

JULY 1985
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THE RECORDING INDUSTRY MAGAZINE

Mix

**Education Issue:
Schools & Programs**

**Studio Listings:
Texas and the Southwest**

**Studio Forum:
Mixing Consoles**

**Interview:
John Denver & Roger Nichols**

**Lunching with
Dr. Demento**

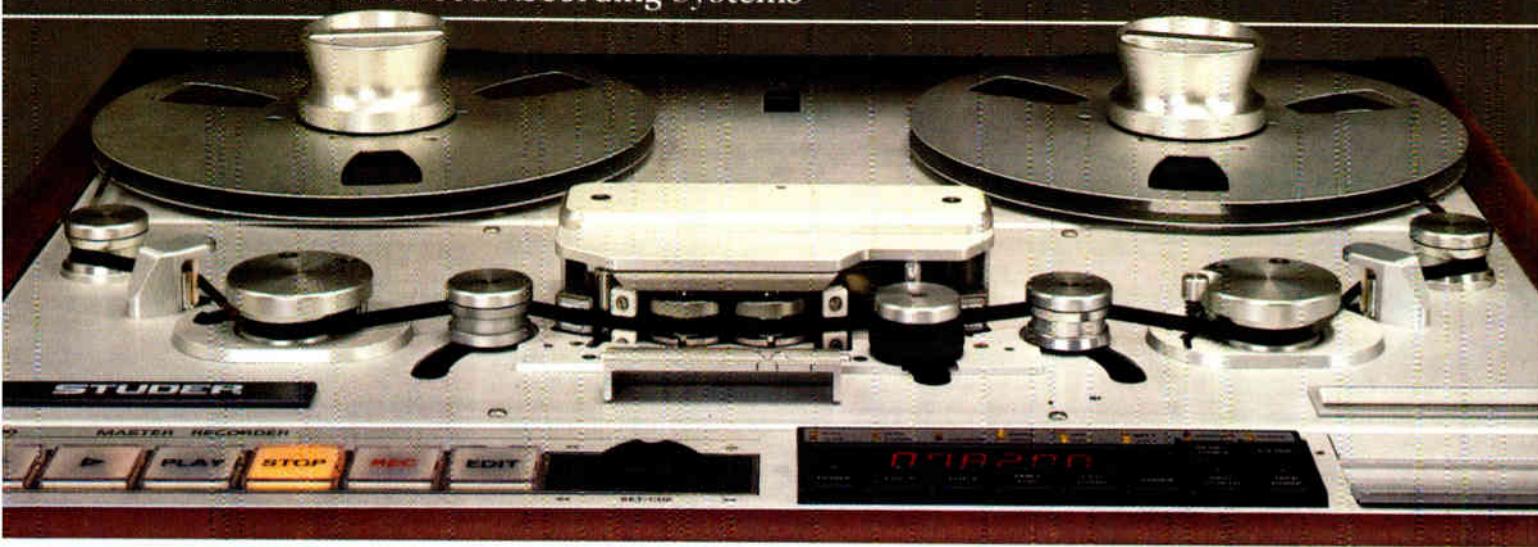
**Digital Reverberation
Roundtable**

Aretha Franklin

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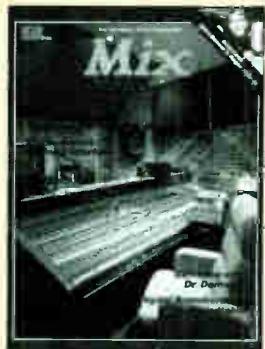
STUDER REVOX



JULY 1985
VOLUME NINE
NUMBER SEVEN

THE RECORDING INDUSTRY MAGAZINE

Mix



Cover: Located in Sunnyvale, Texas (near Dallas) and just 18 months old, Studio Southwest has recently upgraded with an automated MCI 556 48x32 console and has been kept busy with a steady mix of album, commercial, and jingle projects.

Photo: Michael Wilson

Corner: John Denver and Roger Nichols

Photo: Sherry Ryan Barnett



The technical focus of this issue is on mixing consoles. On page 20, George Petersen talks to studio owners about buying consoles and samples alternate choices for those who don't need a 24-track price tag. And on page 30, writer Greg Hanks presents an overview of console basics and maintenance.

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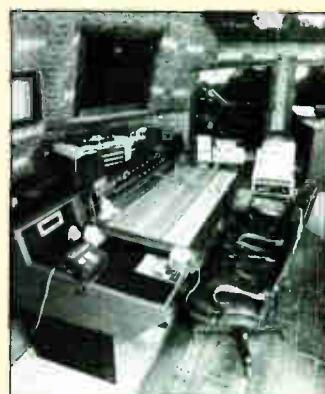
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This issue contains listings of both "Recording Schools and Programs" (page 66) and "Recording Studios of the Southwest" (page 149), as well as several related articles. Linda Johnson checks the pulse of the recording scene in the sunny Southwest (page 142).



On page 92, Mr. Bonzai explores the crazy world of Dr. Demento, disk jockey extraordinaire. The good doctor talks about his humble beginnings and lifelong love of esoteric music, and gives us a healthy dose of insight into the career of one of America's most popular radio personalities.

In Playback, Robin Tolleson talks to producer Narada Michael Walden about working with first lady of soul Aretha Franklin on her new release *Who's Zoomin' Who?* This detailed, behind the scenes look begins on page 130.



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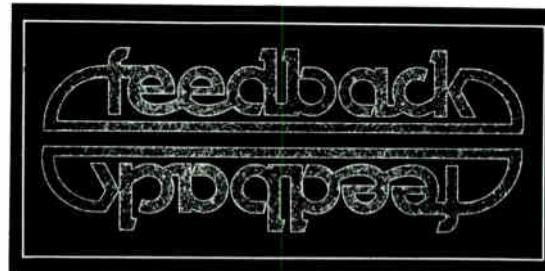
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Dear Mix,

Contrary to the information in your May '85 issue, Europadisk, Ltd. in New York City is the first U.S. licensee of Teldec's Direct Metal Mastering technology. As you can guess, the incorrect attribution of the DMM process to The Cutting Edge will cause confusion for the many people interested in this breakthrough technology. I hope you will agree that the correction for this serious mistake should be immediate and large enough to be noticed by all Mix readers.

Sincerely yours,
James P. Shelton
President, Europadisk, Ltd.
New York, NY

Dear Mix,

I am rarely embarrassed by articles or quotes written about myself or my business. It is usually understood that a certain amount of signal loss exists in any transfer of information.

The May issue of Mix needs some clarification if not correction. In the Northeast Studio Update I was given some terrific but undeserved credit with the digital recording of *Peter Allen Live*. This engineering credit goes to David Hewitt of Remote Recording Services.

