamble & Huff, Thom Bell, Baker/Harris/Young, Dexter Wansel, George Thorogood, McFadden & Whitehead, The O'Jays, The Spinners, Dionne Warwick, Lou Rawls, Michael Henderson, Teddy Pendergrass, Jerry Butler, Johnny Mathis, plus many others. 1983 Grammy nomination for Best Engineered Recording.
Services Offered: Successful and diversified experience in audio producing and engineering with state-of-the-art production methods and recording techniques, knowledge of TV/film direction and studio functions; responsible for program development and implementation, customer/client relations and performer/producer relations. Association with major Los Angeles, Philadelphia and New York studios. Capable of training and instruction, planning, coordination and problem-solving with flexibility and versatility. Creative and innovative; member of NARAS.

TERRY GARTHWAITE/BARBARA BORDEN
Producer

Box 14, San Geronimo, CA 94963
(415) 488-4778 or 456-2732

Credits: Garthwaite: Ferron, Robin Flower, Nicholas/Glover/Wray, Garthwaite/Hawkins/Sorrels; my own album as singer, writer, guitarist, and more. Recorded many albums as artist (Joy of Cooking, solo, duo). Borden: co-producer and partner in Alive Records, co-produced Armando Jones with Helen Keane, recorded numerous albums as musician, drummer in band Alive.
Services Offered: Record production with energy, in pre-production phase (material selection, instrumentation, vocal integrity, rehearsals, logistics, goal-setting) as well as in-studio care and ease in recording. Especially sensitive to vocalists. As a production team we provide a comfortable, positive, creative environment for the artist to reach yet undiscovered heights/depths of expression.

JIM GASEWICZ
Engineer & Producer
308 Dartbrook, Rockwall, TX 75087
(214) 722-8469

Credits: Engineered and produced Three On A Hill's debut single, "Feels Like Fire" b/w "Train," on R'lyeh Records at Sumet Bernet Studios in Dallas. Other clients/credits include: The Underground, New World Cinema, Shallow Reign, The Polytones, The Surfing Turtles, Dayton, and Daughter Judy.
Services Offered: All facets of demo and record production including pre-production, engineering, producing, record mastering and pressing. I am available for full service production for new bands, independent recording engineering and live sound engineering. Affiliation: Texas Music Association (TMA), Dallas Communications Council (DCC); Audio Evolution Network (AEN).

JEFF GASTINEAU
Engineer & Producer
3001 STUDIOS
3001 Indianola Ave., Columbus, OH 43202
(614) 262-3001

Credits: Synthesist/guitarist with Scram, Glass Hammer and Money. Studio synthesist with Suzy Gold. Engineered and/or produced Razor Penguins, John Bruck, Keen Durzo Band, The Slapphappys, Five Mighty People, Turnabout, Turning Point, Royal Crescent Mob. Product specialist/clinician for Korg Keyboards.
Services Offered: State-of-the-art production techniques and synthesis in the facility of your choice or 3001 Studios in Columbus, Ohio, where we employ dual multi-tracks and a complete synthesizer composition/arranging system. My production style utilizes today's and tomorrow's techniques to capture the true character of the artists and the song, while being a musician, the technology does not overwhelm the music.

LARRY GATES/LARRY HOCHMAN
Engineer & Producer
NEWFOUND MUSIC PRODUCTIONS, INC.

10 Kershner Pl., Fairlawn, NJ 07410
Office: (212) 929-3037 Studio: (201) 796-9175
Credits: Jingles produced by NMP: Kodak Film and Disk, Nestles, Toys R Us, Sports Illustrated, Clairol (MTV), Chewels (Network and MTV), Valvoline, Kool-Aid, Honeycomb, Weight Watchers, Gulf Oil. Original Film Scores: Thorne/—LISTING CONTINUED ON NEXT PAGE

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✓VISA Berkeley, CA 94709

415/527-1411



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—LISTING CONTINUED FROM PAGE 147

EMI's *Not For Publication*, *Friends and Feelings* (CBS), *The Watchman*. Artists: Mitch Foreman, Desmond Child, Bob Crewe, Tommy James, Bob James, Michael Brecker, Herbie Hancock, Steve Gadd, Anthony Jackson, Richie Havens, and Lynn Redgrave.

Services Offered: In a relaxed country setting, 15 minutes from the GW bridge, Newfound Music offers 24-track state-of-the-art recording facilities. Services include all phases of recording for film and disk with a full range of digital services available. Complete production services include original music and orchestrations for film, jingles, industrials, records, and demos. Equipment: customized '84 Amek console, computer automation, two plates, two digital reverbs, full range of microphones, DDLs and other outboard gear. Instruments: Kawai baby grand, wide selection of digital and analog synthesizers.

TIM GEELAN

Engineer

TIM GEELAN AUDIO RECORDING

123 Woodcliff Ave., Woodcliff Lake, NJ 07675
(201) 391-7527

Credits: Paul McCartney, Wynton Marsalis, Music for ABC-TV 1984 Olympics coverage, Ted Nugent, Blood, Sweat & Tears, Max Roach, Mel Torme, Laura Nyro, Minnesota Symphony, Sesame Street, Mahavishnu Orchestra.
Services Offered: Freelance recording engineer and consultant. Experienced in recording all types of music for records, film scores, radio and TV commercials, industrials and multi-media presentations. Will also aid in selection of studio or remote location.

PAUL GERRY

Engineer & Producer

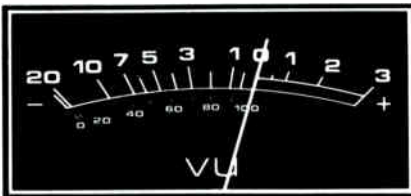
THE CUTTING EDGE CUSTOM DISC MASTERING

Box 217, Ferndale, NY 12734
(914) 292-5965

Credits: Producer and engineer for Revonah Records, Tel-E-Vue Productions Records, Quickway and Studio 17 Records. Production engineer and disc mastering on numerous independent artists LPs, EPs and 45s.

Services Offered: Disc mastering, plating, pressing, engineering, jacket design, layout, photography, artist development and management, studio clips, demo records, tapes and videos. Record production for LPs, EPs and 45s.

INDEPENDENTS



BOB GIAMMARCO

Engineer

NIGHT OWL MUSIC

251 W. 30th St., New York, NY 10001
(212) 563-6410

Credits: Upon request.

DAVID GLASSER

Engineer

AIR SHOW, INC.

5727 25th Rd. N., Arlington, VA 22207
(703) 237-8312

Credits: Sisterfire Festival 1984 (Redwood Records), Shirley Horn, *Garden of the Blues* (Sleeplechase Records), New Music America 1983 and '84 (technical director), New Music Distribution Service, New American Orchestra, Modern Jazz Quartet, Count Basie Band, National Public Radio, Western Public Radio, American Jazz Radio Festival, Murray Street Enterprise, Jazz Alive!, Skyelabs.

Services Offered: Technical direction for remote recording and broadcasts. Direct to stereo and multi-track mixing—in studio and on location, with emphasis on recording of classical, jazz, and acoustic music for album and broadcast projects. Production mixing for music, documentary, and news broadcasts. In-house stereo production studio, digitally equipped. Telco and common carrier satellite interfacing and testing. Telco, PL, and IFB comm systems design and implementation.

BILL HALVERSON

Engineer & Producer

607-B Shady Ln., Nashville, TN 37206
(615) 227-2923

WILLIAM J. HAMILTON III

Engineer

BILL HAMILTON

230 New York Ave., New Brunswick, NJ 08901
(201) 249-0374

Credits: Freelance sound reinforcement engineer, 1976 to present. Staff engineer at audio/video production facility since 1979. Design of several audio and video systems. Experienced in all facets of stage and studio, audio and video production. Member A.E.S., S.M.P.T.E.

Services Offered: Live sound mixing, studio engineering, location recording, systems design. Other services available or accessible include: A.C. power tie-in and distribution, camera setup and operation, film-to-tape transfer, lighting (stage or studio), system rental, tape duplication, video editing, titling, etc.

R. MARK HANSEN

Engineer & Producer

715 South 34th St., Terre Haute, IN 47803
(812) 234-0229

Credits: Studio, live engineering, production for Johnny Sneeze and the Dead Preps, Covenant and others. Graduate of Recording Workshop, Chillicothe, Ohio. Current projects include Wolfbane, Enticers, R.O.C.

Services Offered: Music production, engineering, performance and songwriting demos, songwriting, arranging, studio musician (guitar, bass, keyboards). Especially enjoy helping an artist's original work take shape as it is envisioned.

JEFFERY KENT HARBIN

Engineer & Producer

89 Mass Ave., Box 229, Boston, MA 02115
(617) 266-4859

Credits: Prentice-Hall Publishing, Northeastern University, Dorum Hair Products, Just for You Cosmetics, City of Gary, Indiana, Strohs Beer, Slice soft drink.
Services Offered: Engineering/production for records, radio and TV and live sound. Also, acoustic consulting.

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LARRY HARLOW**Engineer & Producer****BIG APPLE STUDIOS INC.**353 West 48th St., New York, NY 10036
(212) 974-1755

Credits: Produced over 200 LPs. Latin-American specialist, tri-lingual; keyboardist, arranger, producer, Grammy nominee.

Services Offered: 48-track recording, two Neve/Studer studios, special MIDI keyboard room, large outboard selection.

MALCOLM H. HARPER, JR.**Engineer & Producer****REELSOUND RECORDING CO.**2304 Sheri Oaks Ln., Austin, TX 78745
(512) 472-3325, 282-0713Credits: Live concert and TV recording engineering: Willie Nelson, Ricky Skaggs, Lee Greenwood, Glen Campbell, Eddie Rabbit, Silvia, AC/DC, Robert Plant, Ted Nugent, Billy Squire, Tears for Fears, Judas Priest, Journey, Christopher Cross, The Gap Band, Frankie Beverly and Maze, Amy Grant, Dave Perkins, Jay Aaron, Neil Young, and Eric Johnson. Westwood One, DIR, NBC *The Source*.

Services Offered: Forty-two foot Tom Hidley designed remote audio tractor-trailer unit. 46-track automated with SMPTE interlock, overdub room and lounge. In-concert recording for radio, film and TV audio support. For those out of the normal album projects and mixing sessions. Sixteen years experience. Second remote unit located in Nashville, Tenn.

DON HARRISS**Producer****DH PRODUCTIONS**910 Celia Way, Palo Alto, CA 94303
(415) 858-0602

Credits: Our clients include Pacific Bell, National Semiconductor, AT&T, and many others.

Services Offered: Custom music designed for film, TV/radio, multi-image, corporate projects and industrials. All styles—electronic or traditional. Call for demo.

MARTY HASSELBACH**Engineer & Producer****NO-HASSELTRAKS PRODUCTIONS**#305-1872 Barclay, Vancouver, BC V6G 1K8
(604) 685-4009

Credits: Producer: Questionnaires, Herald Nix; numerous jingles, soundtracks, and production work. Engineer: Powder Blues, Wildroot Orchestra, The Villians, Mark Hasselbach, Parallel States, David Raven, Richard Loney, V.E.I.I., John Lee Hooker, The Lawlors, B-Sides, and many nationally aired radio spots and audio post-production for pay TV.

Services Offered: Production services and engineering available. Fully computerized 24-track facility with synchronizer for audio/video post-production. Fee and rates negotiable. Also, available for audio engineering lectures and seminars. Please phone.

GENE HEIMLICH**GENE HEIMLICH SAVAGE ANGEL MASADA MUSIC**888 8th Ave., New York, NY 10019
(212) 757-1953

Credits: Founder of Daily Planet Studios (Planet Sound), manager: George McCrae; production manager: Deodato; A&R director: Billboard Disco Forum '76; production coordinator: Noel Pointer. Clients: RCA, Tropical Buddha, Whole Life-Times, Xerox, Halston, Moving Center, Jim Scott (Radiance), Arlen Roth, Mike Mandel, Raphael, Revelation, Bell Sound Studios, Kenny Lehman, Cafe Lamama, Ted Bates, etc.

Services Offered: Full production, engineering—multi-track, digital; location recording w/Nagra IV-S and F-1 processor (d/digital); re-mix. Arranging and contracting, some studio brokerage and administration. Production especially suited to clients and artists w/packaging needs—for tape sales. Includes cover design and marketing of tapes, film scoring and B.G. music, commercials, etc. Analog, digital, record, tape and CD sampler tape available on request.

ROLF HENNEMANN**Engineer & Producer****ROOSTER PRODUCTIONS, LTD.**1234 W. 6th Ave., Vancouver, BC, Canada V6H 1A5
(604) 734-1217, 687-5205

Credits: Heart, Chilliwack, Clocks, Toronto, Prism, Doucette, Nantucket, Randy Meisner, Al Stewart, Terry Lacks, Valdy, Long John Baldry, various movie soundtracks and TV variety shows.

Services Offered: Engineering and/or producing for established as well as new artists anywhere in the world. Connections to major record labels in U.S. and Canada. Have worked in major studios throughout North America.

JAY HENRY**Engineer & Producer****VISUAL MUSIC**235 E. 13th St. #3-D, New York, NY 10003
(212) 505-9281

Credits: Fourteen years experience in recording and broadcast industries. Has earned a number of gold records and worked on Grammy nominated albums. Jay has spent the last three years in New York, working on albums for Shannon, Alphonse Mouzon, Larry Coryell, Robin Clarke, and singles on CBS, Atlantic, and Posse Records.

Services Offered: We offer (user friendly): software based, audio/video pre- and post-production. Full music production services for singles and master demos, including: arrangements and lyrics; complete music video packages; machine lockups; studio and location production services for film and video; visual styling; programming of synthesizers and drum machines; MIDI and SMPTE interfacing for sequencers; sample library; custom signal processor software; and unusual equipment rentals.

BRUCE HENSAL**Engineer & Producer****BRUCE HENSAL/KOPPERHEAD PRODUCTIONS**935 Schneider Rd. N.W., North Canton, OH 44720
(216) 494-8760Credits: Engineer: *Hotel California*, *Eagles*; *Defenders of the Faith*, Judas Priest; *Right By You*, Stephen Stills; *You Get What You Play For*, R.E.O. Speedwagon; *Nederlands*, Dan Fogelberg; *Let's Rock the World*, Third World; *You Can't Argue With a Sick Mind*, Joe Walsh. Producer: Little Girls, Crash Street Kids.

Services Offered: Synclavier digital music system, both in and out of session 24-track recording and production; musical consultation; custom music composition and arrangement; publishing; Kopperhead Compositions Inc., ASCAP

BOB HODAS**Engineer & Producer****P.O. Box 2028, Sausalito, CA 94965**

(415) 331-6941

Credits: Doobie Brothers, Village People, Marty Balin, Rick James, Mickey Hart, Dinosaurs, Merl Saunders, Dick St. Nicklaus.

Services Offered: Recording and concert engineering; film, album, and demo production.

**JOHN C. HOHMAN JR.**
San Francisco, CA**JOHN C. HOHMAN JR.****Producer****JOHN HOHMAN PRODUCTIONS**2215-R Market St., Box 225, San Francisco, CA 94114
(415) 626-5440

Credits: CBS Records: Double Entente, "Sleeping Dogs Lie" (dance remix and dub); Jon Jon Band, "All Night Breakdown" (dance remix and dub); Uno Records: Sonny Padilla Jr., "It's Your Body" (dance remix, dub and video version); Sonny Padilla Jr., "Talk To Me" (dance remix, dub and video version); Hot Tracks Records: Sheila E., "Sister Fate" (dance remix edit).

Services Offered: To produce dance remixes for recording artist.

MICHAEL HOFFMAN**Engineer & Producer****FLORIDA VIDCOM, INC.**3685 N. Federal Highway, Pompano Beach, FL 33064
(305) 943-5590, 943-5592

Credits: Emmy award-winning production facility.

Services Offered: Full 16- and 8-track audio production facility plus full video production facility. Jingles, film-scores, post scores, albums, writing, composing. Comprehensive audio and television production and post-production capabilities under one roof.

JACK HOLDER**Engineer & Producer****SUR PRODUCTIONS**1902 Nelson Ave., Memphis, TN 38114
(901) 278-8346

Credits: Terry McNeal (Epic Records), Rob Jungklas (Manhattan Records), William Lee Golden (MCA Records), Joanna Jacobs (Epic Records), Krokus (Arista).

Services Offered: Complete in-house 24-track analog or 32-track digital studio with staff musicians and extensive selection of outboard gear and microphones. Pre-production room with Linn, Fairlight CMI, PPG, DX7, IX-8P, IX-3P, MSQ700, Prophet 5.