Another credit/correction point that I did have something to do with is the group I am very proud to have produced and engineered, Growing Up Different (that is the name of the group, not the album). The only information I have on the author's reference to Delaware is that it is the "first state" and it is home base for Skyleabs. The rest of the misquotes and misleading info are trifles as they mention no names other than mine.

I am a firm believer in the phrase, "Give credit where credit is due." I tend to be very particular about this because these credits often represent tremendous contributions to the music industry by individuals or groups with great ability. Sometimes it may be just name dropping, but this is the usual way of

finding out that these people exist. I believe giving correct credits is as important as giving correct change at the bank.

Sincerely yours,
Bob Skye
Skyleabs, Inc.
Dover, DE

Dear Mix,

I noticed that the article on Great Immediately Recording (May 1985) did not mention Acoustilog, Inc. This surprised me for two reasons: first, I did a minor preliminary inspection and consultation for Bob Christiansen, as I do for many prospective studio owners. Second, the statement that Mr. Joseph Carrero was the designer of Duplex Sound (owned by Eumir Deodato) is incorrect. I designed the interior and exterior acoustics as well as the audio wiring system for Duplex. We were fortunate to have Mr. Carrero as the builder. The May 1984 Mix article on Duplex also didn't mention Acoustilog. I spoke with everyone involved and apparently it was just a misunderstanding.

Yours truly,
Alan Fierstein
President, Acoustilog, Inc.
New York, NY

Dear Mix,

I must make a correction regarding my letter to the editor reproduced in your April 1985 issue. It was stated that "proper school registration for Canadian schools is the B.C. Ministry of Labour under the apprenticeship and training development act." This in fact is for British Columbia schools only. Schools in other provinces should register with the appropriate authorities in their respective provinces.

I must thank you very much for the opportunity to express my opinion in your magazine regarding audio and music industry schools. It reinforces my belief that your magazine is truly an open forum for the audio and video industries. I'm look-

CURRENT

SPARS/3M Business Conference

The Society of Professional Audio Recording Studios will hold a two-day studio business conference, September 20 and 21 at the 3M headquarters in St. Paul, Minnesota. The conference will address issues such as the economic outlook for the production studio industry; cost effective ways to computerize business functions; price-cost comparisons of analog and digital two-channel, multi-channel, tape and hard disk recorders; the effect of recent tax law rulings; studio insurance, and employee relations.

The cost of the conference will be \$300 for SPARS members and \$450 for non-SPARS members (for registration previous to July 1). Included in that fee is seminar registration, three nights lodging, breakfast and lunch for both days of the conference, transportation to and from the Twin Cities airport and evening entertainment.

For more information on this conference, contact SPARS at (213) 651-4944.

NAMM Promotes TV Ads

Searching for an effective way to expand the market for its products, the National Association of Music Merchants, through its Board of Directors, recently approved \$150,000 in matching funds for a test market advertising campaign on MTV. The purpose of this campaign is to convert young viewers of Music Television from "music lovers" into "music makers."

Three 30-second ads are currently in progress, generic in nature and compatible with MTV's music format, to be aired beginning this fall. Evaluation of the test market campaign should be completed by early 1986, with a positive assessment leading to an ongoing national promotion on Music Television.

NAMM is requesting support from all organizations involved in the manufacture, distribution or retail sale of electronic instruments,

percussion, sound reinforcement and recording equipment. For further details on this program, contact NAMM at (619) 438-8001.

JBL Forms New Company

A new company has been formed from JBL's professional products division, according to its new president Ron Means. JBL Professional is one of four units recently created due to the overall growth of JBL. The consumer division is now known as Harman-America. JBL's exporting group is now JBL International, and the manufacturing arm is now Harman-Manufacturing.

JBL Professional will operate its own finance and credit departments, purchase products from the manufacturing groups, and maintain its own inventory, as well as be responsible for new development of JBL professional and UREI products.

With the restructuring, Mark Gander, formerly product manager, has been promoted to vice president-marketing of JBL Professional, and former national sales manager, Ken Lopez, has been named vice president-sales.

Lucasfilm and Convergence Form The Droid Works

Lucasfilm Ltd. and Convergence Corporation have announced the formation of The Droid Works, a

company to develop and market state-of-the-art postproduction systems.

The Droid Works is the outgrowth of several years of research in electronic editing systems conducted by Lucasfilm and Convergence. In 1983, Lucasfilm formed a joint venture with Convergence to introduce EditDroid, a computerized video editing system.

The Droid Works will be headquartered near the Lucasfilm complex in San Rafael, California. "We've spent the last few months preparing for the spinoff," said Bob Doris, who will be the president and CEO of the new company. Doris has been with Lucasfilm for three years, and has helped develop the initial market strategy for commercializing the products of Lucasfilm's computer research.

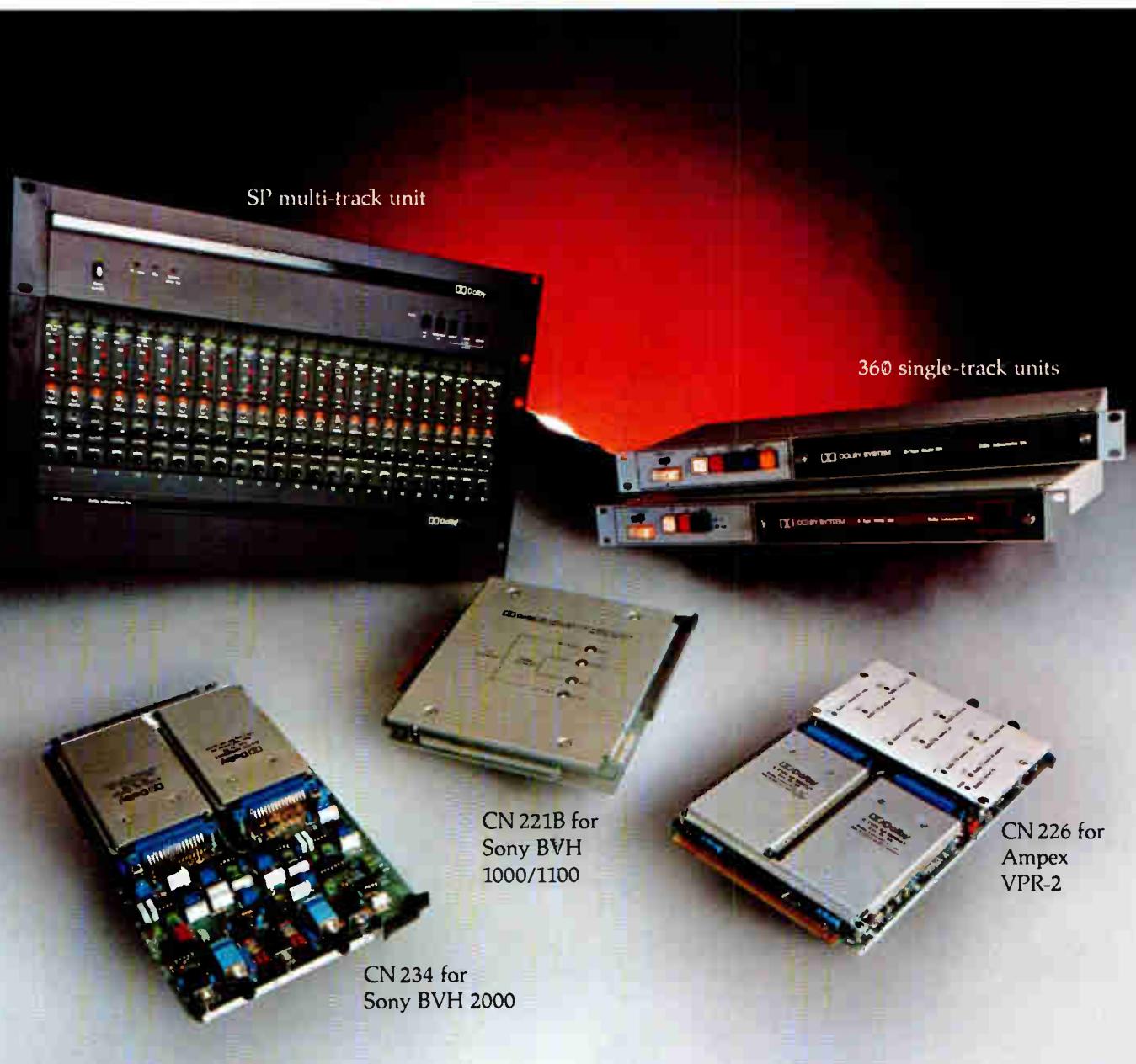
"Forming The Droid Works will fit well with Lucasfilm's long-term goal to revolutionize filmmaking," explained George Lucas. "Anybody who's worked in film postproduction realizes what a primitive 19th-century process it is. Somebody had to be willing to develop computer technology for filmmaking, and I'm glad we've been able to do it."

In addition to the San Rafael headquarters, The Droid Works has two sales and field service offices in Los Angeles and New York.

notes:

Audio and acoustics expert **Dick Swettenham** has joined forces with **Audio Design Calrec, Inc.** to run their new sales and support office located at 1616 Butler, West Los Angeles, CA 90025... **Electro Sound, Inc.**, will host a technical seminar in the production of prerecorded cassettes August 20 through 22 in Sunnyvale, CA. Call (408) 245-6600 for details... At **Ampex**, **Philip M. Ritti** has been promoted to director of marketing at the Magnetic Tape Division and **Ray Dulye** has assumed the newly-created position of senior product support engineer for the Audio-Video Systems Division... **Bob Todrank**, president of Nashville's **Valley Audio** and **Neil Grant**, technical director of Discrete Research in London, have announced their association to jointly pursue audio/video facility designs... **Electro-Voice** has added key accounts manager **Janine Fromm** to its Pro Sound Reinforcement Division... **Edmund Sutton** and **Brett Kinig** have joined the staff of New York's **Telegenics** as media coordinator and club sales coordinator, respectively... **Gerard J. Ferri** has joined **Atlantic Video, Inc.** in Washington D.C. as director of marketing... **Sheridan Elson Communications**, of New York City, has added senior producers **Kathleen Held** and **Lisa Orden** to their staff... **The Camera Mart, Inc.** has relocated its Syracuse, New York office to 456 55th St., 10019... **Videosmith Rentals** has moved to 1942 South St. in Philadelphia, PA 19103. New phone number (215) 665-0695...

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SESSIONS

NORTHWEST

Producer Narada Michael Walden was at Tres Virgos Studios in San Rafael, CA cutting tracks for the new CBS album by Clarence Clemons (E Street Band). Among the notables on these sessions: Booker T. Jones, Randy Jackson, and Preston Glass. David Frazer and Gordon Lyon engineered...At Forte Studios in Tigard, OR, local bands Knight 'N Hale, Night Attack, and Visual Obscenities were in doing demo work...At Steve Lawson Productions in Seattle, The Cowboys worked on demo project with engineer Terry Date; and Jr. Cadillac was in to mix the new unofficial Washington State song "Louie Louie"...Members of Glenn Frey's band went up to Seattle's DNA Studios to help collaborate on an original album by Tom Kell. Kell, former lead vocalist for the well-known Northwest act, The Skyboys, recorded the seven-song "Blessed Are The Blameless" with Duane Berry as executive producer and Jeff Cox and Don Dodge both as producers and engineers...At Banquet Sound Studios in Santa Rosa, CA Kit Walker has been working on a "new age dance" album, with Mark Lyon at the console...Lots of activity at The Plant in Sausalito, CA including: producer Ron Nevison completed the final mixes for Capitol Records' Heart LP. Nevison engineered with assistant Michael Clink; Huey Lewis & The News were in tracking and mixing a couple of tunes for the soundtrack of Stephen Spielberg's summer movie release, with Jim Gaines and Jeffrey Norman engineering, Robert Missbach and Mark Slagle assisting; and Journey was back cutting basics for their next group album with Steve Perry and Jim Gaines producing this CBS project...At Mushroom Studios in Vancouver Dave Ogilvie is engineering and producing an album for 54/40, a band that has garnered US major and independent label interest...

SO. CALIFORNIA

Ray Violet and Bruce Duff, the founding members of Jesters of Destiny, were in Dawn-breaker Studios in San Fernando, producing the upcoming record by the Super Heroines...At Monterey Sound Studios in Glendale, the heavy metal group 44 Magnum was in laying tracks and mixing an upcoming album for Alfa Moon Records in Japan. They produced themselves along with Kyoshi Tagu-