JAMIE HOOVER**Engineer & Producer****OVO PRODUCTIONS, LTD.**410 Graystone Rd., Charlotte, NC 28209
(704) 523-1117

Credits: Albums by the Spongelones, SugarCreek, The Killer Whales, Robert McClure, Awareness Art Ensemble, Helpless Dancer, The Federal Brothers, and more, all produced by Jamie Hoover and engineered by Mark Williams for OVO Productions, Ltd. Plus, freelance engineering at Reflection Sound Studios, Arthur Smith (HMC) Studios, Lamon Studios, etc.

Services Offered: Freelance engineering for records, jingles, soundtracks, demos, live productions, and TV. Experienced as engineer on MCI, Trident, Soundworkshop, Tangent and other fine boards, and as a session player on guitar bass, vocals, and just about anything that makes a noise.

ROGER HOOVER**Engineer & Producer****SWEETSONG PRODUCTIONS**Box 2041, Parkersburg, WV 26102
(304) 489-2911

Credits: Miltenberger & Clark, Of One Accord, J.I.C. Express, Light, and many more.

Services Offered: Producing of Christian artists. Own 16-track state-of-the-art studio or at artist location. Demo tape available. Excellent quality and rates. Also produce video tapes for music artists, instructional, training. Can work from concept to creativity to pressing of finished product. Looking for Christian artists who are committed and professional.

PAUL HORNSBY**Engineer & Producer****MUSCADINE STUDIOS**3078 Vineville Ave., Macon, GA 31204
(912) 745-2401

Credits: Producer of albums by The Marshall Tucker Band, Charlie Daniels, and many others. Have many major label contacts.

Services Offered: Complete 16-track and 8-track recording studio.

**LARRY HUERTA**
Chicago, IL**LARRY HUERTA****Engineer & Producer****HUERTA RECORDING SERVICES**4118-B N. Kedvale, Chicago, IL 60641
(312) 794-0125

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INDEPENDENTS



—LISTING CONTINUED FROM PAGE 149

Credits: A&M, Arista, Capitol, Columbia, Delite, Elektra, EMI Epic, Flying Fish, Mercury, Motown, Warner Brothers, Coffee, Linda Lifford, Kurtis Blow, Heaven & Earth, Lettermen, John Campbell, Bonnie Koloc, Chevere, Erwin Helfer, Sheba Pawnz, Chicago Poy, McDonalds, Taster's Choice Zenith, RCA, United Air Lines, NBC News, Sears, Kellogg's Doublemint, Coors

Services Offered: Available for artists, record companies, advertising agencies, jungle companies and audio-visual companies. Over 12 years experience recording demos, records, commercials, slide presentations, trade shows, locations, and feature films. Can contract professional studio musicians, and have access to studios ranging from mono to 72 tracks, analog or digital. Professional follow through including quality control, inspection of dubs and record pressings. Rates vary to meet your budget.

ROD HUI

Engineer & Producer
RODWAY PRODUCTIONS
112 Greene St., New York, NY 10012
(212) 226-4278

Credits: Produced and engineered Shannon, Let the Music Play, Run DMC "Run DMC" and "King of Rock", Carol Lynn Townes, Satisfaction Guaranteed, Riot, "Born in America", Lovebug, "Starski," "Houserocker." Albums engineered: Bonnie Tyler, "Total Eclipse of the Heart"; Con Funkshun, "Electric Lady"; Kurtis Blow, "The Breaks"; "Christ mas Rappin'"; "Tough," "Devise"; Joe Piscopo/Eddie Murphy, "Honeymooners Rap"

Services Offered: Knowledge of expert musicians for all types of music, knowledge of keyboards, sampling devices, drum machines, digital equipment.

RANDE ISABELLA

Producer
ARTASIA MUSIC PRODUCTIONS
13020 SW 92 Ave. #A-214, Miami, FL 33176
(305) 255-8190 or (216) 534-3971

Credits: Current tapes and resumes available upon request. Am currently seeking a well equipped studio to use as home base for production activities. Preferably Los Angeles or New York City areas. Willing to assume some staff producer/engineer responsibilities. Have viable business prospects for growing studio, extremely professional, demeanor and unlimited energy.

Services Offered: Record production and demos, film/TV composition, songwriting and engineering. Male/29, worked 11 years as producer and four years as staff engineer. One of very few holding a Master's degree in record production and studio writing from University of Miami. Spent much time working with literally all styles of popular music but enjoy top 40 most. Specialty is turning raw songs and talented artists into great records and consistent songwriters, respectively.

DON JAMES

Engineer
DON JAMES PRODUCTIONS
1263 W 72nd Terrace, Kansas City, MO 64114
(816) 931-4102

Credits: Beta Mu Phi, Alpha Sinfonia, Butler Manufacturing, Central Methodist College, Roger Ferris, Hallmark Cards, Junie Page, Kraiz, Names Don't Matter, Panhandle East, Pipeline, Raspberry Records, Secret Meeting, Southwestern Bell, Yield.

Services Offered: Audio engineering, 2 to 24 tracks for albums, demos or remotes. Live sound engineering, house or monitors. Engineering and editing commercials and industrial soundtracks. Sing music background, versatile in all styles. Local or free to travel.

ROBBIE JARVIS

Engineer & Producer
ROBBIE JARVIS' MUSIC
P.O. Box 525, Buzzards Bay, MA 02532
(617) 759-7973

58 Washington St., Warren, RI 02885

(401) 245-8204 after 5 pm

Services Offered: Sound systems and light shows for all sizes rock shows.

STEVE V. JOHNSON

Engineer & Producer
**ELEGANCE PRODUCTIONS/
SEARCH 'N' RESCUE AUDIO**
536 Comstock Dr., Tiburon, CA 94920
(415) 435-1517

Credits: Available upon consultation.

Services Offered: Specialize in remixes, saving existing tracks or dance/hi-tech treatments. Ground up production also, with emphasis on pre-production and rehearsal. Will enthusiastically shop our product. Most interested in new sounds, new artists, although veterans welcome.

DANNY JONES

Engineer & Producer
DANNY JONES
3550 Sportsway Ct., Memphis, TN 38118
(901) 365-0021

Credits: Beach Boys, Jim Corcoran, Creed, Jim Dandy, DeGarmo & Key, Etta James, Jean Knight, Patti LaBelle, Mylon LeFevre, Ramsey Lewis, Neville Brothers, Billy Joe Royal, Staple Singers, Diane Tell, Allen Toussaint, Irma Thomas, Rufus Thomas.

Services Offered: Engineering, producing, music publishing.



JEFF JONES
New York, NY

JEFF JONES

Engineer & Producer
CINA-TONE INC.
218 E. 82nd St. Ste. 4FW, New York, NY 10028
(212) 570-2765

Credits: Recorded for Def Jam, Russell Simmons, Spider D, Marley Marl, Roxanne Shante, Boggie Boys, Virgin, Tommy Boy, Streetwise, CBS, Warner Bros., Capitol, Elektra, Atlantic, Cheetah, Sony, NBC-TV, CH 13. Recorded with Planet Patrol, Larry Coryell, Talking Heads, Gang of Four, Plasmatics, Neil Sedaka, Miroslav Vitous, Vikie Sue Robinson, Angela Clemmons, Fonda Ray, Parliament, Brecker Bros., Dave Sanborn, John Hammond Sr., Teo Macero, Don Elliot, Arthur Baker, Ted Currier, Teru Nakamura.

Services Offered: Complete 24-track and 32 track digital recording, production services, album, single, EP & CD masters produced. A specialist in location recording, studio recording, mixing, and editing, live PA mixing, master recording, broadcast and video sound.

LESLIE ANN JONES

Engineer & Producer
3844 Whittle Ave., Oakland, CA 94602
(415) 530-1402

Credits: Co producer and engineer. Tret Fure, "Terminal Hold", Holly Near, "Speed of Light"; Margie Adams, "Here is a Love Song"; Jane Fonda, "Caribbean Workout" video music. Engineer: Maze, Angela Bofill, Cris Williamson, Bobby McFerrin, Whispers, Narada Michael Walden, Herbie Hancock, Carlos Santana, Ferron, and many others.

TRACY H JORGENSEN

Engineer
AUDIO ARTS
1511 Emigration Cyn., Salt Lake City, UT 84108
(801) 581-1400

Credits: Twenty-five year veteran, director of audio for the "Donny & Marie Show" (3 seasons), freelance engineer.



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music recording and mixing specialty, live recording specialty, 24-track experience (Neve, Studer, MCI, Harrison). Production music for: CBS Radio, Japanese TV Network, 50 international ad clients; have recorded nearly 300 major recording/TV/theatrical stars

Services Offered: Freelance engineer, owner of Audio Arts which consists of myself as an independent (which I've been for 12 years), Audio Recording Arts Academy (a school of recording—8 years old), Musicians Survival Seminars (a lecture series) and Listen Publications. I am starting to write audio articles for the trades and have just finished editing a book on audio, 600 pages, which I hope to have published this next year. It will be different from any book out for it deals almost totally on the "Art!"

LOU JUDSON

Engineer & Producer
INTUITIVE AUDIO

Box 7172, Santa Cruz, CA 95061
(408) 335-2018 or 426-1008

Credits: Independent musicians albums. Joel Andrews, *Paradise Bird* (1985), tour recording 1978; Sylvan Grey *Ice Flowers Melting* (1981); First Amendment Choir, *Hear My Breathing Heart* (1981); Amadeo, *Amadeo* (1981) live/remote album; Old Globe Theatre, Sound Design Award (1982), New Dimensions Radio, KUSP, KPFA, KQED-FM, KJAZ, KMFB, WMAH; Celestial Sound Studios

Services Offered: Film sound recording and mixing; audio tracks for videotape; complete albums for independent musicians; soundtracks for multi media productions; sound design for theater (two Drama-logic awards in 1982); high quality sound systems for music, dance, and drama; road and house sound for music of all types, maintenance and booking of rental equipment pool, recording and archiving of a library of sound effects; hand manufacturing of professional audio products; alignment and maintenance of studio equipment; engineering and editing radio programs and radio documentaries; extensive voice and music editing; seminar recording; mastering, and operation of duplication equipment; audio for any purpose

EDD KALEHOFF & HOWARD LINDEMAN

Engineer & Producer

EDD KALEHOFF PRODS /MAGIC VENTURE
111 W. 24th St. 4th Fl., New York, NY 10011
(212) 924-1885

Credits: The Roches, Rosko, CBS West 57th St., CBS Crossroads, The Guiding Light, The Price is Right, ABC American Sportsman, ABC USFL, Walking Tall, Grey Advertising, Hill Holliday, Wang Computers, Foreigner, Roberta Flack, Sarah Vaughn, Philadelphia Theme with Patty LaBelle

Services Offered: Production, arranging, engineering, original compositions. Recording studio facility Solid State Logic 4000E, Otari MTR 90. Specifications upon request

KAREN KANE

Engineer & Producer

329 Highland Ave., Somerville, MA 02144
(617) 628-6469

Credits: To date I have produced and/or engineered over 50 albums. Many of them on the Rounder Records label, Flying Fish, Folkways, and many independent labels. Have had many rock and roll 45s and demo "hits" on the radio. Have been in the recording business since 1970.

Services Offered: I was one of the first successful freelance recording engineers in New England. I offer unbiased advice about recording in Boston and a no-charge pre-production meeting. Recording drums is a specialty of mine as is acoustic music. I am extremely efficient, dedicated and easy to work with. I really listen to my clients and give them what they want to hear.

DAVID KASPERSIN

Engineer & Producer

DYNAMIC RECORDING
2846 Dewey Ave., Rochester, NY 14616
(716) 621-6270

Credits: Have secured 33 major publishing contracts for artists in the last four years. Engineer for 22 years, producer for ten years.

Services Offered: Produce excellent demo tapes/records. Write for free cassette or record to 2846 Dewey Ave., Rochester, NY 14616 or call (716) 621-6270. Specify type of music production you are interested in.

HELEN KEANE

Producer

HELEN KEANE ARTISTS MANAGEMENT
49 E. 96th St., New York, NY 10128
(212) 722-2921

Credits: Producer for LPs by Bill Evans, Kenny Burrell, Tony Bennett, Paquito D'Rivera, Morgana King, Joao Gilberto, Mark Murphy, Steve Kuhn, Adam Makowicz, Joanne Brackeen, Keith Macdonald. Companies produced for: Warner Bros., CBS Records, Fantasy, Muse Polygram, Landmark, CTI, Blue Note, Polydor, MGM Verne, etc.



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(818) 985-1792

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MARCUS S. KEARNS

Engineer & Producer
PERFECT PITCH RECORDING & PRODUCTION CO.
 Rt. 8 Box 433-A, Statesville, NC 28677
 (704) 872-2360

Credits: Producer, engineer, composer, musician and owner of Perfect Pitch Recording; have produced albums of pop, dance, and fusion music, as well as music for commercials and television themes. Currently involved in production of New Age music album; owner of Melomouque Publishing Co. and independent record label.

Services Offered: Complete production services. Album production, film music, commercials, composition and arranging. Fairlight computer, drum computer and synthesizer programming. Bachelor's degree in composition with background in classical piano, orchestration, electronic music, and jazz and rock music of all kinds. Automated 24 track studio featuring all Studer machines, top-of-line outboard gear (Lexicon 224XL), Fairlight CMI, drum computers, and full array of synthesizers located on 40 acres of seclusion in beautiful North Carolina.

WILLIAM M. KELLY

NATIONAL VIDEO CENTER/RECORDING STUDIOS
 460 W. 42nd St., New York, NY 10036
 (212) 279-2000

Credits: Kurtis Blow's "America," Marshall Crenshaw's "Little Wild One," Scritti Politti's "Perfect Way." Feature films Woody Allen's *Zelig*, *Broadway Danny Rose*, and *Purple Rose of Cairo*. Also, commercials, industrials and network programming.

Services Offered: Audio new music studio (50'x40') with SSL 6000 console, 24-track music studio, video/audio mixing—Q. Lock and Vidi Mag, film mixing, live voice studios, time compression, reel-to-reel and cassette duplication, music and EFX libraries. Video, two video studios (60'x80' and 40'x50'), live on-line edit suites, two off-line/informational suites, negative color correction, remote production, videodisc mastering, computer graphics, duplication—all formats.

PETER R. KELSEY

Engineer & Producer
 2038 Holt Ave., #10, Los Angeles, CA 90034
 (213) 837-7939

Credits: Thirteen years experience, including six years at Trident Studios, London with producers: Ken Scott, Roy Thomas Baker, Rupert Hine, Peter Asher, Dennis MacKay, Robert "Mutt" Lange, and artists: Elton John, Jean-Luc Ponty, Graham Parker, The Fixx, Camel, Cafe Jacques, "Weird" Al Yankovic, Randy VanWarmer, City Boy, Linda Ronstadt, Terri Nunn of "Berlin," Joe Zawinul, Weather Report.

Services Offered: Engineering and mixing for any project, co-production with artist and/or producer, full production with or without engineering. I will do everything I can do to make your music the best it can be. Please call to discuss your next project. Resume on request.

NORMAN KERNER

Engineer & Producer
BRILLIANT PRODUCTIONS, INC.
 617 S. 13th St., Richmond, CA 94804
 (415) 236-2281

Credits: Local credits include Terry Haggerty, The Chills, Freaky Executives, Mike Molenda's Passion Dance, Saturn Alley, FCC, Jonathan Richman & the Modern Lovers, Unix, Parallax, Daniel Kobialka, Rhythm & Noise.

Services Offered: No project is too big or small if it's happening! Please send all cassettes and info to P.O. Box 7139, Berkeley, CA 94706.

AVI KIPPER

Engineer
 15050 Sherman Way #230, Van Nuys, CA 91405
 (818) 994-6737

Services Offered: Music mixing and recording supervision. Broad and in-depth experience in records, motion pictures, television and advertising. A quality cost conscious professional covering all phases of recording, from pre-production through final mix, mastering, or sweetening. International experience. Travel welcomed.

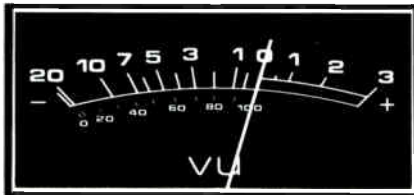
BERNIE KIRSH

Engineer & Producer
 c/o MAD HATTER STUDIOS
 2635 Griffith Park Blvd., Los Angeles, CA 90039
 (213) 664-5766

Credits: Chick Corea, Stanley Clarke, Herbie Hancock, Chaka Kahn, Janis Ian, John Klemmer, Patt Smith, Gary Burton, Lenny White, FreeFlight, Robin Williamson, John Cale, Return To Forever.