chi and Goh Hotoda...Recent activity at Clover Recorders included producer Chuck Plotkin and engineer Toby Scott in mixing "Stand On It" for a Bruce Springsteen single, with Scott Weinstein and Squeak Stone assisting...At Studio Orange in Santa Ana, Decor was in working with producer/engineer Ted Vegvari and assistant Phil Thomas...At The Complex Studios in Los Angeles, Stanley Clarke put the finishing touches on his CBS album project in studios B and C. Clarke produced the LP himself, with Mick Guzauski engineering and Sharon Rice assisting. Also Jeffrey Osborne was in producing A&M artist Joyce Kennedy. Tom Vicari engineered...Taj Mahal was recording on Kauai at Mantra Sound Studios for Lucasfilm. Producers Mickey Herman and Michael Hirsch were supervising the tracking for an Ewok animated film series to be aired on syndicated television...Rusk Sound Studios in Hollywood had Stevie Wonder in to do a TV spot for Associated Television. And Carlos Cavazo of Quiet Riot did a simultaneous audio/video recording for release as an instructional video, produced by Star Licks...Polygram Records recording artists Finesse tracked at Hit Man Studios in Los Angeles with producer Larry Robinson. Anthony Modster engineered with Joe Seta assisting...Golden Goose Recording Studio in Costa Mesa, had John Bilezikjian and Tom Bozogian in to record their newest album of Armenian folk songs. It was produced by Bozogian for the Hy-Bahr Label, and engineered by Dennis Rose and assisted by John Goetz...At Fast Forward Recording, Hollywood, CA European pop star Vladimir was in cutting a four-song demo tape. After recording five gold records in Czechoslovakia, Vladimir has his eye to breaking the U.S. market. Shepherd Ginzburg was engineer on the project...Sound Image Studio, North Hollywood, had producers Tim Bogert and Bill Willens in cutting tracks for D'vette, with John Henning at the board...Lyricist Phyllis Molinary was in at A&M Recording Studios in Los Angeles working on the main title for the Carson Productions TV special, Our Time. Engineer on the session was Roger Young, assisted by Clyde Kaplan...At Group IV Recording in Hollywood, producer Ashley Irwin tracked a new Spinners LP with engineer Lee Di Carlo, assisted by Andy D'Addario, for Atlantic Records...Darius & the Magnets completed recording four new songs at Mad Hatter Studios in Los Angeles. The tracks were produced and engineered by long-time Magnet associate Denis Degher, who also produced their independent LP, In the Valley of Dreams...

SOUTHWEST

At Goodnight Dallas, Mark Nesler was in cutting tracks with MCA Nashville producer Jerry Crutchfield and Ken Sutherland...Three On A Hill completed their debut single, "Feels Like Fire" b/w "Train," at Sumet Bernet Sound Studios in Dallas. The record was produced by Jim Gasewicz, with both David Boothe and Jim Gasewicz engineering...At Crystal Clear Sound in Dallas, recent sessions included completion of the debut album from About Nine Times produced and engineered by Keith Rust...Stevie Ray Vaughan worked at Dallas Sound Lab's studio A on his upcoming CBS album with Richard Mullins engineering and Ron Cote assisting...Willie Nelson added himself to the list of top Texas talent on the Honky Tonk project, recorded and mixed at Studio Southwest. Nelson recorded his portion for this Texas blues compilation album at his Perdenales Studio, then sent it up to Studio Southwest. Nelson now joins Johnny Winter, Jimmy Vaughn, Bugs Henderson and Jimmy Wallace on "Honky Tonk," which is a single on the album...

SOUTHEAST

At Criteria Recording Studios in Miami, Bob Seger was in doing overdubs for an upcoming album. Dave Cole was engineering with Bob Castle and Dave Axelbaum assisting...The Producers, former Portrait recording artists, completed their third album project at Axis Sound Studios in Atlanta. This album was co-produced and engineered by Joe Blaney, assisted by Louis Hajosy, with additional engineering by Chuck Fedonczak...Studio musician Shane Keister has been holed up at Treasure Isle Recording Studios in Nashville composing and performing the score for the forthcoming feature film Dr. Otto and The Riddle of the Gloom Beam. Richard Schirmer is engineering...Recent sessions at Sound Emporium in Nashville included Roy Clark, Mel Tillis and Glen Campbell in working on a movie soundtrack, Uphill All The Way; Harold Shedd was producer; Jim Cotten, Joe Scaife engineered. Waylon Jennings also cut a tune for the same soundtrack with engineer Gary Laney...Producer/arranger/writer Cirocco completed mixing the new Toni Redd single "You're So Fine" for Northwest Records at Atlanta's Web IV Studios; Tommy Cooper and Brendan Davis engineered...At International Sound in

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Miami, *Miami Sound Machine* cut tracks with *Eric Schilling* at the board. *John Haag* assisted; *Nicole McCloud* was in with *Barry Mraz* engineering, *Haag* assisting, *Lou Pace* producing for *Portrait Records*...

NORTH CENTRAL

Recent sessions at *3001 Recording Studios* in Columbus, OH include demo work by *Bill Kates*, the *Razor Penguins*, *Doug Kuhns*, *Haani Nowilaty & Persona*, and *Erwin Tan*, all engineered by *Jeff Gastineau*...*Mannikin* recorded two singles at *A.R.S. Recording Studio* in Alsip, IL. The project was produced by *Richard Nemeth* and engineered by *Gary Cobb*...Between tour dates, *Survivor* stopped in *Sound Summit* in Lake Geneva, WI to mix a live concert recorded by *Westwood One*. The mix was produced by *Frankie Sullivan*, engineered by *Mike Clink*, and *Phil Bonanno*, and assisted by *John Patterson*...Recent activity at *Ryansound Recording Studio* in Detroit included *Myron Youngblood* producing his own demo with *Rick Guinyard* at the console...In Detroit, at *Sound Suite Recording Studios*, *Bill Easley* and several members of the orchestra of the Duke Ellington Musical *Sophisticated Ladies*, were in recently to lay tracks on Ellington compositions. *Easley* acted as producer and arranger with *Warren D. Woods, Jr.* as engineer; *Frank "Cornbread" Corn* was assistant engineer...Veteran Atlanta-based producer *Eddy Offord* completed work on the new LP by the Canadian rock band *Platinum Blonde* at *Metalworks Studio* in Toronto. *Offord* produced and engineered the album...



(L to R) Celebrating the reopening of Sigma Sound N.Y.'s Studio 8 are: *Frank Heller* (engineer), *Fred Zarr* (synthesist), *Jimmy Santis* (assistant engineer), *Hank Meyer* (studio manager), seated: *Stefan Gerbier* (producer), *Mark Kamin* (producer).

mix on new tracks which were produced by *Sandy Yaguda* and *Howie Kirschenbaum*, and engineered by *Glen Kolotkin* and *Mark Gaidé*...At *Little Big Horn Studios*, NYC, Free Soul Experience recording artist *Fredrix Clark* has been laying down lead guitar tracks for some Brooklyn-based MCs—*The Stetsonics*, a six-piece rap group...In from Canada, *Walter Stewart* (former producer of *Loverboy*) was in NYC's *D&D Recording* working on some hot new tracks for *End to End*. *Douglas Gramma* engineered...MCA recording artists, *The Fixx* were in *Workshoppe Recording* in Douglaston, NY cutting basic tracks for their next MCA LP. Engineering was *Rob Bengston*...At *Planet Sound Studios* in New York, *The Ramones* recorded a single for *Beggars Banquet Records* in England with producers *Tommy Erdelyi* and *Ed Stasium* with *Stasium* at the board and *Ken Florendo* assisting...At *Secret Sound Studio* in New York City, *Billy Hart* recorded his latest album for *Gramavision Records*. Behind the board was engineer *David Baker* with assistance from *Warren Bruleigh*...Activities at *Rawlston Recording* included *Davy DMX* producing *Daylee*, a New York City teacher with a rap for her students; *Akili Walker* engineering and *Bob Brockman* assisting. Studio musicians *Clifton Anderson*, *John Adams*, *Victor See Yuen*, and *Russell Blake* have formed a group called *Meridian*, and were in cutting two tunes; *Walker* at the board with *John Lajvourt* assisting...*Roy Ayers* cut tracks under his own production for Family One Productions at *Celestial Sounds*

in NYC. *Ron Banks* engineered with *Larry DeCarmine* and *Arthur Zarate* assisting. Also, *Evelyn King* began work on her new album on *RCA Records* with *Allen George* producing, *Hugo Dwyer* engineering...At *Normandy Sound* in Warren, RI producer *Rick Harte* cut tracks for *The Lyres* and the *Nervous Eaters* with engineer *Phil Greene* and assistant *Fletcher* for Ace of Hearts Records...At *Gramavision Studio* in NYC *John Blake* was in with engineer *Alec Head* doing final mixes for a new album on Gramavision Records...Three singles cut recently at *The Power House*, Camden, NJ were recently released nationally: "I Wanna Be Your Lover" by *Patrice Hawthorne* "No More Roxanne" by *The East Coast Crew*, and "Kiss Off" b/w "Dedicated Punkster" by *The Kid* were all produced by *Dan McKeown* for Nise Productions, Inc., and engineered by *McKeown* and *Mark Schultz* and *Frank Ferrara*...At *Planet Sound Studios* in New York, *Kid Creole & The Coconuts* completed their new LP for Sire Records; *Bill Evans* was working on a new Manhattan Records project with *Rick Kerr* engineering and *Ken Florendo* and *Tim Purvis* assisting...At *Systems Two* in Brooklyn, singer/songwriter *Elizabeth Ann Corbo* cut tracks with producer/arranger *Kevin DiSimone*. The sessions were engineered by *Michael Marciano* and mixed by *Joe Marciano*...Recent activity at *Kajem Recording Studios*, in Gladwyne, PA included mixdown of new sides for *Brandy Wells*, produced by *Mike Tyler*; and *Stroke*

—PAGE 14

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expanded
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digital
reverberator
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One touch of the status button will configure the whole console for each particular stage of recording, mixing, broadcasting and video post production without sacrificing any flexibility whatsoever. In other words, one touch and you're off and running.

NEW DESIGN.

Conventional in-line consoles suffer from the limitations of one long travel fader and one equaliser being shared by two signal paths. With the engineer fader reversing and moving the equaliser back and forth throughout the recording, overdubbing and mixing process to optimise the situation.

The TS24 eliminates these shortcomings, thanks to its logical design. The long travel fader is in the section called MIX, which is the signal path for both monitoring and mixing. The equaliser moves between the MIX and CHANNEL

signal paths automatically by use of the master status switches. 'Soft' switches may locally move EQ and AUX sends between the two signal paths but are also automatically reset.

When mixing, the CHANNEL section become available as additional inputs or effects sends without the limitation imposed by more conventional designs.

DROP-IN. BOUNCE.

Drop-ins are made easy by the use of the TAPE and GROUP buttons (T & G). Tape and Group enables you and the musician to monitor the original track and the overdub simultaneously.

The Bounce button facility enables you to take any combination of channels with their fader and pan settings directly to the routing matrix giving you instant bounce down.

SOUND AND VISION.

To create perfect sound, you also need perfect vision. With the TS24, that's exactly what you get. Separate scribble strips are provided instead of the usual confusing double one, and the Mix and Channel controls are in clearly defined areas for easier use.

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Soundcraft have developed a unique interface to the disc based MASTER MIX automation system, which enhances its operational flexibility by totally integrating the full extent of the console muting.

One feature of this system enables you to by-pass the Channel VCAs, thereby

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INSTANT STATUS.



-FROM PAGE 10

produced by *Terry Price* for WMOT Records. Engineered by *Derk Devlin* and *Joseph Alexander*...At the *Sound Cottage* in Port Jefferson Station, NY *Phil Liquori* was in recording basic tracks for his upcoming demo...At *Sigma Sound* in Philadelphia, overdubs and mixing were done on material by artist *P.P. Arnold*, produced by *Dexter Wansel* for Virgin Records. Engineering was by *Michael Tarsia*, assisted by *Randy Abrams* and *Scott Mac Minn*...The heavy metal act *Martyr* cut tracks at *Sound Heights* in Brooklyn with their producer/manager *Joel W. Dein*; *Vince Traina* was the engineer with *Gary Collins* the intern from Center for the Media Arts assisting...

STUDIO NEWS

Audio Achievements Recording Studio in Torrance, has upgraded its 24-track facility with the addition of a Trident Series 70 console and Lexicon digital reverb, among other improvements...**Track Record Studios** has announced its relocation to the midway area of St. Paul/Minneapolis, a location convenient to both downtowns. Also, equipment has been upgraded to include Tascam 16- and 8-track recorders, Audiotrack and Studiomaster con-

soles and much more. Track Record Studios is now located at 1561 Sherburne Ave., St. Paul, MN 55104; phone (612) 645-9281. An office will be maintained at the former Burnsville, MN location...A new Otari MTR 90 24-track tape machine has been installed at **A.R.S. Recording Studio** in Alsip, IL. The Trident console has also been updated to 28 x 24...**Skyelab's Mobile Recording Unit** has recently installed two new Otari MTR-90 24-track tape machines along with two new Otari Mark III 2-tracks...In late May, *Goodnight Dallas* took delivery of the first Neve console in the Dallas metroplex. The new Neve 8128 console is equipped with Necam 96 automation. Other recent equipment additions include the Kurzweil 250 and Yamaha DX7 digital keyboards...**Sountec Studios**, Norwalk, CT has completed a major upgrade of their studio 'A' including complete renovation and redesign of the existing control room. Major acquisitions include a custom Neve 8058 console (including six 32264A compressor/limiters), Otari MTR-90 MKII 24-track and MTR-10 MKII 2-track recorders with Dolby available on all machines, and eight Tascam 122B cassette decks (five of which are housed in a "floating" rack to service multiple real-time copy needs of studio A and B)...**Avid Productions** in San Mateo, CA went 16-track recently with the installation of an Otari MTR 90 recorder, Sound Workshop Series 34 fully automated board and much more...**Servi-**