Services Offered: Pre-production and production consultation and producing, engineering.

INDEPENDENTS

**PAUL KITCHEN**

Engineer & Producer
THE INSYNC ASYLUM
 P.O. Box 62, Burtonsville, MD 20866
 (301) 384-8480

Credits: Produced and engineered sessions for The Insync Asylum for past five years as well as independent freelance work. Production and engineering clients: Cartel, Petty Tyrant, Paul Kitchen. Co-produced and engineered tracks for Frankie Kelly, Marcus Green.

Services Offered: Professional engineering skills for the most demanding dates, where total efficiency is essential, as well as the ability to realize textures and the imagination to create new and uncharted aural landscapes. As a producer I am drawn only to artists who have an intense need for self-expression, because even in the '80s I still believe it's possible to slip a little art into the marketplace without upsetting the diet of the Top 40 junkie.

STEVE KLEIN

Engineer & Producer
 20224 Sherman Way #32, Canoga Park, CA 91306
 (818) 716-8430

Credits: Thirteen years engineering experience, Criteria Recording Studios—senior engineer 1975-1982. Partial list of album credits include: Barry Gibb, *Now Voyager*, Kenny Rogers, *Eyes That See in the Dark*, includes Dolly Parton duet "Islands in the Stream;" Bee Gees, *Staying Alive*; Bus Boys, *American Worker*; Frankie and the Knockouts, *Below the Belt*; Rick James, *Garden of Love*; Ted Nugent, *Weekend Warrior*; Outlaws, *Lady in Waiting*; Rosington Collins Band, *This is the Way*. Live recording credits include: Aerosmith, *Average White Band*, Supertramp, The Knack, The Police. Production credits include: Shotgun, *The Bellamy Brothers*, *Restless LP*, includes the #1 singles "World's Greatest Lover," "I Need More of You." Extensive work with 48-track, digital recording, audio/video formats and electronic music.

RON S. LAGERLOF

Engineer
DBA RECORDING SYSTEMS LTD.
 5803 Velasco, Dallas, TX 75206
 (214) 826-5418

Credits: Currently head of technical operations for the Dallas Sound Lab. Have recorded and/or mixed: Randy Meisner (Eagles), Roy Orbison, Recoil, John Prine, Mac McAnally, Wayne Newton, et al, including gold record for Hank Williams, Jr's *Family Tradition*. Commercial/Industrial: Decker Special Olympics, Macy's, Jimmy Dean Sausage, General Dynamics, Miller Beer.

Services Offered: Manufacture Recording Systems "QB Series" custom headphone/cue boxes and studio access sones Studio installation/interface for. Dallas Sound Lab (3 studios), TM Productions (two studios), Studio Centre, Omega Audio, Eagle Mountain Recording, and Sierra Audio Digital recording, editing and rental with Sony PCM 10 digital audio processor. Affiliations: AES, NARAS, Nashville Chapter; Professional Audio Recording Association of Dallas/Ft. Worth (PARA). Direction: Dedicated to the achievement of excellence in audio reproduction and aural perception.

JACK LANCASTER

Producer
 6610 1/2 Padre Terrace, Hollywood, CA 90068
 (213) 851-2084

Credits: Produced various artists in top London studios including: Rod Argent, Stephane Grappelli, Gary Moore, Brian Eno, Clive Bunker, Phil Collins, Ella Jordan, Manfred Mann, Cosy Powell, Zeitgeist, Knisma, The Permutations, several film and TV scores, etc. Have had hit singles in Europe and USA.

Services Offered: Production, arrangements, compositions, play all saxes, flutes, clarinet, Lyconas. Can supply engineer for productions. Have produced many styles of music including rock, new wave, pop, fusion, etc.

MICHAEL R. LANE

Engineer & Producer
LANE AUDIO & RECORDS
 Box 29171, Los Angeles, CA 90029
 (213) 469-8007

Services Offered: Specialists in noise reduction and sonic restoration/rebalancing, using highly specialized equipment such as the Packburn Noise Suppressor, Orban Parametric Equalizer, etc., in a unique audio restoration system. Our work is oriented toward reestablishing the naturalness and clarity of the original performance, with special attention given to maintaining phase coherence. Our many years of experience and developmental work in the art and science of sonic restoration apply equally well to 78s, transcriptions, LPs and tapes, both mono and stereo. A reprint of our article, "Sonic Restoration of Historical Recordings," will be sent free upon request.

NYYA F. LARK

Engineer
 953 Amsterdam Ave. #4C, New York, NY 10025
 (212) 749-2959

Credits: Gil Scott-Heron, Smokey Robinson, Bill Evans, Cecilio and Kapono.

Services Offered: Studio and live recording, live concert sound

BERNARD M. LEE

Engineer & Producer
AIRCRAFT RECORDING STUDIO
 #3 Dormont Sq., Pittsburgh, PA 15216
 (412) 343-5222

Credits: Produced and/or engineered hundreds of sessions including: Toby Beau, Dave Hanner, Red Hot & Blue, Jimmy & the Hint, McDonalds, GM Fiero, Allied Chemical, W.A.M.O. radio IDs, etc. Seven years engineering, five years producing.

Services Offered: Producing/engineering/songwriting/live sound/total project coordination. Also president of AirCraft Communications a full-service audio production facility offering multi-track 2-inch recording, art and graphics, publishing, sound reinforcement, artists development, AirCraft Record Label.

ERIC LILJESTRAND

Engineer
 577 Henry St., Brooklyn, NY 11231
 (718) 624-7712

Credits: Peter Gordon's, "Love of Life" for CBS/Masterworks; David Van Tieghem's dance scores for Twyla Tharp, Elisa Monte and the Pennsylvania Ballet; live sound for Love of Life Orchestra, The Waitresses; various live and taped performances for the Next Wave Festival at Brooklyn Academy of Music; countless battery sound sessions.

Services Offered: Studio engineering; programming on a wide variety of synthesizers and drum machines including the Fairlight CMI; location house and monitor mixing for any kind of ensemble. I believe in a musical approach to engineering. I read music and can mix or edit from a score. I am comfortable with anything from New Age to Heavy Metal. My top priority is a happy, comfortable client.

PETER LINK

Producer
WESTRAX RECORDING STUDIOS
 484 W. 43rd St., Basement Level, New York, NY 10036
 (212) 947-0533

Credits: Wrote and produced three songs for *Beats/Reel* soundtrack, produced "If You Let Me Make Love to You, Then Why Can't I Touch You," for Jenny Burton's second album on Atlantic (also wrote it), have produced major industrial scores for House and Garden, BMW, Clairol, Seagrams, among many others. Also produced cast albums as well as being award-winning Broadway composer.

Services Offered: Owns Westrax Recording Studios in NYC where he writes, produces, and arranges with state-of-the-art equipment such as LinnDrum, OBXa with Oberheim Xpander and DSX, Yamaha DX7, Yamaha TX-816, Octave Plateau Sequencer Plus w/IBM PC-AT, and Korg Poly-800. Heads a full staff of top quality engineers and musicians as well as a top stable of vocalists for all purposes. Also owns Westrax Publishing, Ltd. an ASCAP music publishing firm. Also directs and produces many major live acts in NYC.

FRANK LIZARRAGA

Engineer & Producer
ISRAFEL PRODUCTIONS
 5772 Broadway, Sacramento, CA 95820
 (916) 455-5278

Credits: Israfel has produced one LP and two 45s in Spanish and two 45s in English for Luna Records of Los Angeles. Under its own label, Israfel produced one LP.

—LISTING CONTINUED ON PAGE 154

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Names and contacts are what the recording industry is all about. Having a good product is only part of the struggle; to make it a success you need to get to the right **people**. Now, through a special arrangement with Augie Blume & Associates/Music Industry Resources, MIX is pleased to announce the availability of a new music business/recording industry data base information service.

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- Make your job easier and your time more productive.

Each data base contains current, comprehensive and specific industry information designed to serve the everyday sales, marketing and promotion efforts of professionals in every field of music. A typical sample listing in the record business data base includes the name of the company, names of key executives, marketing and national promotion people, address, city, state, zip, phone number, job function, and music focus(es). A typical sample listing in the radio data base includes the call letters of the station, name of the program director and/or music director, address, city, state, zip, phone number, and a reference code line which indicates the music format and trade reporter status.

The data bases are available both in print form and on computer disk. And, best of all, the information can always remain current because Augie Blume & Associates is also offering an up-to-the-minute update service to all customers at 50% off the original data base prices. Those ordering print versions will receive a computer printout as well as a set of mailing labels. Those ordering computer disk versions will find full information regarding computer system and disk formatting requirements listed in the licensing agreement.

Augie Blume & Associates was founded in 1973 as an independent promotion, consultation and data base service for the music industry. Author of the *California Music Directory* and previous winner of the "National Promotion Man of the Year" award (The Gavin Report, 1969) and the "Man of the Year Award for Independent Promotion" (*Billboard Magazine*, 1978), Augie Blume's expertise has been honed over decades of experience. The music business/recording industry data bases reflect his commitment to a diversified industry and effective independent promotional campaigns.

How to order

Please understand that these data bases are available for license only, not for outright sale. All customers will be sent a copy of the licensing agreement from Augie Blume & Associates which must be signed and returned along with proper payment before the order can be processed. To receive the data base licensing agreement and further information about computer disk formatting and compatibility, send your request to **MIX Bookshelf, ABA Database Service, 2608 Ninth St., Berkeley, CA 94710.**

Listed below are the data bases currently made available.

Record Data Base	Total Listings	Print Data Base Price	Computer Disk Data Base Price
The Music Business List:	3,000	\$250	\$500
Record Companies (U.S., Canada, overseas)	1,800	\$175	\$350
Record Distributors	355	\$100	\$200
Pop/Rock Record Listings	507	\$100	\$200
Country/Record Listings	150	\$50	\$100
Black/Soul Record Listings	230	\$50	\$100
Jazz Record Listings	606	\$100	\$200
Record Company A & R Listings	240	\$50	\$100
17 Major Record Labels (includes all key executives, producers, marketing, national promotion)	425	\$100	\$200
Management Companies and Booking Agencies	750	\$100	\$200

Radio Data Base	Total Listings	Print Data Base Price	Computer Disk Data Base Price
The Radio Station List (includes all formats listed below)	4,200	\$250	\$500
CHR/Top 40 Radio List	850	\$100	\$200
CHR/Top 40 Reporting List	400	\$50	\$100
Adult Contemporary Radio List	800	\$100	\$200
Adult Contemp. Reporting List	400	\$50	\$100
Album Rock Radio List	300	\$50	\$100
Black/Urban Radio List	350	\$50	\$100
Country Radio List	900	\$100	\$200
College/Non-Commercial Radio	800	\$100	\$200
Combination Album Rock and College Rock List	900	\$100	\$200
Jazz Radio List (full & part time)	800	\$100	\$200

Augie Blume & Associates

c/o Mix Bookshelf 843-7901

—LISTING CONTINUED FROM PAGE 152

three 45s and two EP albums in Spanish and English. Israel is currently producing three 45s to be released early 1986.

Services Offered: Israel is the first studio and production company in the Sacramento area to specialize in Spanish music and has a bilingual staff. Israel also houses two publishing companies: Pancho's Music Co., which is affiliated with BMI and Nochtistan Publishing Co., an affiliate with ASCAP. Also, Bi Jingles Music Co., which specializes in Spanish or English jingles.

LONNIE LONDIN

Producer

RAMA DAMA RECORDS

219 State Rd., Eliot, ME 03903
(207) 439-5541

Credits: Twenty five years experience as recording artist/producer. Labels: Glendale Records, Home of the Blues, Keno Records, Motown Records. Three years as session player (bass) and background vocalist in Nashville. Currently producing for own company, Rama Dama Records. Masters, demos, custom recording, jingles, radio and television advertising production, narration for industrial and promotional films, studio rental, publishing.

TOMMY LOOMAS/JOE SILVER

Producer

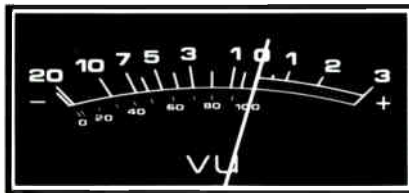
SILVER-LOOMAS PRODUCTIONS

38 Music Square E., Ste. 217, Nashville, TN 37203
(615) 255-8008

Credits: Produced sessions for Fleming McWilliams, Roger Lambert, Lissa Lee and others. Produced video and session for comedian, Skidrow Joe. Directed artist performance for Kenny Rogers TV Telethon, and produced commercials for Malden State Bank, Brenda's Boutique, Midtown Goodyear Tire Co., etc.

Services Offered: We will produce and deliver finished master or demo tape and advise on promotion, PR, and distribution. If needed, we will follow through with production of your music video. Other involvements include TV production, syndication and production of commercials.

INDEPENDENTS



GARY LUEDECKE

Engineer & Producer

MUSIC LANE RECORDING

P.O. Box 3829, Austin, TX 78764
(512) 447-3988 or 467-2011

Credits: Charlie Sexton and the Eager Beaver Boys, Will Sexton and the Kill, 14 K, Michael Balew, High Exposure, Loy Banton, Joe King Carrasco, Second Generation, Spencer Perkins, Van Wilks, Kathy and the Kilowatts, The Neighborhood, Dubussy Fields, Sabor, Militia, Ponty Bone & The Squeeze Tones, Bugs Henderson, Mickey Gilley, and more.

Services Offered: Hardworking engineer with creative ideas and a good ear to make you sound just the way you like or the way you never dreamed you could sound. Quick and efficient to save you dollars in recording time. Also available for live mixing, house mix or monitor mix positions.

LEE LUSTED

Engineer & Producer

214 W. Baltimore Ave., Larkspur, CA 94939

(415) 924-6124 or 381-4230

Credits: Twelve years experience in audio and video production. Audio production for video, film, radio and multi-image. Video production for cable TV and industrial/corporate clients. Currently staff engineer, command productions, Sausalito Production manager for Marin Video Visions, Mill Valley, CA.

Services Offered: Location video production, soundtrack production, on and off line editing, 1/4 and 1/2 inch edit suites, production management, technical coordination.

RICKY LEE LYND

Engineer & Producer

AUDIO ENGINEER

579 21st Ave., San Francisco, CA 94121
(415) 387-9000

Credits: I have been in the music industry for 15 years, with experience in performing, writing, production and most importantly, engineering. I feel having been a player has helped me to be a better engineer and given me a clear understanding of what the musician is experiencing in the studio.

Services Offered: Apple IIe, and IBM PC computers with MIDI software, punch in/out and sync to tape capabilities, DX7, CZ 1000, Drumtrax and Linn digital drums. Need help/advice in choosing the right studio? Call me. Save money with pre production planning. No project is too small. 2 to 46 track.

JON LYONS

Producer

ORPHEUM RECORDS

2140 N. Bronson Ave., Los Angeles, CA 90068
(213) 850-2365

Credits: Two albums with original Spirit for Mercury, 1976; #1 single ("867 5309/Jenny") and album (*Tutone-III*) with Tommy Tutone on CBS, 1982. Idle Hands in the UK for Chrysalis, 1985, many other British projects.

Services Offered: Complete command of all creative aspects of music, songwriting/composing, arranging, multi-instrumentalist (all synthesizers, guitars, bass, drum machines) and singing. All available when necessary. Specialty: modern, progressive pop with a commercial slant (a la Tears for Fears) and combinations of digital, keyboard and drum computer technologies with real instruments to create records that are orchestrated, sonically advanced, while still passionate and organic.

DON MACK

Engineer & Producer

6951 Ranchito Ave., Van Nuys, CA 91405
(818) 988-3271

Credits: Y&T, Brian Eno, David Byrne, Huey Lewis and the News, Windham Hill Records, Jane Fonda, Dino Fekaris, Phoenix Rising, Odin, Hellion, Jaded Lady, Letcher Grey, Foxx, Jon Barr, Quest, Alliance. Films: *Apocalypse Now*, *Plague Dogs*, Walt Disney Productions.