Sound Inc., NYC, has constructed additional facilities providing access from any of five production studios and composing suites, to a centrally located Studer Revox A80 VU-3LB video layback audio recorder. This will allow in-house 1" video striping and layback functions to streamline ServiSound's 24-, 16-, and 8-track videosync postproduction sound services that are currently available in four studios...**D&D Recording** in NYC has acquired the new Sony MCI JH-110 ½-inch 30 ips mix-down...**Northeastern Digital Recording** of Shrewsbury, MA received shipment of a new Sony DAE-1100 digital audio editor. NDR is the only facility in New England that does professional digital recording, editing and mastering for Compact Disc...**The Post Group** in Los Angeles recently installed Quantel Mirage's new floating viewpoint. The new hardware enables an editor to take 3-D shapes with live video wrapped onto them and with the aid of the trackball, rotate these shapes in real-time with perspective, transparency, and expansion...**Mark Farner** and **Al Hurschman** have opened **The Alliance Recording Co.**, a new recording studio located on the sight of Grand Funk Railroad's famous studio **The Swamp** in Fenton, MI. **The Alliance** has just completed their new control room, which was built from the ground up, with design consultation from Jerry Milam of Milam Audio. The new control room will house the world's largest Neotek console (56 channel) built for Hurschman when he was chief engineer at **A Square** studios. Other control room and studio equipment includes MCI 24-track and mastering decks, Lexicon 224XL, and a wide variety of outboard gear. Call (313) 632-5653 for information...**Razor Cut Records and Tapes**, of Inkster, MI have opened a demo facility with the capability to do either-eight track recording, half-inch videos or both. For more information, contact Jim Randolph at **Budget-8 Recording Studios**, 26751 Oakland, Inkster, MI, 48141 (313) 562-3865...A new film and video production complex opened in San Francisco in May. The 35,000 square foot **San Francisco Studios** offers three soundstages (two with hard cycs and one insert stage) and 5,000 square feet of office and prep space; including: a ten chair hair and make-up salon, two private dressing areas with separate baths, wardrobe, two screening rooms, a conference room, a 42-seat theater, a kitchen and commissary, private offices, and a pool table...**Centro Corporation** (San Diego, CA) has completed the design, installation and construction of facilities for **Unitel Video** of New York City, who have expanded their editing operations to the west coast. Located on the Paramount Pictures lot in Hollywood, the new 5,600 square foot operation includes two post-production suites, one off-line suite, telecine control suite, and combination master control / videotape room...

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There are a lot of jobs for qualified people, but without education, you may never get a chance.

A WINNING STRATEGY

by Ken Pohlmann

Over the last eight years, in my experience as an educator, I have witnessed the launching of over a hundred careers in the audio profession. The fact that a number of those individuals have quickly gone on to record platinum and Grammy-winning albums has made me very conscious of the degrees of success possible within the audio industry, and the strategies required to obtain that success. Of course, as an educator, I have been especially involved in the early formation of those strategies, particularly as they have taken root in the educational process. Is audio a good choice of profession? What sorts of individuals are best qualified? What role should education play? With the proviso that guidance counselling is an imprecise science, and more so when addressed to a general audience instead of the individual, I'd like to offer my opinions.

In the original and best bible of strategy, *The Prince*, Machiavelli weighs the effect of a man's policy against the effect of his prevail-

ing fortunes, to determine to what extent human affairs can be planned. He points out that men use various methods to achieve their goals of glory and riches; one man proceeds with circumspection, another impulsively, yet both could achieve their objective, depending on the nature of the times. Thus one who adapts his policy to the times prospers, and likewise the one whose policy clashes with the demands of circumstances does not. In short, a man who is able to change his policy according to the times will always enjoy good fortune. While that advice was given 500 years ago, it still holds true today. Thus the formulation of our career strategy must begin with knowledge of circumstances themselves.

According to the estimates of researchers at CBS, 1984 was the best year ever for the American recording industry; retail shipments of audio recordings were valued at \$4.464 billion, up 17% from the 1983 value of \$3.815 billion, and up 8% from the previous peak year of 1978 at \$4.132 billion. The prerecorded videocassette market in 1984 was estimated at 22 million, up 100% over 1983. Computer software for 1984 was valued at \$380 million, up 52% over 1983's \$250 million. In audio recordings, the market share of LPs declined, and that of CDs rose dramatically, to an estimated 4.9 million units in 1984, a 500% increase over the previous year.

Sure, numbers can be misleading, but several trends seem clear. First, the recording industry appears to have a future, and a fairly rosy one at that. Second, the move is toward video and digital audio. Third, and less obvious, is the consolidation underway. In the future, it would be best to think of the recording industry as one encompassing music, video, and computer software, on both magnetic and optical mediums. After all, they are all forms of recording, and with new juxtapositions such as music videos, compatible LaserVision and Compact Disc players, and CD-ROM, differentiation will become increasingly more difficult, and irrelevant. However they are considered, all three recording areas are enjoying considerable growth. At this time, any or all areas of recording appear to be good candidates for a profes-

sional career. Let's take a closer look at audio recording.

Given the times, how do we choose the strategy for the greatest good fortune in audio? In my opinion, the times have changed, and older strategies are no longer the best. Specifically, many of the recording professionals were schooled through apprentice programs, the School of Hard Knocks. For its time, that was the best strategy; many of those individuals have prospered. But times have changed, thus Machiavelli calls for a new strategy. That strategy might be formal education. Not surprisingly, most of the professionals with P.h.D.'s in Hard Knocks saw this

vide career direction. Do you want to mix, or is maintenance more interesting? Are you really into MIDI, or does video catch your eye? Do you want to record, or produce? A reputable workshop allows you to sample many aspects of the recording business—the more the better. A sleazy workshop pretends to make you a recording engineer in three weeks, and gives you a diploma to prove it. Use a workshop not for education, but for orientation.

After the workshop, try to visit a local studio without making a pain of yourself. Take a good look. Specifically, look beyond the knobs and buttons—examine, as much as

schools offering a minor in audio—that may amount to a few courses and an eight track tape recorder. You'll need much more depth than that.

How do you choose the right school? I recommend three criteria: emphasis, faculty, and facilities—in that order of importance. Every school has found its niche, with its own emphasis. In my estimation, for example, Peabody focuses on classical music recording, Berklee on music production, and Miami is more technically inclined. Of course, any program allows for development of self-interests within the constraints of its curriculum. Nevertheless, your intended career direction should align with the program's emphasis. Start asking questions—probably the most important indicator of a program's emphasis is where its graduates are working. Your teachers are of paramount importance. They set the example, and dictate content and delivery of all the information to be crammed into your head. More importantly, they should be concerned with you as an individual, and offering the tools you need. That's the only legitimate reason why they should cash a paycheck each month. Facilities are important, but less so. Just look for the essentials: 24-track, digital recorders, timecode, video, and some computers laying around. Remember the three-fold diversity of the recording profession as a whole and make sure you get a lot of hands-on in all three areas. You might be concentrating on audio but the overlap among areas demands at least familiarity with the other two.