Services Offered: Fast, efficient, affordable engineering that will capture and enhance the magic of your music. As a producer I'm there every step of the way, from pre-production and rehearsals through the final mix and mastering of your product. Totally organized and capable of staying within your budget, I strive to keep your total costs to a minimum without sacrificing quality. I'm interested in all new music and am always looking to stretch the boundaries of today's sound. Artists are encouraged to submit material. I will listen to everything. Please call or write.

MR. HARVEY MARCUS

Engineer & Producer

CRYSTAL RAM PUBLISHING BMI/APRIL RECORDING STUDIOS/PRODUCTIONS

827 Brazil Pl., El Paso, TX 79903
(915) 772-7858 or 565-4692

Credits: We have done regional commercials for the YMCA, and for smaller companies in the southwest area. In regard to demos and albums we have placed songs for album consideration with such people as Glenn Campbell to Menucho; some of the regional artists we represent are The Street Boys and Cecelia Noel.

Services Offered: Crystal Ram Publishing affiliated with BMI, also works hand in hand with April Recording Studio of El Paso, Texas. Presently we are looking for material especially in the ballad area with crossover ability to submit to national artists and/or, a solo artist, or band that is strong regionally, in order that we may produce or represent. All correspondence will be answered within four to six weeks, mail all inquiries to Crystal Ram Publishing, c/o Mr. Harvey Marcus.

GEORGE (JORGE) MARTIN

Producer

STREET LEVEL PRODUCTIONS

5741 Carlton Way #305, Hollywood, CA 90028
(213) 466-8916

Credits: Sheila E., Richie Morales (Spyro Gyra), Jim Fielder (Blood, Sweat & Tears), Fred Allen (Fresh Start), Clayton Richardson (Summer Heat), Pheeroan Ak Laff (Gramavision), Henry Davis (LTD), Blue Standard Music, Apex Systems, BASF Systems, Studio Film and Tape, Inc., American Dance Guild, RPC Label, Michigan State Council for the Arts.

Services Offered: Multi percussion artisan, songwriter,



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Our staff ensures that all your needs, from the most detailed technical requirements to your personal preferences, are anticipated long before you arrive.

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MCI Automated Console	JB1. 4430 monitors

Our Services

Accommodations for six at the Farmhouse. Maid Service and Cook daily. Limousine transportation to and from the airport.

Our Guarantee

To make your stay at *Elora Sound* the most productive and relaxing experience of your recording career.

ELORA SOUND STUDIO

ELORA SOUND STUDIO, 122A ST. ANDREW STREET WEST, FERGUS, ONTARIO, CANADA (519) 843-4178



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and producer-rhythmist combines aural sophistication and primeval ingenuity to translate emotion to the listener. Hi-tech creativity through the imaginative use of new technology. Add realism and dimensionality, using the right creative tools (an array of indigenous percussives). One very crucial ingredient is the versatility needed to execute new ideas. Always working in new directions is the key to innovative production. Coordination of the creative process conducive to achieving the optimum product. Stimulated creatively by the limitations of a back-to-basic approach. Street Level Productions—"Hear the heartbeat of the streets."

MICHAEL HENRY MARTIN

Engineer & Producer
CASTLE SOUND PRODUCTIONS
 905 N. Mockingbird, P.O. Box 3061, Abilene, TX 79604
 (915) 672-3661

Credits: JH-24 24-track MCI recorder, Auditronics console, plate reverb, digital delays (Lexicon) and digital reverb, Eventide Flange, and more outboard, AKG, Neumann, Sennheiser, etc., mics, various synths, LinnDrum available, Crown amps and JBL monitors.

Services Offered: Albums, singles, demos, jingles, soundtracks for film or slide, voice-overs. All performing, arranging and producing talents available in-house.

PETER MARTINSEN

Engineer & Producer
PETER MARTINSEN PRODUCTIONS
 11160 Anderson Lakes Pkwy., Eden Prairie, MN 55344
 (612) 944-2491

Credits: Jesse Johnson's Revue, Janet Jackson, Evelyn King, The Girls, Andre Cymone.

RICHARD A. McBRAYER

Producer
DAWN RECORDS, INC.
 56 Ravenscroft Dr., Asheville, NC 28801
 (704) 254-8000

Credits: Many Christian artists including Squire Parsons, Gold City Quartet, The Primitive QT, etc.

Services Offered: Producing and keyboards for Christian musicians of any style.

ROBERT A. McBRIDE

Engineer & Producer
DECIBELS UNLIMITED PRODUCTIONS
 3342 T.C.U. Blvd., Orlando, FL 32817
 (305) 657-6481

Credits: Produced and engineered for Unemployed Royalty, heavy metal band Mere Threat, American Opera. Professional business includes directors of Mary Kay Cosmetics, American Business Women Association, and other business, and political organizations.

Services Offered: Engineering and mixing for any project, co-production with artist and/or producer, full production with or without engineering. I will take your project, book the studio, book the musicians, assist in arranging and restructuring your material if needed, work with you at rehearsal—everything it takes to make your music the best it can be. Call me and let's discuss your next project.

DAVID MERRILL

Engineer & Producer
CASTLE CORPS, INC.
 47 Renwick St., New York, NY 10013
 (212) 219-8693

Credits: Wrote, produced, performed and engineered music for *Break Dancin'* LP on Atlantic Records and other independent labels. Arranged, wrote, and produced music for documentaries, industrials and theater companies in New York and Florida. Former engineer at Master Sound Astoria.

Services Offered: Production, engineering, writing and arranging. Have well facilitated 8-track studio but will work at studio of your choice.

ALLAN J. MEYER

Engineer
ARROW AUDIO
 110 E. Canal, Neenah, WI 54956
 (414) 725-4988

Credits: The Producers; The Shoes; Conway Twitty; Huey Lewis & the News; Jerry Lee Lewis; Moynard Ferguson; Dizzy Gillespie; Roy Clark; Great Northern Bluegrass Festival '83, '84, '85; Hodag Country Festival, '81, '82, '83, '84, '85; Ronald Reagan; Jim Miller Country Spree '83.

Services Offered: Pro sound rentals, sales, and service. Freelance engineering and producing. Design, installations, touring systems.

MICHAEL MIKULKA

Engineer & Producer
GOPHER BAROQUE PRODUCTIONS
 7560 Garden Grove Blvd., Westminster, CA 92683
 (714) 893-3457

Credits: Berlin, Otha Young/Juice Newton Band, Exude, Juance Charmaire, Dorothy Hamill's "Fantasy On Ice," Knott's Berry Farm, "Christmas Needs Love" performed by Andy Williams (Bob Hope Christmas Special).

Services Offered: Owner of Gopher Baroque Productions, a full-service facility which includes a recording studio, publishing company and full synthesizer lab (tied in with two record labels). Also, independent w/special deals and several studios. Looking for pop/new music bands, country/contemporary Christian, singer/songwriter, strong performers seeking material.

JIMMY MILLER

Producer
VAR INTERNATIONAL PRODUCTIONS
 Box 2392, Woburn, MA 01888
 (617) 935-5386

Credits: Rolling Stones' LPs *Beggars Banquet*, *Let It Bleed*, *Sticky Fingers*, *Exile on Main Street*, *Goats Head Soup*; Motorhead's *Overkill* and *Bomber*; *Blind Faith*, with Eric Clapton and Stevie Winwood; three Traffic LPs: *Talk Talk*; *The Boomtown Rats*; Beck, Bogart & Appice; *Spooky Tooth*; Jimmy Cliff; Johnny Thunders; *The Move*; *Delaney & Bonnie*; etc.

Services Offered: Record Production by Jimmy Miller. Also, developing radio show to be nationally syndicated from Euphoria Sound Studios in Revere, Mass.

ROB MOITOZA 'THE ELECTRIC REVEREND'

Producer
MOITZ-ART MUSIC
 11248 1/2 Military Rd. S., Seattle, WA 98168
 (206) 241-2078

Credits: Worked with Kiki Dee, The Sons of Champlin, Tim Weisberg, Holly Near, Spencer Davis, etc. Recorded with Lee Ritenour, Harvey Mason, Reilly and Maloney.

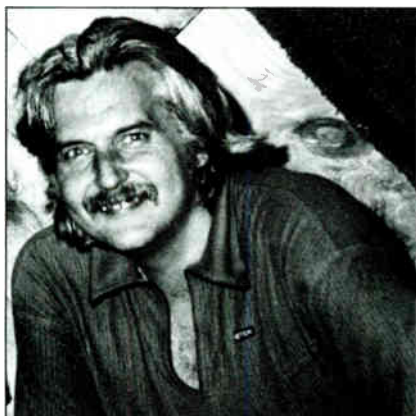
Services Offered: Independent production. Currently producing Seattle artists, Tim Noam, Mari Karolyn Earl, and Martin/Smekiri. Engineer/producer at Woodmont Beach Studios. Songs recorded by Tower of Power, The Sons of Champlin, and others.

MICHAEL A. MOORE

Engineer & Producer
SOUND LAB EAST
 29256 York Ave., Inkster, MI 48141
 (313) 721-4032

Credits: Produced, composed, performed, engineered: Lady Deluxe, Semi-Automatic, Bert Robinson, Vision, The Newz, Delanore Troupe, video soundtracks, various jingles, and album projects. Top two graduate of Recording Institute of Detroit.

Services Offered: Freelance multi-track engineering, record, and jingle production. Hot session rhythm guitarist. Appeared on various records, radio, and TV commercials. Multi-media presentations on guitar, bass, and as producer/engineer.



JIMMY MILLER
 Woburn, MA

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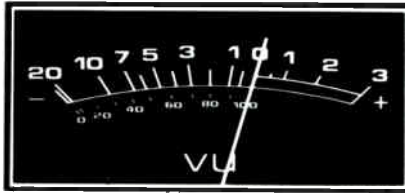
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INDEPENDENTS



J.B. MOOSE

Producer
405 W. 45th St., New York, NY 10036
Credits: Kurtis Blow, Rodney Dangerfield, Full Force.

ERIC MORGESON

Producer
EMP PRODUCTIONS, LTD.
5619 N. Beech Daly Rd., Dearborn Heights, MI 48127
(313) 561-7489
Credits: Boone Bros. (Atlantic), Detroit (Tabu/CBS), Mario Resto (Atlantic).
Services Offered: Complete production services.

TOBY MOUNTAIN

Engineer & Producer
NORTHEASTERN DIGITAL RECORDING
12 Sadler Ave., Shrewsbury, MA 01545
(617) 353-0963 (Boston Office), 753-1192
Credits: *Divya* (CD master of soundtrack), Ario Guthrie, Rubber Rodeo, Chris Hollyday, Toni Ballard. Digital editing for Second Hearing, Ryko Disc, RCA, Titanic. Extensive music background: MA, PhD with digital signal processing at Stanford, MIT.
Services Offered: Digital recording, editing, and mastering with the Sony PCM-1630 and DAE-1100. Also, digital transfers from the Sony PCM-F1, 701, 501 series. All kinds of production work ranging from on-location recording, studio mixdowns to mastering for Compact Disc, cassette or LP.

JOHN NAGY

Engineer & Producer
AUDIO MATRIX RECORDING
1 Camp St., Cambridge, MA 02140
(617) 497-0020
Credits: EMI, Rounder, A&M Records, Warner Brothers, CBS, and much more.
Services Offered: Extensive services in studio production of records, video soundtracks, full length movie scoring and recording and associated services. Services include access to fully equipped 24-track studio, audio matrix recording. Full complement of outboard gear, large control room, 35'x40 ft. studio, isolation booth, digital upon request.

JOHN NEVIN

Engineer & Producer
NEVIN CONSULTING AND RECORDING
575 W. Madison St., #2109, Chicago, IL 60606
(312) 902-2366
Credits: Billy Cobham, Five Point Star, Z-Factor, Stan Nevin, Camarade, Factor VIII, John Davis Quintet, Brian St. George.
Services Offered: Studio recording and production, video demo production, location recording with Metro Mobile Recording and GHL audio engineering.

DAVID NODIFF

Engineer & Producer
DAVE NODIFF RECORDING
706 Waverly St., Framingham, MA 01701
(617) 872-6843
Credits: The Team Ministry, The Calif. Little League, Goody Whitfield, Rudy Taylor, Douglas Ecker (2), Paul Krueger, others; video soundtrack: Levi-Strauss & Co.; platinum recording experience, credits since 1976 on both coasts. Contact for complete track record.
Services Offered: Record/overdubs/mix 2- to 24-tracks, audio-for-video, music customizing/editing, SFX, MIDI/ SMPTE. Call for info/rates.

RICK NOWELS

Producer
RICK NOWELS PRODUCTIONS
7469 Melrose, Ste. 33, Los Angeles, CA 90046
(213) 655-7990
Credits: Songwriter/producer of the Stevie Nicks LP *Rock a Little*.

JEANNINE O'NEAL

Engineer & Producer
TIKI ENTERPRISES, INC.
195 S. 26th St., San Jose, CA 95116
(408) 286-9840
Credits: David Goins *Love Has No Limits* (gospel), Suzanne Lorente (gospel), Jeannine O'Neal *Down on the Farm* (pop-rock TV album), Sharon Faye album *Country*, various other artists.
Services Offered: Complete albums including horn/string/rhythm arrangements and musicians. Two 24-track recording studios in a new location (see address).

PAUL OROFINO

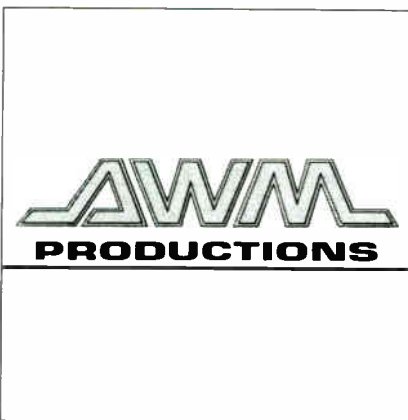
Engineer & Producer
BEETHOVEN STUDIOS
112 W. 31st St. 4th Fl., New York, NY 10001
(212) 736-3653
Credits: Angie Bowie, Rex Smith, Lionel Hampton, Simon Townshend, Frank Carillo, Twiggy, Carly Simon, Hal Lundes, Cherry Vanilla, Peppi Marchello, Kurtis Blow, Kiss.
Services Offered: Pre-production, engineering and producing in my studio; also I'm an arranger and a guitarist.

OUTLOOK PRODUCTIONS

Engineer & Producer
THE OUTLOOK
Star Route Box 180, Bethel, ME 04217
(207) 824-3246 or (800) 221-3378 in the Northeast
Credits: The Outlook offers the services of Ted St. Pierre, engineer/producer, and Connie St. Pierre, producer.
Services Offered: Maine's only 24-track studio, Studer/Trident equipped. Complete record production services, music publishing, independent label.

PEACH TOWN RECORD CO. INC.

Producer
3120 Maple Dr. Ste. 119, Atlanta, GA 30305
(404) 261-5265
Services Offered: Let us plan your next recording session. Create your own label, press and distribute your own records. We will establish a mailing list of over 1,500 radio stations: rock, jazz, R&B, country or gospel music.



AUDIE W. MURPHY
Independence, MO

AUDIE W. MURPHY

Engineer & Producer
AWM PRODUCTIONS
9930 E. Truman Rd., Independence, MO 64052
(816) 252-0530

Credits: AWM Productions has over two decades experience with both stage and studio. Our credits include the '84 K.C. Chief's pre-game entertainment, '84 Wrangler Country Showdown regional semi-finals, plus '85 touring blues acts such as Lonnie Mack, Robert Cray, plus Buddy Guy/Jr. Wells. Also monitor mixes for Kris Kristofferson, Jerry Lee Lewis, Johnny Lee, and "Weird" Al Yankovic.
Services Offered: AWM Productions is the largest independent full-service production company in western Missouri. We are also Kansas City's only full-service production company and discount music center. We offer the widest range of custom audio/lighting/video production services at one number in the Midwest. These include state-of-the-art sound reinforcement and lighting (rental, sales, design), video production, custom audio cables made to order, multi-track recording, musician referrals, plus custom embroidered satin jackets. All this and so much more: call or drop by the store.

MR. KEVIN PEPPERALL

Engineer
RENT A RIG TOURING SYSTEMS INC.
 41 River Rd. E., Unit #8
 Kitchener, Ontario, Canada N2B 2G3
 (519) 745-8423 Kitchener or (416) 674-0890 Toronto
 Credits: George Thorogood, Nazareth, Pat Travers, Helix, Mickey Gilley, Sylvia Tyson (Canadian tour), TG Sheppard, Tammy Wynette (Canadian tour), The Commodores, Lee Greenwood, Kris Kristofferson, Fats Domino.
 Services Offered: Specialists in concerts, industrial shows and permanent installations. Up to 40,000 watts (audio) Midas consoles, Meyer & Martin speaker systems, Leprecon & E.T.A. lighting systems. Sales, rentals, set up, touring technicians, delivery anywhere.

JULIE ANNA PEREZ

Engineer
 67-25 Dartmouth St., Forest Hills, NY 11375
 (718) 263-6067
 Credits: Audio engineer at NBC, Inc.: Phil Donahue, NBC Nightly News, and others. Formerly freelance engineer in Miami for audio production and sound reinforcement companies.
 Services Offered: Television production and recording studio engineering in New York City area; sound reinforcement, live concerts and recitals; also recording live performances to 2-track and multi-track.

JOHN A. PERGAMO

Engineer & Producer
J.P. PRODUCTIONS/ACE RECORDINGS
 414 Vanderbilt Ave., Brooklyn, NY 11238
 (718) 622-4524

SCOTT PETERS

Engineer
HUMMINGBIRD RECORDING
 349 Harwood Ave., Satellite Beach, FL 32937
 (305) 773-8741 or 259-6576
 Credits: Dead Serious, Robin Chase, Bad Boys, Legacy, Special Forces, Locals Only, The No, Trixx, Blind Rage, '84 Indialantic Art Festival, The Point After/WDIZ battle of bands, July 4th '84 Melbourne Jaycees battle of bands, '83 Cape Canaveral Surf Contest, member A.E.S.
 Services Offered: Independent engineer for live and recorded sound. Consulting for home and commercial audio installations.

JOHN PFISTER & TRACEY POPE

Engineer & Producer
DISTRANS
 3 Orchard St., Cambridge, MA 02140
 (617) 661-7154 or (617) 492-2170
 Credits: Little Joe Cook, The Bags, Piece de Resistance, Nova Mob, Asa Brebner.
 Services Offered: Audio engineering/production.

SCOTT PHELPS

Producer
AL JOLSON ENTERPRISES, INC.
 31 Music Square W., Nashville, TN 37203
 (615) 242-1580
 Credits: State-of-the-art 16-track with engineer, \$35/per hour, 8-track, \$25/per hour. Instruments: Yamaha electric grand, Emulator II, Linn 9000, Yamaha TX816 (8-DX7s). Also featuring real-time and high speed duplication using Otari and Denon cassette machines.
 Services Offered: 16-track recording facility, Tascam M-520 20 in, eight out + 4dB console, Tascam MS-16 16-track w/SMPTE, Studer B-67 2-track, Studer A-80 half-inch or quarter-inch 2-track, or half-inch 4-track, Otari 8-track half-inch. Outboard gear includes: limiter, compressor, gate, ducker, and expander by Symetrix, Lexicon 200 digital reverberator, Eventide Harmonizer, Aphex Aural Exciters (4), BBE sound processor, Nakamichi MR-1 cassette deck (+4dB), Galax expander/gates (4). Monitors by Westlake and Yamaha. Power amps are Crown 1000, Studer and Yamaha. Mics: Neumann 84 and 87, AKG, Shure, Sennheiser, Countryman, Audio-Technica. Studer 169 8 in, 4 out remote console, Nagra IV-S 2-track quarter-inch recorder.

STEVE R. PINKSTON

Engineer & Producer
THIRD FLOOR PRODUCTIONS
 P.O. Box 40784, Nashville, TN 37204
 (615) 383-0586
 Credits: Albums: Mac Gayden Nashville Blues, Buddy Hyatt Knock Me Out, and many customs LPs. Demos: White Shoes, Wayne Kirkpatrick, J.J. Cale, Tom Schuyler, Rococo, and hundreds of others. Live: Amy Grant, Alabama, Christopher Cross, Kool & the Gang, Linda Ronstadt. Remote: Ozzy Osbourne. Video and film: BTN, Broadman Films, Star Search, West Tobacco, International.

Services Offered: Recording engineering and/or audio production of albums, demos, videos, films, concerts, stage monitor systems, post-production, LinnDrum programming, consulting, installation of audio recording studios. With a college degree in recording engineering (Belmont College, Nashville), as former chief engineer/manager of Crazy Mamas Recording, as a BMI affiliated songwriter and over eight years of experience, creative performance is the feature at Third Floor Productions.

CHARLIE POSITERRY

Engineer & Producer
GATOR TRACKS RECORDING STUDIO
 104 E. Main St., Houma, LA 70360
 (504) 851-4602 or 594-2085
 Credits: Rod Roddy, Tony Haseldon, Jim Odom (Lousiana LeRoux), Carol Berzas, Vinn Bruce, L.J. Foret, Halifax, Blue Max, Visitor, and other statewide talent.
 Services Offered: Complete 16-, 8-, 4 track studio which consists of albums, singles, demos and jingle projects, tape duplication system. We also have sound reinforcement system for local shows. We also can provide live remote recordings.

STEVE POULIOT

Engineer & Producer
STEVE POULIOT MUSIC
 10913 Fruitland Dr. #216, Studio City, CA 91604
 (818) 980-7040
 Credits: Albums done over the past nine years: Merle Haggard, Johnny Paycheck, Saturday Night Fever, Peaches & Herb, The Spinners, Maxine Nightengale, Ann-Margret, Tavares, Tierra, Bonnie Bramlett, Koko Pop, Thomas McClary. Producers: Steve Cropper, Merle Haggard, Freddie Perrin, etc. Also co-wrote current single on Billy Burnett album.

Services Offered: Recording, overdubbing, mixing, editing, production, disk mastering, songwriting. Also familiar with most equipment.

GARY POWELL

Producer
POWELL STUDIO PRODUCTIONS
 303 W. 12th St., Austin, TX 78701
 (512) 499-8888
 Credits: Producer/arranger for the following artists: Philip Sandifer, contemporary Christian music; Megan Meisenbach, classical flutist; Joe Scruggs, children's music; University of Texas Ensemble 109. In-house producer for
 —LISTING AND PHOTO CONTINUED ON NEXT PAGE

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 11114 Cumpston Street, North Hollywood, CA 91601
 (818) 980-5605



GARY POWELL
Austin, TX

Wink Tyler's Austin Recording Studio. Director of the University of Texas at Austin's jazz/pop vocal ensembles. Services Offered: Full in house arranging and orchestration. Masters only, recorded and fully produced in Austin

CHUCK PRESTON JR.
Engineer
POSSIBLE PRODUCTIONS
1821 Eustis St., St. Paul, MN 55113
(612) 644-7497

Credits: National PBS; One Last Song, Route 66, Legend of the Wolf, Scandinavia Today, Magic, National ESPN Sports, local PBS, Nighttime Variety, Almanac; local Spectrum Sports.
Services Offered: Audio mixer for video productions; live music, sports, variety, public affairs, audio mixer for video post production

BRAD PRIBYL
Engineer & Producer
P.O. Box 215137, Dallas, TX 75221
(214) 324-1440

Credits: Studio mixing, live mixing, monitor mixing (audio, mixing for video and film), video and film production, camera, editing.
Services Offered: Working with independent musicians, finding the studio that can work with the budget. Demos to masters, plus audio-visual projects. Storyboard to post production.

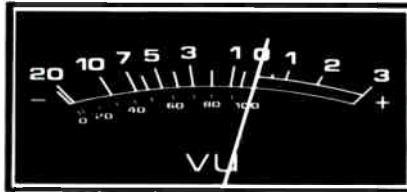
MIKE RASFELD
Engineer & Producer
ACME AUDIO
3821 N. Southport, Chicago, IL 60613
(312) 477-7333 or 935-6069

Credits: Record company clients include Atlantic (*The Curly Shuffle*), Rhino, Flying Fish, Blind Pig, Nessa, Red Beans, Earwig, Arhoolie, Rooster, and Snail Records. Artists include: Louie Bellson, Jack Bruce, Red Norvo, Cecil Taylor, Claudia Schmidt, Mama Yancey, John Hartford, Darlene Love, and hundreds of other pop, rock, jazz, blues, ethnic, electronic, folk and classical musicians.
Services Offered: My knowledge of available musicians and recording facilities coupled with my musical and technical expertise allow me to consistently produce albums of all kinds of music that pay for themselves quickly, truly represent the artist's intentions, and have tremendous commercial acceptance. I specialize in using whatever recording techniques are appropriate to capture an artist at their best, while maintaining budget guidelines and minimizing unpleasant surprises. I enjoy traveling and my digital equipment can travel with me. My company supplies equipment, recording, and custom record and tape manufacturing.

MICKEY MICHAEL RAT
Engineer & Producer
Cheez Box 1332, Silver Springs, MD 20902
(301) 649-4153

Credits: Send for text.
Services Offered: Non fast food oriented production work! Let me feel what you got! Send me any tapes and photos to address above

INDEPENDENTS



MR. MICKEY RAT
Silver Springs, MD

JEFF RAY
Producer
838 Meadowsweet Dr., Corte Madera, CA 94925
(415) 924-6559

Credits: Sixteen years songwriting experience with many bands and solo projects. Sixteen years song arrangement experience on solo and band projects. Eleven years producer experience with various writers from pop-jazz to rock. Seven years producer experience in radio and television advertising for local, regional and national accounts.
Services Offered: I am a producer/composer. Being a songwriter enhances the approach to producing a writer's song. Retaining the writer's concept and then expanding on that idea, to achieve the most creative and fulfilled composition of a song is my primary concern. I have produced musical styles ranging from pop-jazz to hard rock. My services also include being a multi-keyboardist and a lead/back-up vocalist and are available at your request.

JIM REEVES
Engineer
REEVES AUDIO RECORDING
Yonkers, NY
(914) 793-6496

Credits: ZZ Top, Lou Reed, Gregg Allman, Mott the Hoople, Johnny Winter, Edgar Winter, Dave Mason, Manhattan Transfer, Bobby Vinton, Chambers Brothers, Al Kooper, Don McLean, Count Basie, Johnny Ray, Leslie Gore, Angela Bofill, Tom Rush, King Crimson, Queen, Frankie Valli, Martin Mull, John Davidson, Wang, Hollywood Squares, Technics, Coleco Vision, Consumer Reports.
Services Offered: 24-track studio engineering, mobile studio engineering, "live" PA mixing (20,000 seats), albums, jingles, film, television, radio, A/V, audio technician. Vocals (including harmonies), piano, synths, bass, drums. Own and operate professional 8 track pre-production facility.

GARY REMAL
Producer
MUSIC DESIGN
2949 Jackson St., Ste. A, San Francisco, CA 94115
(415) 929-0997 or (213) 826-3181

Credits: Features such as "Breakin'," "Mania's Lovers," "Dark Circle," "Wild Rose," Norma Kamali fashion videos; some commercial clients include: Bank of America, Solflex, Safeway, Chevron, Avon, Hunt Wesson, two NBC specials and HBO specials. Two time Emmy award-winner.
Services Offered: Original music designed, composed, arranged, and produced for feature film, television, radio, I.D. packages, commercials, fashion videos, and multimedia/industrial projects. Extensive private library avail-

able for lower budgets. In-house demo studio provides on-the-spot ideas for creative meetings. Known for extreme versatility, Remal Music Design specializes in turning imagination into sound. Offices in Los Angeles, and San Francisco.

STEVEN REMOTE
Engineer & Producer
REMOTE MEN VISUAL MUSIC ENT.
P.O. Box 791, Flushing, NY 11352
(718) 886-6500

Credits: TV/audio: Frank Zappa, James Brown, Lene Lovich, Bad Brains, Paddy Noonan, Soca Festival, Steve Forbert, New York String Orchestra, Yello FM live broadcasts Howard Jones, Rellex, Ramones, Blasters, Brecker Bros., Icicle Works, Dwight Twilley, The Police, XTC, The Members, Jerry Lee Lewis, Sam and Dave, Marshall Crenshaw, Joan Armatrading, Magazine, Buzzcocks. Records: Elvin Jones (live), Stevie Wonder, Simple Minds (live), Chns Rush, David Sanborn, Marcus Miller, plus many gospel artists for Savoy Records.

Services Offered: 24-track mobile audio/video for pre and post-production, audio mixing, engineering and producing. Digital recording available upon request. Also available: 24 track in-house studio and live sound reinforcement.

ROBIN DANIEL Z. RIVERA
Engineer & Producer
6 Bayanihan, West Triangle
Quezon City, Philippines 3008
999-743/99-28-23

Credits: Production work for China Airlines, Revlon Philippines, Vintage Enterprises, Optiflex International, Cultural Center of the Philippines Folk Arts Theater, University of the Philippines. Presently teaching at Institute of Mass Communications, University of the Philippines.
Services Offered: Audio and audio for video production and post-production.

TOVAL ROLSTON
Engineer
T.R. PRODUCTIONS INC.
920 N. Franklin, Chicago, IL 60610
(312) 941-2193

Credits: Music Institute Awards, Sandburg Village Jazz Concerts, Cong. Gus Savage 4th of July picnic.
Services Offered: Commercial audio and video production and sound reinforcement. Three-quarter-inch and 16-track dbx recording, Yamaha DX15 digital drums.

DAVID ROSENTHAL
Producer
MASTERPIECE PRODUCTIONS
378 Carlton Ave., Piscataway, NJ 08854
(201) 968-7361

Credits: Rainbow *Straight Between the Eyes* (Polygram), Rainbow *Bent Out of Shape* (Polygram), Roger Glover *Mask* ("21" Records), keyboardist for Rainbow, keyboardist for Little Steven, produced Hammerhead *Heart Made of Steel* (EMI), currently producing own band, Inlinity. Graduate of Berklee College of Music.
Services Offered: All aspects of production, arranging, and orchestration; songwriting and jingle writing; synthesizer and drum machine programming, all styles of piano and synthesizer performance.

DON ROSS
Engineer & Producer
3097 Floral Hill Dr., Eugene, OR 97403
(503) 343-2692

Credits: Studio: Dan Siegel; Inner City, Don Latarski; Pause, Jim West, MCA, Sterling Whipple; Electrica, Sneakers; City Lights, Don Norris; Pheasant, Tommy Smith, Mason Williams, Johnny and the Distractions, Gregg Tripp, Graphics, Helt, Rob McIntosh and Laurie Brown. Live: Oregon, Trapezoid, Holly Near, Hot Rize, Akiyoshi/Tabackin, George Shearing, Betty Carter.

Services Offered: For the past nine years I have been engineering and producing demos, albums and singles for up and coming and established musicians alike. Combining many years as a musician with the necessary technical skills that comprise recording technology as it exists today, my goal is to offer new and established acts an accessible means to the public through the medium of recording. Like many of the other engineer/producers, I have my own bag of tricks for creating national product, but in addition take great pride in my ability to relate to the musicians and their individual needs and goals.

JOHN "ROCK" ROTHROCK
Engineer & Producer
ROTHROCK PRODUCTION ENTERPRISES
P.O. Box 1624, Boulder, CO 80306
(303) 499-5475

Credits: Expertise: nightclub sound, live recording. Degrees: BA 1979 Communication Arts, BA 1979 Theatre. Acts: Two Bucks n' Change, Winchester, Cahoots, Cutter, Heartbreak Radio. Records: Eccentrics "Lost in the Tone Zone", John Rock Band "Launched from Earth."
Services Offered: Production management, live sound mix, sound system placement and interface, studio engineering, producing (45 rpm singles only), sound design for theater and dance, sound effects tapes, live recordings.

JEFFREY RUST

Engineer & Producer
JASIR PRODUCTIONS
 5438 Mason Rd., Memphis, TN 38119
 (901) 761-0657

Credits: Supreme Realty jingle (Memphis, TN), Jamnation Band live at the Berklee Performance Center, fashion show tapes for modeling agencies, demonstration tapes for Tom Whealey which won awards in *Downbeat* magazine's 1985 student music awards; composition and production for the international film, *En Trance* by Eric Hirsch.
Services Offered: 4- and 12-track in house or remote recording. Songwriting and arranging, jingle writing and production, scoring for film and TV, music and effects production for fashion shows. Jeff Rust received his BA in music from the Berklee College of Music with a major in scoring for films.

KEITH RUST

Engineer & Producer
 4902 Don Dr., Dallas, TX 75247
 (214) 630-2957

Services Offered: My professional and enthusiastic approach to recording allows me to work comfortably in any situation, from commercials to album production, and all points in between.