But is the audio program really the best route? How about a degree in Electrical Engineering? For some, that is indeed the way to go. But there are some unique obstacles. Studios always welcome EE's, but only if they have experience in audio. Also, it's often difficult for EE's to resist the temptation of higher-paying jobs. If you're an EE with a hair cut and a blue suit, IBM makes a good offer. Because the studio business is so unique, I tend to think that an outright audio program is better preparation for all but the hardcore technician. Of course, if you want to design digital consoles, EE is the only way. You don't even need a blue suit.

How much education is enough? In today's job market, each of us will continue to learn as long as we are participants in the labor force. Likewise the requirements for preparatory education are growing more stringent. Just the growing sophistication in the audio industry led Miami

"The growing sophistication of the recording profession, and the merging of audio, video and software recording, argues for the necessity for formal education in audio. But which sort of education is best?"

before anyone else. One academician who saw it was Ted Crager, who started the first college degree audio program, the Music Engineering program at the University of Miami ten years ago, not coincidentally shortly after the first digital device, the DDL, began appearing in control rooms.

Thus the growing sophistication of the recording profession, and the merging of audio, video and software recording, argues for the necessity for formal education in audio. Which sort is best, and should the course of study necessarily be in audio? There are many recording workshops, advertised profusely. Some are good, and others not so good. I recommend checking out the good ones. They can play a vital role in forming the correct strategy. A course of a few weeks or months cannot pretend to provide a complete understanding of recording, and the reputable ones freely acknowledge that. However a workshop can pro-

possible, the nature of the profession itself. It isn't quite the way it is depicted in music videos. Bands rarely dance on the console, smoke machines and flash pots may harm the equipment, and laser light shows tend to obstruct your view of the meters. It is mainly long hours and dealing with diverse personalities. On the other hand, there exists a peculiar kind of creative energy which is unique to studios. It might be the kind of Fun With Chemistry you are looking for in a career.

After looking into it, and discovering that you are serious, then school is the next step. Your education requires an enormous investment in terms of money, and time—anywhere from two to six years. I don't know of any shortcuts. Hence, it is a big decision. In the beginning, there was one school, now there are still only a few with programs exclusively and comprehensively concerned with audio. Don't be fooled by

Who Uses Soundtracs?



Pete Townshend that's who!

When Pete Townshend wanted to purchase a mixer for home use he obviously had the choice of every mixer available in the U.K. Pete was looking for flexibility such as 16 extra inputs on re-mix, transparent equalisation, high resolution control of the effects returns with equalisation and compatibility with -10dbv or +4dbm tape machines (he's got quite a few!).

Pete took his time, asked around and kept being referred back to the Soundtracs 8-16 series. After one day's evaluation Pete's decision was made — the Soundtracs 16-8-16.

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Pete Townshend
November 7th 1984

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to institute the first Bachelor's degree in Music Engineering. We have recently announced the first Master's degree in Music Engineering. This graduate curriculum emphasizes the engineering side of the profession, with coursework in psychoacoustics, advanced digital audio, audio system design, and computer programming.

What kind of employment is available? There are a lot of jobs, for qualified people. More and more, the profession is looking to music engineering programs for a reliable source of employees. Within that bright scenario, several significant points must be noted. It is rare to walk into a first engineer's job. You'll most likely start as a second engineer, which means starting at the bottom. Every studio has their own way of doing business, and every new employee is treated as a beginner. Your investment in education initially serves only to get your foot in the door. However it is also the ace up your sleeve. If your policy suits the circumstance, competence quickly rises to the top. Thus your education can move your career, given your own ability and cooperative attitude, for which there is no sub-

stitute. Without the education you may never get a chance, and if you did, you might not have the chops.

Another significant point is the ratio of second engineer jobs versus maintenance jobs. In my experience, for every phone call I get asking for a second, I get two asking for a technician. The ratio would probably be even higher, but many studios simply give up trying to find an affordable maintenance person. Thus while mixing might appear to be more glamorous, maintenance is where the action is. If you can calibrate tape machines and fix the automation when it gets flakey, you will never be hungry. If you can interface tape machines to timecode, you can buy yourself a red Ferrari, and a black one for your old professor, to show him your appreciation.

Which brings us to the question of salary. Again, the ratio is probably close to two-to-one. From my experience, a graduate entering a second engineer's job can expect a starting salary between \$12,000 and \$20,000 a year—low pay for long hours. A graduate skilled at maintenance can expect several offers for \$28,000 to \$32,000, with better pro-

motion expectations. I suspect a good freelance technician with a 24-hour beeper could clear \$60,000 with no trouble. Of course, salary is secondary to the nature of the job itself. If you want to mix, then aim your strategy accordingly.

My regard for education is increasingly shared by industry professionals. The Society of Professional Audio Recording Studios (SPARS) has set about to establish an audio testing program. They have contracted the Educational Testing Service (ETS), the people who brought you the SAT test and other memorable experiences, to develop a comprehensive audio test. The test will validate the engineer's knowledge, as learned at a school, or elsewhere, and will be aimed at people entering the audio profession. Presently, job applicants have widely varying levels of education and experience. The test will identify their strengths and weaknesses relative to the knowledge required to successfully perform the engineer's job. That would help both applicant and employer to assess the best employment alternatives.

The first step is to identify the precise nature of the audio engineer's job and determine which skills are required to perform his or her obligations, and most importantly, meet the challenges of new obligations, such as digital recording and video postproduction. To complete this job analysis, a questionnaire has been sent to many entry-level engineers to determine prerequisite knowledge, skills and abilities, and their relative frequency of application and importance. The nature and number of test questions will reflect the weighting provided by the job analysis. Test scores will provide diagnostic information to applicants, employers, and educators. For example, employers will be better able to evaluate job applicants, and hire the best qualified people. Applicants will be able to use the test results to better prepare themselves for a professional audio career. In other words, it will help you plan your strategy.

Given the right strategy, success is easy. There is only Machiavelli's final observation: "Above all, in all his doings a prince should endeavor to win the reputation of being a man of outstanding ability." Any profession always has room for more of those. ■

Besides enlightening *Mix* readers each month with this column, Ken Pohlmann is also the head of the Music Engineering department at the University of Miami.

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Whichever MC mixer you choose, you get input channels that are modularly constructed in blocks of four for easy access.