ANDY SALMON

Engineer & Producer
 900 S. Lamar #304, Austin, TX 78704
 (512) 443-9811

Credits: Bassist with Christopher Cross Band (LPs *Chris* *topher Cross* and *Another Page*). Producer: *Shivers* Lisa Rhodes (Spindletop Records), soon-to-be-released album by Ray Wylie Hubbard, numerous local demos.

Services Offered: Based in Austin, TX, Andy is looking for pop-rock and pop-country artists to produce. He does arranging and some engineering as well as playing bass if necessary. He works with a group of experienced session musicians and can take a project from demo to finished product. Serious inquiries only. Projects must have their own financing. Andy is willing to travel.

RICK SANDIDGE

Engineer & Producer
SANDCASTLE RECORDING STUDIO
 Ste. 109 Wade Hampton Mall, Greenville, SC 29609
 (803) 235-1111

Credits: Rick Sandidge has produced the following: The Killer Whales, The Rob Cassels Band, The Pilots, Sonny Turner, Panic, Grace Capps, Country Gold, J.D. Wilson, Harvey Willis, Barry De Fleron Band, The Drifters, The Grapes.
Services Offered: Producing, engineering, video producing.

RANDY SCHELL

Engineer
SCHELECTRONICS
 13103 Ashford Point Dr. #2308, Houston, TX 77082
 (713) 558-5121

Credits: Design and construction: KTUX-FM, Shreveport, LA; KTOQ-FM, Sulphur, LA; KROK-FM, Denndor, LA. Design: KUFO-FM, Odessa, TX. Remodel: WWCK-FM, Flint, MI. Maintenance: various broadcast and recording facilities.
Services Offered: Design, construction, and maintenance of radio broadcast facilities (including transmitting, studio, and audio processing equipment), and audio recording studios.

RICK SCHNEIDER

Producer
FINE TUNING INC.
 322 Spring St., New York, NY 10013
 (212) 431-4788

Credits: Video production for the Rolling Stones, Kool and the Gang, Shannon, Willie Nelson, Starpoint, Ellen Foley. Audio production: recordings by the Rattlers, Zambomba, Greg Alper, the Flint Brothers, Graham Moses. Film sound-

tracks for Exxon, CBS.

Services Offered: Full production of videos, from concept to completion and of master audio tapes. Presently Fine Tuning has two record labels: Radio Records for rock and Transor for jazz and new music.

CAL SCOTT

Producer
CAL SCOTT MUSICAL SERVICES
 P.O. Box 686, Clackamas, OR 97015
 (503) 658-7583

Credits: *Wee Sing* (Price, Stern, Sloan, Pub.), childrens video musical director; *Haunted*, Craig Carothers (Nebula Circle Records), album producer; *Sleeping Like Mad*, Cal Scott (Bolowax Records), album producer/artist; *Tangier* (C.I.S. Records), album co-producer/artist; *Zap Rap* (P.P. and L), educational video, composer and producer of score; over 30 other scores and albums.
Services Offered: Producer for albums and demos; composer for film and video scores; complete 8-track facility for demos and pre-production including computer-based MIDI sequencer; drum and keyboard programming.

GLENN & KEN SCOTT

Engineer & Producer
 4354 Monteith Dr., Los Angeles, CA 90043
 (213) 294-1892

Services Offered: Are you looking for help with your demo or project and find these producer/engineer listings in *Mix* a little intimidating? We specialize in producing demos. We'll give you as much (or as little) assistance as you need to get your project on tape—with an added bonus we'll even record it for you in our fully equipped 8-track recording studio. We welcome songwriters, musicians, and yes, even bands. Our rates are competitive, and our quality is excellent. Write or call us and we'll show you what we have to offer.

PAUL SETSER

Producer
PAUL SETSER CREATIVE SERVICES
 2930 N. Newhall St., Milwaukee, WI 53211
 (414) 962-9174

Credits: I produced soundtrack for the City of Milwaukee.
 —LISTING CONTINUED ON PAGE 160

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c/o **Seagrape Recording Studios 5740 N. Western Avenue Chicago, IL 60659**

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INDEPENDENTS



—LISTING CONTINUED FROM PAGE 159

kee's "Spirit of Milwaukee" '57 projector slide presentation. I have also participated in numerous Association of Multi-Image (AMI) award-winning productions.

Services Offered: I specialize in concept to completion audio visual soundtrack production for all media, including original music and audience research capabilities.



LEROY SHYNE
San Rafael, CA

LEROY SHYNE
Engineer & Producer

SHYNE SOUND
Box 9906, San Rafael, CA 94912
(415) 459-2833

Credits: *Clifton Chenier Live at the San Francisco Blues Festival* (Arhoolie 1093), *Mix* magazine article December '84 on San Francisco Blues Festival.

Services Offered: Live concept production, sound reinforcement, and recording live to 2-track specialist, or high quality, cost-effective two P2M recording of sound system. Supervision of rented multi-track equipment for live remote recording.

GARY P. SKARDINA
Engineer & Producer

ANIDRAKS MUSIC
c/o Richard Leher, esq., 11377 W. Olympic Blvd.
Ste. 900, Los Angeles, CA 90064
(213) 372-8251 or 312-3118

Credits: Pointer Sisters, Phil Collins, Chaka Kahn, Barbra Streisand, Natalie Cole, Stevie Nicks, George Benson, Donna Summer, Aaron Spelling Productions, Jon Luc Ponty, Chubby Checker, Melissa Manchester, Dionne Warwick, Lou Rawls, Alan Holdsworth, Peabo Bryson, Dennis Edwards, Durrell Coleman, Anita Baker, Martin Mull, Lenny Williams, Mighty Clouds of Joy, etc.

Services Offered: Full production capabilities, including songwriting, arranging, engineering and/or producing.

ROD SLANE
Engineer & Producer

STAR TRACK RECORDING INC.
5840 S. Memorial, Ste. 210, Tulsa, OK 74145
(918) 622-6444

Credits: Producer of Muspak production music library, 15 LPs for Rhythmic Aerobics Inc., film soundtracks *Blood cult*, *The Ripper* and *Bloodcult II* for United Entertainment Pictures. Engineered over 50 award-winning jingles for TV and radio. Engineered and produced over 200 local and regional LPs and singles. Soundtracks for such clients as: AT&T, Telex, United Way, Levis, GM, and FAA.

Services Offered: 24-track recording, scoring, synchronizing, post production for TV and film, layback to "C" format video. Emulator II, Jupiter 6, DX7, Kawai grand, drum kit, LinnDrum.

MICHAEL SMALL
Engineer & Producer
PHANTOM POWER PRODUCTIONS
316 Young Pl., Lakeland, FL 33803
(813) 682-3615

Credits: Producing and engineering for 10 years from central Illinois to central Florida. Currently, an associate producer for Real to Reel Recording in Bartow, Florida. Also, studio consultant for central Florida studios. Producing, engineering, and booking top acoustic duo, Blind Date, in Florida.

Services Offered: Live sound engineering services are available and at Real to Reel Recording in Bartow, Florida. I produce clients through their demo or album packages. This consists of pre-session consultations with the client(s). By discussing what their needs are in any given situation, they will end up with a demo or album that they are completely satisfied with. If the client(s) wishes a particular studio within their locale, I will set up the package, produce, and assist in the engineering in their project.

DON SMITH
Engineer
SUR PRODUCTIONS

1902 Nelson Ave., Memphis, TN 38114
(901) 278-8346

Credits: Terry McNeal (Epic Records), Rob Jungklas (Manhattan Records), William Lee Golden (MCA Records), Joanna Jacobs (Epic Records), Krokus (Arista).

Services Offered: Complete in-house 24-track analog or 32-track digital studio with staff musicians and extensive selection of outboard gear and microphones. Pre-production room with Linn, Fairlight CMI, PPG, DX7, JX-8P, JX-3P, MSQ700, Prophet 5.

DONOVAN "SOUND" SMITH
Engineer & Producer
AUDIO ACHIEVEMENTS, INC.
1327 Cabrillo Ave., Torrance, CA 90501
(213) 533-9531

Credits: *World Class Wreckin' Kru* album (Kru-Cut Records), The Ellects (Gibbon Head Records), Premo Records, David Andrews & Assoc. Advertising, Rita Graham, Hooks-Graham Explosion, Herman Mangandi, Mark St. John (formerly with Kiss), Blues Image, Donny Dean. Member of NARAS (Voting) and AES (Associate).

Services Offered: 24-, 8-, 2-track recording facility equipped with state-of-the-art recording equipment. Experienced recording/mixing/editing engineer and producer. Also many producers on call for virtually all types of instruments: Synclavier, Fairlight, Kurzweil, Emulator, Oberheim, Yamaha, Linn, Simmons, Kawai, etc.

JON SMITH
Engineer & Producer
HUMONGUS PRODUCTIONS
825 West End Ave. #4F, New York, NY 10025
(212) 222-4431

Credits: Art Garfunkel, Invisible Man's Bands, Don Kinsey, Rolling Stones, Yoko Ono, Kenny G, The Del Lords, Leonard Cohen, The Clintons, Chemical Wedding, John Lennon/Yoko Ono.

Services Offered: Engineering and/or production.



KEITH STEIN
Vancouver, BC

KEITH STEIN
Engineer & Producer
KEITH STEIN PRODUCTIONS
202 - 1928 W 2nd Ave., Vancouver, BC V6J 1J3
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Credits: 1982 Juno Award, Engineer of the Year, Canada, Pro Sound News Award, 1983 B.T.O., Prism, The Cascades, Chief Dan George, Susan Jacks, Denise McCann, David Russell, Novacir & Bissiri, The Rovers, Roger Whittaker, Bill Kenny, Incredible Bongo Band, Paul Horn, Trooper, Fast Forward, James Foster, Loverboy.

Services Offered: Specialist in basic tracks, live drums, acoustic instruments, guitar and vocal engineer (14 years). Studio record work, multi-track or live to master. All types of music including rock, jazz, country, legit. and classical. Production and creative services, by request only, for Top 40 and FM pop music. Others considered. Will travel anywhere.



DOUGLAS STEVENS
Boston, MA

DOUGLAS STEVENS

Producer
HANDSOME BROTHERS MUSIC SERVICE, INC.
34 Farnsworth St., Boston, MA 02210
(617) 423-0280

Credits: (35 awards) IBM, Sheraton, Acushnet, Cullinet, Harvard University, Coleco, Gillette, Friendly Restaurants, Converse Shoes, Data General, Fleet Financial Group, Computervision, Digital Equipment, Keds, Lotus, Nixdorf, Scandinavian Design, New England Aquarium, Veryfine apple juice, Polaroid, and Stanley Tools.

Services Offered: Music composition, scoring, score to picture, advertising music, music library, popular song parodies, songwriting, and production.

DOUG STEWART/RICK WURPEL

Engineer & Producer
T.T.S., INC.
2177 S. Cherry St., Denver, CO 80222
(303) 758-8082

Credits: U2 Live at Red Rocks video and soundtrack, The Fixx at the Rainbow video and soundtrack, ZZ Top Schlitz spot video and soundtrack, The Gibson Jazz Concert video and soundtrack, Nashville Network Denver Premiere video and soundtrack, Savoy Brown Live video and soundtrack.

Services Offered: Location video and audio production, location coordination, location video and audio recording, production financing, staging, lighting, location audio reinforcement, video reinforcement, production management, video and audio post-production, program marketing and distribution, corporate sponsorship. All forms of live satellite uplinking and teleconferencing.

"HANK" STRASSER

Producer
REALITY RECORDS/PRODUCTIONS
19 Roxborough Pl., Willingboro, NJ 08046
(609) 877-7653

Credits: Produced *Antigua*, a jazz album by Rio Clemente players: Rick Laird, Vinnie Cutro, Vic Jurvis, and Marty Rivera. Also produced sessions by: Sequoia (rock), The Sleepers (new wave), Debbie Harrington (rock), Jeanetta Jones (country), and numerous demos and commercials.

Services Offered: Independent production—all types of music, especially jazz and country. Will work on flat fee or a percentage on spec. Experienced in planning, budgeting, recording, mastering, coordination of cover design, publishing, manufacturing, sales, accounting, promotion and distribution. My passion for the music is tempered by 20 years of business experience and my knowledge of the realities of the commercial music business. Getting the excitement into the grooves comes first, but there's a lot more to the business of music.

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901-276-8518

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RON STREICHER
Engineer & Producer
PACIFIC AUDIO-VISUAL ENTERPRISES
545 Cloverleaf Way, Monrovia, CA 91016
(818) 359-8012

Credits: Audio engineer for Mann Music Center/Philadelphia Orchestra; radio broadcasts for the Los Angeles Philharmonic Orchestra; live "direct-to-stereo" broadcasts and recordings for National Public Radio, American Public Radio, Calif. Radio Music Network, Public Broadcasting System, et al; recordings for Angel, CMS Desto, Discovery, CRI, SAZ, and of numerous technical papers on microphone and recording techniques for the Audio Engineering Society, *Mix* magazine, and others.

Services Offered: Pacific Audio-Visual Enterprises provides cost-effective, quality-oriented services by specializing in basic, time-proven production techniques—without unnecessary fuss or gimmickry. The result: a successful job... on time, and within budget. And with my lifelong involvement in music presentation, I can also serve as a musical consultant, as well as a recording engineer. Complete facilities are maintained ready to travel for in-studio or on location audio projects across town or around the world analog or digital recording, editing, and post-production; record and/or cassette duplication; radio or television audio broadcast production; live mixing for concert sound reinforcement; music and performance coordination; audio systems design and consultation; lectures and seminars on recording techniques.

MICHAEL S. SULLIVAN
Engineer
FORMULA 1 SOUND
2677 Laramie Rd., Riverside, CA 92506
(714) 686-2229

Credits: Live sound, recording, fully qualified engineer Graduate of Sound Master, North Hollywood. In industry since 1972. Some production experience, including producing live bands.

Services Offered: Recording engineer—all aspects, tracking through mastering. Live sound—have complete sound system for up to 1,500 people. Give me a call, we'll see what we can come up with!

BILL THOMAS
Engineer
PREFERRED SOUND
42 Avenue 20 #1, Venice, CA 90291
(213) 827-2830

Credits: 10/85 *Shay*, S.B. Productions, Gordon Fordyce, 8/85 to 9/85 *Vanity*, Motown, Skip Drinwater; 8/85 to 9/85 *Duke Davis*, Rocking Double "D" Records, Duke Davis; 5/85 to 8/85 *Breakthrough*, independent, Gari-baldi/Fowle; 1/85 to 5/85 *Robert Tepper*, CBS, Joe Chiccarelli; 11/84 *IC3*EMI, Roman Cliff, 9/84 *Van Coppock*, Geffen, Van Coppock.

Services Offered: Full-service multi-track recording and mixing for all types of formats. Experienced friendly professional engineering for records, films, video and radio. Excellent references available upon request.

CHUCK THOMAS
Producer
MASTERSOURCE MUSIC PRODUCTIONS
704 N. Wells, Chicago, IL 60610
(312) 922-0375

Credits: National and regional credits. We are also producers of the Midwest Music Exchange, a regional music conference on the current trends of the biz. Years of experience in Top 40 and contemporary Christian formats.

Services Offered: Artist development, songwriting development, artist placement, long-term relationships w/artists. We've got good talent.

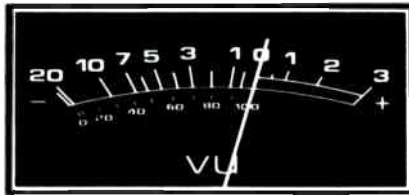
TONY THOMAS
Engineer & Producer
TARGET COMMUNICATIONS INTERNATIONAL
1123 Rosewood Ave., Inglewood, CA 90301
(213) 419-4017

Credits: Producer/engineer on numerous master and demo recording sessions encompassing virtually every musical genre including jazz, rock, country, gospel, R&B and electronic. Writer/producer of numerous commercials, jingles, soundtracks and audio-visual presentations for large as well as small clients.

Services Offered: Complete coordination of demo and master recording sessions from pre-production through final mixdown and mastering, synthesizer programming and MIDI sequencing, technical consultation, jingle and sound-track composition and arranging, broadcast production, copywriting and special effects creation

BILL THOMPSON
Engineer
1978 Ardith Dr., Pleasant Hill, CA 94523

INDEPENDENTS



(415) 689-1197

Credits: Debora Iyall, Ronnie Montrose, Sam Bostic and Circuitry, Pete Escovedo, Freaky Executives, The Looters, The Chill, Stiff Upper Lip, Boi. Remix engineer on 12" dance mixes for Atlantic, Virgin, CBS, Island, Polydor, Polar and UK records.

Services Offered: Engineering and production from pre-production to mastering. Demos, LPs, remixes, soundtracks, location recording

RICHARD TIEGEN
Engineer & Producer
PLUM STUDIO, LTD
2 Washington St., Haverhill, MA 01830
(617) 372-4236

Credits: Atlantic Records, 1968-1969. Produced over 30 independent records. Own a state-of-the-art 24-track facility. Musician, having played with the legends, including Sam & Dave. Member of BMI!

Services Offered: Complete record production in our 24-track facility. Will supervise all phases including: arrangement, session players (some of the best) pressing and mastering. Also, video production from cost-effective live in house shoots to fully edited three quarter-inch and one inch music videos. Plum Records, our own label, now publishing and distributing independent product throughout New England.

GEORGE TOBIN
Producer
11337 Burbank Blvd., No. Hollywood, CA 91601
(818) 506-4487

Credits: Smokey Robinson, Kim Carnes, Natalie Cole, Barbara Mitchell, Jennifer Holiday, The New Edition.
Services Offered: Record producer, publisher. Two 24-track studios, all keyboards and samplers plus Kurzweil. Six staff songwriters. Beautiful staff, great coffee.

SCOTT TUTT
Producer
SCOTT TUTT MUSIC
P.O. Box 121213, Nashville, TN 37212
(615) 329-0856

Credits: Scott has never produced a record that didn't chart in national charts. Served as president of Union Station Records. As a publisher, has had several #1 records. Instrumental in the careers of Alabama, Earl Thomas Conley, Pat Garrett, Bigamy Bros., Bruce Henderson (Top-10 New Country Artist), and Susan Marshall.

Services Offered: Scott Tutt Music is an independent publishing house and record production company. Services offered: studio production, and music publishing. From this point, depending on particular artist and project, Scott Tutt music can assist in many facets, from label shopping to pressing to promotion. Whether you want to sell LPs off the stage or record for a major label you've got to have great music and quality product. That's what you'll get from Scott Tutt Recording is not limited to Nashville, although there are many excellent studios in Music City.

JOHN TYLER/LOU SIMMONS
Engineer & Producer
RM AUDIO FABRICATORS
2528 Chamblee Tucker Rd., Atlanta, GA 30341
(404) 458-6000

Credits: James Brown at *Chastain Park*, Heartfixers *Live from Moonshadow*, Glenn Phillips Band *Live! Blues for Bitch*, Stone Mountain Band, Spies of Life, etc.

Services Offered: Full service audio facilities available on location: 16 to 24-track mobile recording unit w/video capability. Let our creative staff capture your "best" on tape anywhere. Also, sound system design, fabrication, rental, installation, service.

RICHARD VAN DORN
Engineer & Producer
245 Hyde St., San Francisco, CA 94102

(415) 474-0377 or 441-8935

Credits: Ten years serving the Bay Area and California music communities, including many single, album, television, and film credits with successful artists and producers from all styles of music.

Services Offered: A good understanding of the technical and musical aspects of recording and performance. I believe that creativity can best be realized in a comfortable atmosphere, a result of pre-production, well organized sessions, post-production follow-up to insure a quality product.

JOHN VANORE
Producer
ACOUSTICAL CONCEPTS, INC.
708 Ashland Ave., Eddystone, PA 19013
(215) 328-9450

Credits: Albums for Music Company of North America including music of Freddie Hubbard and Chick Corea, One Alternative, others. TV soundtrack for WCAU-CBS Philadelphia. Commercials. Member of NARAS and former trumpet player with Woody Herman and Louie Bellson.

Services Offered: Jazz production and pop/commercial production. 2-track digital or analog to 16-track studio or remote production. Production services available for complete demo to master to finished album project.

STEVE VAVAGIAKIS
Engineer & Producer
118-17 97th Ave., Queens, NY 11419
(718) 849-5725

Credits: Films: The WNET-13 televised film *It's The Real Thing*, *Ain't No King Coming*, *In The Dark* and *Batterie Film*. Jingles: Cote Furniture, Tenex Communications, Creative Papers, WEVD-FM spots for Good Deal Windows and Fantis Foods. LPs include projects for Red Rhino Records, Slash, Rough Trade, Rohit International, Peter's International, and Vasipop. Tutorial: Lang Percussion Music Minus One, and audio magazine *International Percussionist*.

Services Offered: Pre-production consultation covers scope of project, picking the right material, organizing a performance group, optimizing tempo, lyrics and arrangements. Access to Inner Ear Recording, a complete two-inch, 16-track recording studio featuring: Neumann tube microphones, a vintage Steinway grand, Emulator II, Yamaha DX7, Simmons and Oberheim digital drums. Specialties include drum machine and synthesizer programming, highly developed editing skills, and special effects generation. Post-production overview of quality control from listening to pre-lacquer cut acetates through listening to test pressings and cassette recordings.

BRIAN A. VESSA
Engineer & Producer
BV PRODUCTIONS
P.O. Box 3272, Santa Monica, CA 90403
(213) 453-3636

Credits: Four gold albums and assorted recordings for Ariola and Melody Records; LAX "Dancin' at the Disco"; CSUN Jazz Band; several HBO programs, numerous commercials including: Disney, Tomy Toys, Aqua Vend, Del Monte, etc.; many records and demos for L.A. artists; chief engineer and audio designer for Salty Dog Recording.

Services Offered: Multi-track recording and production, pre-production planning and demos, live sound, remote recording, audio consulting, modifications and maintenance for studio electronics. Each project I undertake receives my full attention to detail, regardless of the type of music or budget. With 20 years experience as a musician and 10 years in the professional audio and engineering field, I can comfortably provide the link between the artist and the studio. My interest is in the creative process and the realization of musical ideas.

JOSEPH A. VIGLIONE
Producer
VAR INTERNATIONAL PRODUCTIONS
Box 2392, Woburn, MA 01888
(617) 935-5386

Credits: *Last We Forget*, *The Buzzcocks Live* (R.O.I.R.); Richard Lloyd *Undercover* (New Rose); *Willie Alexander's Greatest Hits* (New Rose, Paris); *I'm A Star*, The Count (Carrere, Paris); Boston bands: Max Thorn, Shout, Easy Going Guys, Dimension Ten, Love & Flame, The Realm, Unnatural Axe, Rockkit, etc.

Services Offered: Record production by Joe Viglione. Pre-production, consultation, and studio production. Also record promotion.

—JOSEPH A. VIGLIONE PHOTO ON PAGE 164

Back Issues

- 1984 January, Northwest Studios.** Reference Monitors. Michael Sembello. Steve Smith Studio. Huey Lewis.
- 1984 February, Independent Engineers & Producers.** NAMM Show. Allen Holdsworth. Keyboard Artists Forum. Ronnie Lane.
- 1984 March, Southeast Studios.** Microphone Special Techniques. Sound in Australia. Religious Recording. Oak Ridge Boys.
- 1984 April, Video Production & Post Production Facilities.** Video Supplement. Time Code Special. Jeff Baxter Interviews Brian Setzer.
- 1984 May, Northeast Studios.** Digital Recorder Forum. Studio Computers. Roger Nichols. NASA Sound. Robert Moog. Jim Boyer and Billy Joel.
- 1984 June, Remote Recording & Sound Reinforcement Listings.** Computer Music. Big Country. George Benson Studio. Chrissie Hynde.
- 1984 July — SOLD OUT**
- 1984 August — SOLD OUT**
- 1984 September, Southern California Studios.** Film Sound '85. Digital Resource Guide. Interactive Disks. Jeff Beck.
- 1984 October, Fall AES New Products.** New York Soundstages. Lindsey Buckingham. Optical Disk Update. Amadeus. Steve Miller.
- 1984 November, North Central & Canadian Studios.** Video Supplement. SMPTE Conference. Canadian Spotlight. Fee Waybill.
- 1984 December, Tape to Disk Listings.** Mastering Engineers Forum. Bell Labs. Compact Discs. Rupert Hines. Hal Blaine.
- 1985 January, Northwest Studios.** Superbowl Sound. Springsteen on Stage. Ray Parker Jr. Leon Russell.
- 1985 February, Independent Engineers & Producers.** Brian Eno. The Art of Touring. Roger Powell on MIDI. Les Paul.
- 1985 March, Southeast Studios.** Loudspeaker Technology. Martin Rushent. "Cotton Club" Sound. John Fogerty.
- 1985 April, Video Production Supplement with Facilities Listings.** Compact Power Amps. Radio Recorders. Harry Bryant. Eurhythmics.
- 1985 May, Northeast Studios.** Digital Reverb. Flo & Eddie. Holophonics. Emmylou Harris. Humberto Gatica.
- 1985 June, Sound Reinforcement & Remote Recording Listings.** Location Recording Tutorial. Grateful Dead Sound. Weird Al Yankovic. Synthesizer Oriented Studios. David Sanborn.
- 1985 July, Recording School Listings and Southwest Studios.** Mixing Consoles. Dr. Demento. Kashif's Studio. Roger Nichols and John Denver.
- 1985 August, Studio Design Issue: Listings of Designers & Suppliers.** Control Room Acoustics. Thomas Dolby. Orchestral Recording. On the Road with Prince. Neil Young.
- 1985 September, Southern California Studios.** Film & TV Sound. Frank Zappa. Digital '86 Supplement. Mishima Sound. David Foster.
- 1985 October, New Products for AES.** Maintenance & Testing. Abbey Road Studios. Ambisonics. Ben Burt on Imax. Nile Rogers.
- 1985 November, North Central & Canadian Studios.** George Massenburg. Video Supplement. Alligator Records. Women in Media Production.
- 1985 December, Tape-to-Disk Listings.** Mastering, Pressing & Duplication. TEC Award Winners. Sound for the Twilight Zone. Tom Waits.
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TOM WHITAKER

Engineer & Producer
PEARL SOUND, LTD.
47360 Ford Rd., Canton, MI 48148
(313) 455-7606

Credits: Producer: Map Of The World; *Natural Disasters* EP; Map Of The World; *Hiroshima Girls* 12 inch; Map Of The World, Monkey Paw; *Disconnection* 7 inch; *Cruisin Ann Arbor* and *Cruisin Ann Arbor II* compilation LP's; *Aluminum Beach*, *Crying* 7 inch; *Grey Slacks* 7 inch
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Producer
EXTRATERRESTRIAL SOUND
180 East 2nd Ave., Apt. 5F, New York, NY 10028
(212) 580-8109

Credits: Debut album for The Nails entitled *Mood Swing* on RCA Records Worldwide; 12 inch dance mix of *After The Fire* on *Der Kommissar* on Epic Records; *Army of One* on WEA Records International, as well as numerous independent label productions
Services Offered: Being a songwriter and musician I wrote and sang background vocals on "Eyes on Fire" for Blue Oyster Cult's recent *The Revolution by Night* album) is extremely helpful to my work as a producer. Helping bands get the most out of their songs and then tweaking the arrangements is priority one. From that crucial starting point the right performance and the right sounds can naturally flow.

HOWARD "H. LEE" WOLEN

Engineer & Producer
15425 Vanowen St., Van Nuys, CA 91405
(818) 901-8660

Credits: Smoke Robinson, Herb Alpert, Roberta Flack/Peabo Bryson, Thelma Houston, The Temptations, The T-Men, Natalie Cole, Robert John, Dave Panfil, Kim Carnes, Barry White, Billy Ray Austin, Alphonse Mouzon/Herbie Hancock, Jack Miller Reggae, Teddy Pendergrass, Jennifer Holliday, Hollywood Beat, Solid Gold Show sound mixer/recorder, various others.
Services Offered: Engineering, producing, song writing and collaboration, mixing, fixing, superjoint rolling, editing, music background.

WREN WRAVEN

Engineer
WREN WRAVEN
13224 Superior, Southgate, MI 48195
(313) 281-6381

Credits: Engineered or assisted in recording numerous nationally known and local well-known and lesser known musical groups at 24 track studio. Make media commercials and engineered live happenings. Worked with TV and radio crews
Services Offered: Qualified recording engineer. Completely experienced in studio and field work. Able to follow a project through from setup to finished product. Albums (all sounds), demos, live happenings, commercials, etc.

PHIL A. YEEND
Engineer & Producer

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Services Offered: Writing and production albums, commercial music supervision, videos, recording, editing, mixing, film transfer, video transfer, cassette duplication.

PHIL YORK

Engineer & Producer
705 E. Pioneer Dr., Irving (Dallas), TX 75061
(214) 438-8248

Credits: Twenty year veteran has recorded gold and platinum records, musical numbers to Oscar winning feature movie soundtracks. Was voted Best Recording Engineer 1983 by Texas Music Association. Skilled in all music styles. Produces and engineers audio for MTV type videos. Has recorded over 30 Billboard chart records. All in Texas.
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130 South Bonsall St., Philadelphia, PA 19103
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Credits: Executive Slacks, The Reds, Specimen, The Church burners, Bunnydrums, Mr. Mehta, Experimental Products, Pretty Poison, Crash Course in Sobriety, Five Story Fall, The Stickmen, Opposite Sex, Cobalt Blues Band, Comcast Television, Universal Television
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ZIMMERMAN & ASSOCIATES
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NORTHEAST STUDIOS DIRECTORY

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FINAL DEADLINE: FEBRUARY 17th

—From Page 78, *Forum*

everything and choose later. It happens more on solo projects than band projects. With a band, at least you have an absolute to deal with—the styles and abilities of the players and the way they have interacted in the past to make the sound of the band. With a solo project, people can experiment forever and still not have a grasp of the overall—the guitar style they finally liked matches with the bass style, and “Oh, we’ve got three different drummers working on these two cuts.” That way of working adds a lot to budgets.

If I were running over budget, rather than making any sweeping cuts, I’d target a couple of songs that could possibly be singles and really work on those the hardest. No matter what any band says, that’s the most important thing they can have—a song that can get on the radio. It takes a long, long time to make a good single, and some bands would like to make an entire album of singles. If you’re just recording a regular song, you don’t do some things to it technically and musically that you do to a song that you want to be a single, and often times you hurt a song that isn’t a single because the dynamics of the song don’t warrant the kind of machinations you use to make a single.

Zito: It’s hard to trim. My philosophy—and some labels won’t want to hear this—is that things cost what they cost. I am conscious of money; I know where I am in the budget and what I’m spending. But I try to make my decisions based on creative things, rather than strictly financial ones. Of course, you can work in cheaper studios to save money and work with cheaper personnel or try to convince people to work for a little less. But I’ve found that working in a cheaper studio, things might cost half as much, yet they usually take twice as long. The better studios are better equipped, they understand the pressures of recording better because they deal with bigger clients, and there’s an overall higher level of professionalism.

Nalle: When we have a project that doesn’t have a lot of money, we’ll go to what I’d call an “upscale home studio,” a place with maybe a couple of JBLs, a Sound Workshop console and a good tape machine—and lay the keyboards down flat there. Generally, you can work for about \$30 an hour that way. It doesn’t take a great engineer to record an electronic keyboard. There’s not much noise and the level is usually pretty consistent. We’re getting into MIDI-computer storage of keyboards, too, and that saves people a lot of studio time because they can do the work at home and then come in and dump it.

I think one of the biggest money-savers, though, is hiring the right musicians. People who work with limited budgets try to cut corners by hiring their friends, or friends of friends. I think hiring a good drummer is the

“As far as making cuts, you just have to know instinctively where the cut-off point is.”

—Terry Manning

key. Hire the best you can afford and I guarantee you’ll save money in studio time.

If I had to make cuts, the first thing I’d drop would be things like strings, horns and back-up vocals. The main ingredients should be a great song, a good rhythm track, and good lead vocals. If those three things are happening, even if you have virtually nothing else on the track, you’ve got a shot at a hit. If you put all the dressing on a song but then rush through the lead vocal, you’re going to hurt it badly.

What is the worst waste of time you’ve experienced in a studio?

Droney: We were in the studio, the drums were all set up, we were ready to start recording, and this artist was waiting for his demo cassettes to come in the mail. It was crazy. That was his last record.

Manning: I’ve seen people get involved with drugs and to me that’s the biggest time waster and ruination of talent and life, and I will not stand for it. And I don’t think anyone should stand for it either, because it’s just ridiculous. That’s the only real thing I’ve seen that’s caused a big problem. Not something that I worked on, though.

Chiccarelli: Things like people not showing up on time, or just not being prepared, like writing songs in the studio—which is fine if you’re Elton John—but in the case of making an album with a reasonable amount of money,

there’s a lot of things that should be done outside of the studio: basic arrangements, song structures, writing of the songs themselves.

Another thing I’ve found is that because business has gotten so competitive in the last two to five years—meaning there’s less records being made and less money to make them—I’ve seen a drastic decline in the use of drugs and alcohol. I think people have gotten really serious and said “This is a business and we have to conduct ourselves in some sort of business-like manner.” But you can still have fun in the studio, and it should be a pleasant environment.

Hill: Not making a commitment, especially in mixing. When you get five or six different people to mix three or four different songs, and they’re paying each guy a couple of grand, that’s a tremendous waste of money. The indecision in mixing, when no one is consistent and can’t make up his mind, that’s a waste. Another thing is I’ve worked with producers who won’t reuse ¼-inch tape, who will hold onto it and won’t go back over it. You can go into thousands and thousands of dollars. But the most ridiculous thing I’ve ever seen is when they get into hiring and firing people. It’s incredible! They’ll have a big argument, and they’ll blow one person off halfway through a song and then have to re-cut it. All the funds that have gone into the original can’t be salvaged, so you might have a \$65,000 investment get torched because the next guy they get isn’t too keen on it, and his pride keeps him from trying to salvage the first cut.

Burnett: I worked with a popular band who, if they got one line of a song right during a day, that was considered a good day. It was nitpicking in the extreme. They could afford to do it, but it was still ridiculous. They would literally spend three weeks to get a lead vocal. That’s the kind of stuff that just drives an engineer nuts.

Kahne: I was working at a place in L.A., and a very famous band was working in one of the next rooms at a \$2,500-per-day lockout. They’d locked it out for eight weeks just to mix, and I think they barely made it. They’d decide that people should show up at one in the afternoon the following day, but then nobody would show up before five. Somedays they’d get in at six and leave at eight. Somedays someone wouldn’t come in at all and never bother to tell anyone till seven. That was pretty frustrating and wasteful. You know, in light of things like Live Aid and Farm Aid and all, that’s a pretty healthy piece of change that a band could donate to a good cause instead of, in effect, just burning it. But that’s rock and roll. ■

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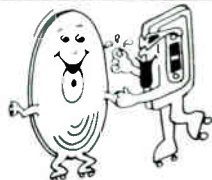
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—CONTINUED FROM PAGE 10

and Ron Carter. It was engineered by Peter Darmi and assisted by Steve Sharrott and Tony Viamontes. . .

NORTH CENTRAL

At *Tone Zone Recording* in Chicago, heavy metal rockers the *Rez Band* were in to record their eighth album *Between Heaven and Hell*. The Band, *Tom Cameron*, and *Dawn Herrin* produced the album. . . At *The Recording Workshop* in Chillicothe, OH, *Dave Egan*, *Brian Stritenberger*, and *Jon Smeltz* finished an album project with *Southbound*. . . At *Studio A*, Dearborn Heights, MI, producer *Vinnie Poncia* put down background vocals for an upcoming movie, *The Golden Eagle* with rockers *Adrenaline*; *Bobby Schaper* engineering. . . At *Gnome Sound* in Detroit, MI, newly signed 4th and Broadway/Island recording artist *Millie Scott* began work with producers *Duane Bradley* and *Bruce Nazarian* of D&B Productions on her forthcoming LP. Scott is a seasoned R&B vocalist who formerly recorded with the group *Cut Glass*. . . *Rainbow Bridge Recording Studio* has expanded its Libertyville, IL, facility to include 24-track transformerless recording and real-time cassette duplication. . . *Budget-8 Recording Studio* in Taylor, MI, has been working on an album project with *The Exit Band*, featuring Ray "Keyboard" Moore; former member of *Shot Gun*. Also working on their projects are *Fatel*, and

Eurka Road. . . *The Mortal Miconotz* from Lawrence, KS, were in *KC's United Recording* cutting tracks and mixing their new album. *Bill Rich* and the band produced; *Dan Billings* engineered. . .

STUDIO NEWS

Sound Ideas in NYC has added eight more modules to their SSL6000 E in studio B, completing its 56 mainframe. They've also acquired several new pieces of outboard gear, including the Roland SRV 2000 digital reverb. . . *Michael Jonzun*, music artist and producer, has opened Mission Control recording studios at Copley Square, Boston. The first studio at the complex is now open and features a Solid State Logic computerized recording system, 48-track recording capability, and the most extensive selection of processing equipment available in New England. In addition to serving Mr. Jonzun's production requirements, the facility is available to other producers. . . *Evergreen Recording Studios* in Pittsburgh, PA, accepted delivery of an Emulator II keyboard, Klark-Teknik DN780 digital reverb processor, ART DR1 digital reverb, Fostex LS2 studio monitors, and an Otari MTR 10 center track time code tape recorder. . . *Quadrasonic Sound* in NYC has taken delivery of their second SSL console, a 56-input board for the newly renovated and decorated Studio B suite. . . *Michael Hektoen*, president of *MediaSound*,

Inc., a New York-based recording studio, announced the opening of its new MIDI Impact room this week. The room provides the client with 64-track MIDI/SMPTE sequencing on IBM, Macintosh and Commodore computer music systems; a Synclavier music system with SMPTE interface capabilities. Displays and printouts of finished tracks as well as keyboard improvisations instantly; and much more. . . *Gnome Sound*, in Detroit, completed its major studio upgrade by putting a Soundcraft TS-24 console in place in the Gnome control room, along with the Otari MTR-90 II multi-track recorder with an EC-101 SMPTE synchronizer card and the UREI Model 809 Time Align monitors. . . *Soundwave*, in Washington, DC, has upgraded and automated studios A and C, by expanding from 16- to 24-track, and installing the AK Master Mix Automation system. A completely rebuilt 3M M-79 24-track recorder has also been installed to interface with the existing Q.Lock video sweetening system. . . *P & P Studios*, Stamford, CT, has added a Sony one-inch audio layback machine to its video sweetening studio. The machine allows audio to be laid off or back to a one-inch video master tape. It compliments P & P's 24-, 8-, 4-, and 2-track Sony Sync Master video sweetening system. . . *Dave Wellhausen Studios* in San Francisco have added a new MCI JH-24 transformerless 24-track machine with both 24- and 16-track heads. Also added was a Roland MSQ700 MIDI sequencer and a Roland

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TR707 digital drum machine... At *Earnie Earnest Productions'* new studio in Marietta, GA, they've added equipment such as a Soundtracs 32 input console, two new Tascam 40 series recorders, a MXR digital reverb and pitch transposer, and a matched set of five Fostex T20 headphones... *Solid Sound* in Ann Arbor introduced its new audio-video synchronizing equipment to Detroit-area producers and advertising agencies in two lavish open-house events in early November. The newly-installed units allow them to tie audio and video together at one-thousandth of a frame accuracy... *Digital Services Recording* of Houston has opened what they claim is the most advanced audio production facility in the Southwest. The studio offers

48 tracks of Sony digital recording, 24 tracks of Otari analog recording, and an extensive selection of processors and effects... *Jeff Gastineau*, owner of *3001 Studios* of Columbus, OH, has announced the addition of several new items to the facility, including an Ensoniq Mirage sampling synthesizer, Roland SBX80 SMPTE-to-MIDI synchronizer, Roland SRV2000 digital reverb, Sansui/JVC digital mastering system, and a Tascam 38 multi-track for field recording and video sweetening... *Robert Berke Sound* in San Francisco acquired a Sony BVH 1100 one-inch video tape recorder; thus becoming the first audio-only facility in the Bay Area with full one-inch Type "C" capability... *McVee Productions*, a private production and post-production house, has relocated to an improved

facility at 140 Bradley Street, New Haven, CT 06511. This location allows the company to access to a full size studio, computerized animation, and film capabilities... *Plum Studio*, Haverhill, MA, has installed a new Sony/MCI JH-24, and JH-110C recorders. Additional new equipment includes: Lexicon digital reverb, Aphex Exciters, Panasonic video equipment and more Neumann microphones... Renovations being made at *Studioeast*, in Charlotte, NC, included the creation of a smaller studio (B) for pre-production and smaller scale productions, with an Otari 8-track machine and a Sony CPC 113B high-speed tape duplicator. In addition, they've ordered an Amek Scorpion production console.

JVC Digital Audio. The artist's editing system.

Digital audio editing takes on new speed, simplicity, and flexibility with JVC's 900 Mastering System. Anyone with a trained ear can learn to operate it in minutes and be assured of professional results of outstanding fidelity, accuracy, and clarity. And while sonic excellence is surely the 900's most persuasive

feature, flexibility runs a close second; for not only will the 900 operate with 3/4" VCR's, but with VHS cassettes, too, with total safety and confidence, making it ideal for mastering digital audio discs and the increasingly popular hi-fi video discs. The DAS-900 consists of four principal components.

VP-900 Digital Audio Processor.

Two-channel pulse count mode processor. Several 16-bit microprocessors make it compatible with other professional production equipment such as cutting lathes, synchronizers, and encoders. Dynamic range of more than 90 dB. Frequency response from 10 to 20,000 Hz (± 0.5 dB), and low recording bit rate of 3.087 Mbits/s at 44.1 kHz. Transformer-less analog I/O circuits further improve sound quality, and the analog-to-digital, digital-to-analog converter reduces distortion to less than 0.02 per cent, while an emphasis circuit improves signal-to-noise ratio. Logic circuit uses CMOS LSI chips for high reliability, compactness, light weight (48.6 lbs) and low power consumption.



Audio Editor Control Unit.

Electronic governor for routing, coordinating, and executing all edit functions, both automatic and manual. All commands, from digital dubbing of original to master for continuous programs, to repetitive point-to-point manual cueing are regulated here.

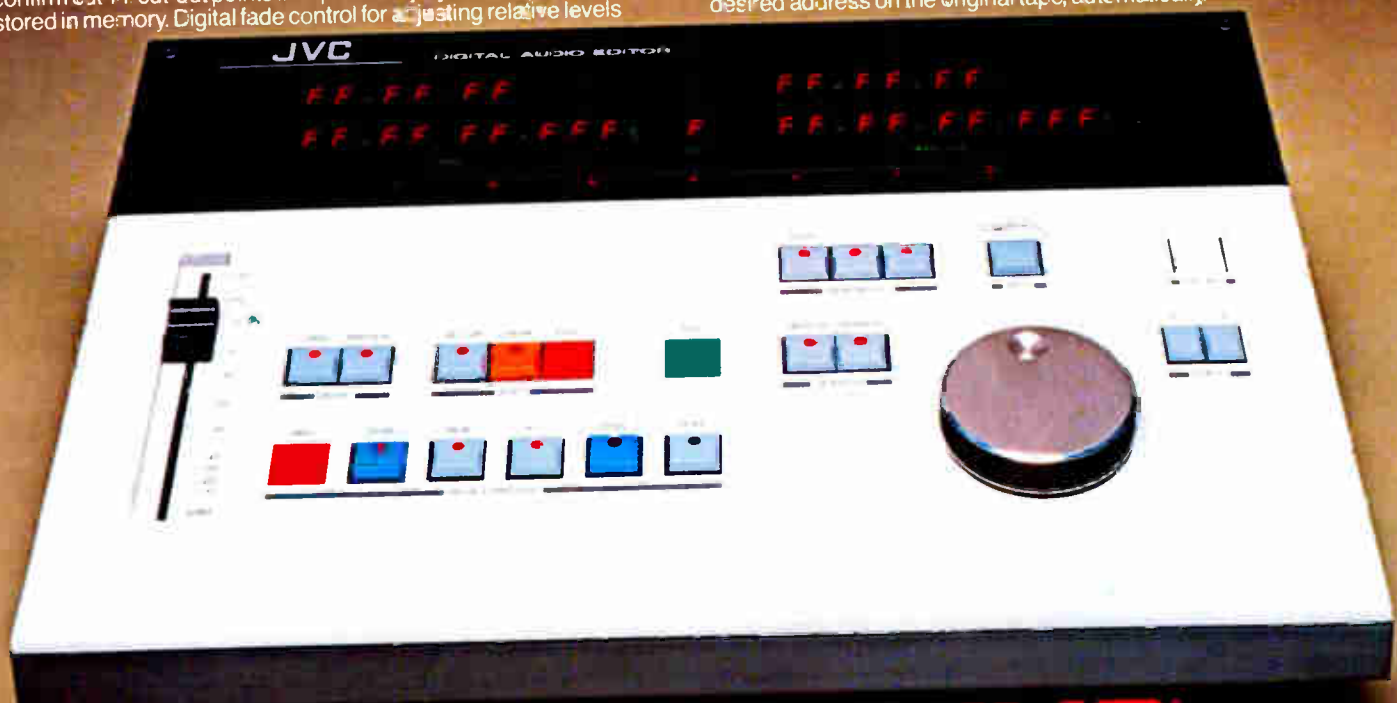
TC-900V Time Code Unit.

Actually two time code units in one, this unit reads and generates SMPTE standard time code and synchronizes the JVC exclusive BF (bi-parity) time code. Thus, the DAS-900 will operate effectively with both time codes a necessity when the System is to be synchronized with video equipment.

AE-900V Digital Audio Editor.

Simplicity itself to operate, this little number puts editing right in the hands of the artist, if need be. Precise to within microsecond accuracy, edit search can be carried out by manual cueing, automatic scan, or direct address. It will confirm cut-in, cut-out points independently by recalling signals stored in memory. Digital fade control for adjusting relative levels

between original and master tape. Shift function for changing edit points back ward or forward in 2-ms steps for super-fine adjustment. And variable-gradient cross-fading function for smooth continuity at the edit point, variable in 10, 20, and 40 microsecond steps. Auto tape locate function enables the user to locate the desired address on the original tape, automatically.



For a demonstration of the DAS-900 Digital Audio System, a Spec Sheet, or JVC's complete catalogue, call toll-free

1-800-JVC-5825

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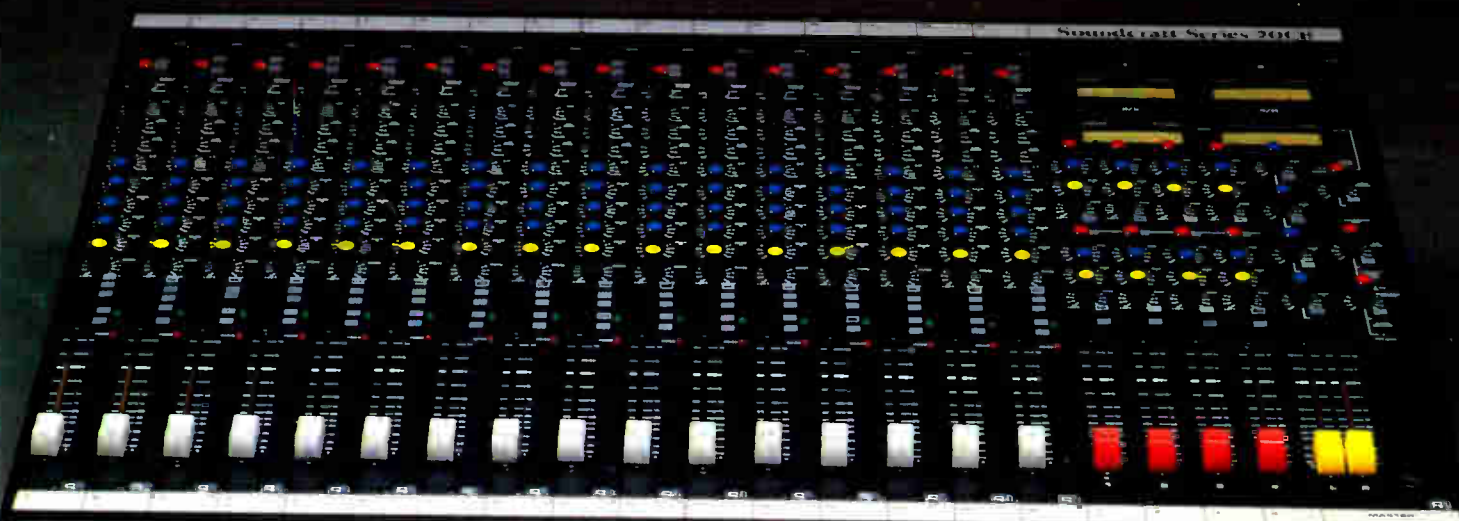
The Soundcraft Series 200 has been the definitive statement in small frame consoles for years. They find homes in recording, broadcast, video production, live music, and stage productions. They have a reputation for being reliable like a rock.

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