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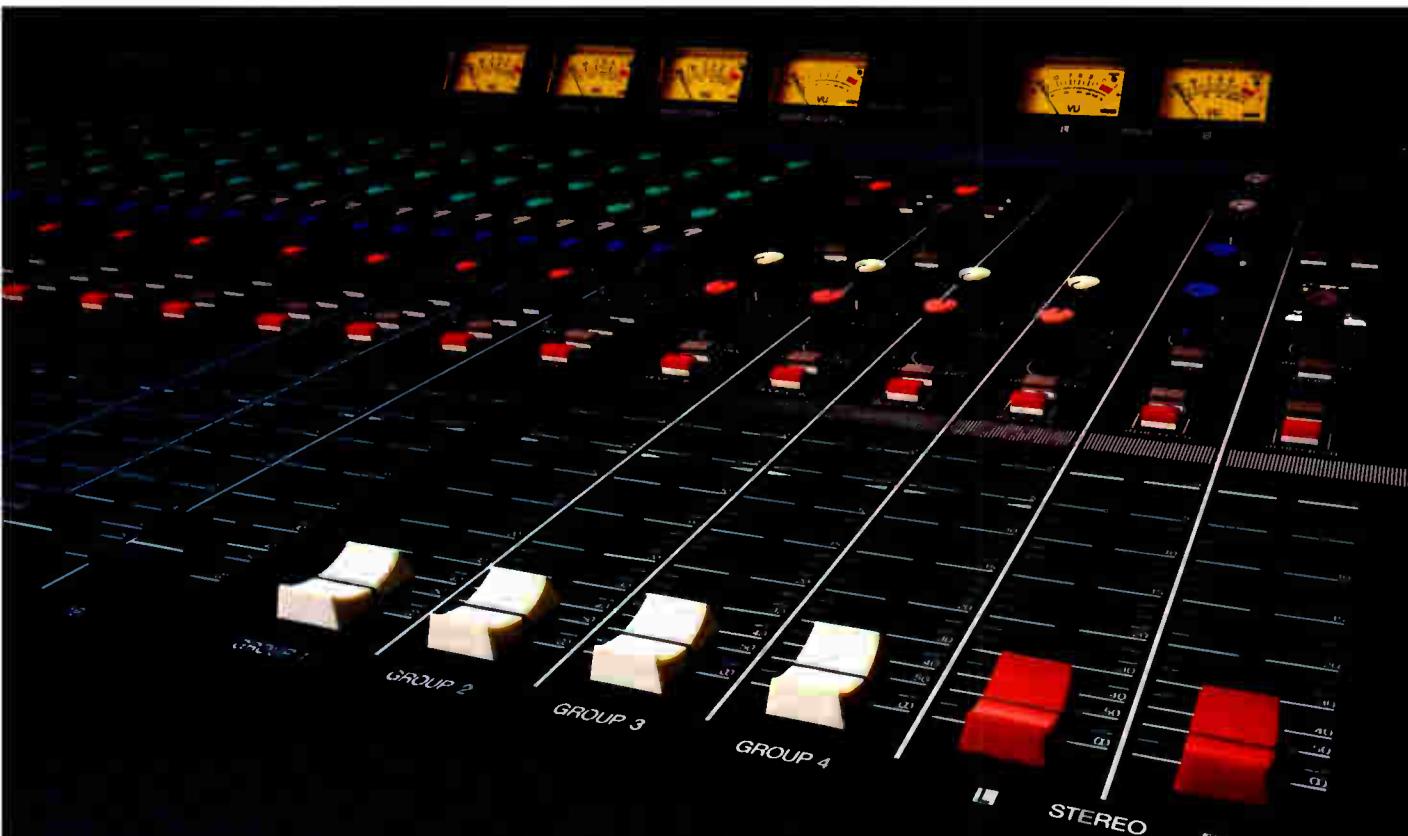
foldback sends, two post-EQ and post-fader echo sends, pan control, group 1-4 assignment switches, cue and channel on/off switches, and a 100-millimeter fader.

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There are even two MC monitor models, the MC1608M and MC2408M. They offer the additional capability of on-stage monitoring. So each member of the band can hear exactly what he or she needs to hear.

Now that we've set the stage, why not visit your Yamaha Combo dealer for a demo of the MC consoles. Or write: Yamaha International Corporation, Combo Products Division, P.O. Box 6600, Buena Park, CA 90622. In Canada, Yamaha Canada Music Ltd., 135 Milner Ave., Scarborough, Ont. M1S 3R1.

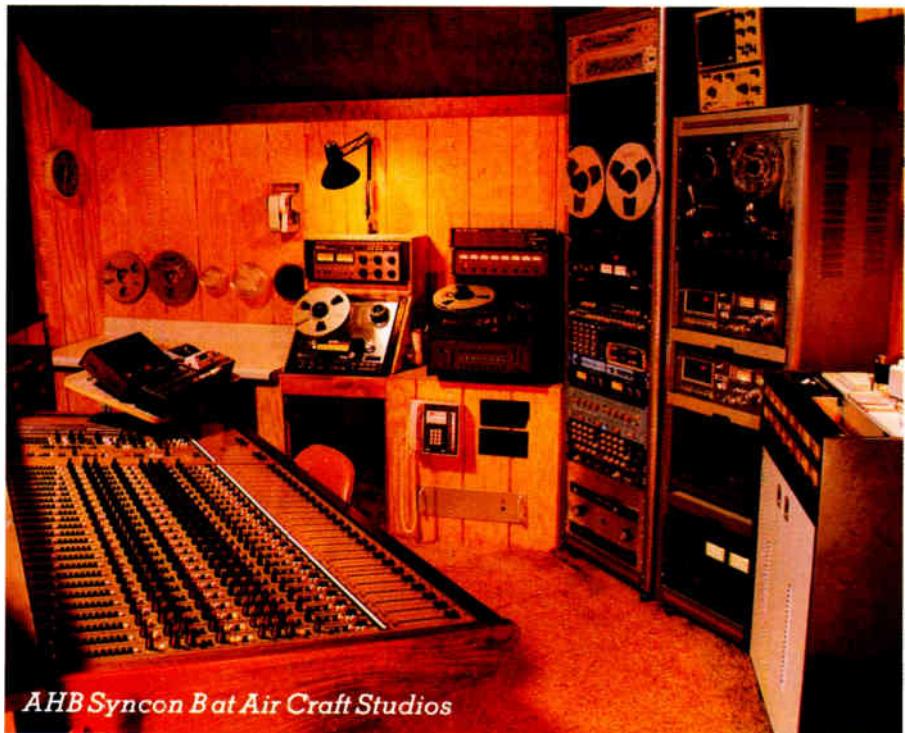


STUDIO FORUM

ON CHOOSING A MIXING CONSOLE

by George Petersen

Without a doubt, the selection and purchase of a console is one of the most important decisions faced by a studio owner. Input/output configurations, routing flexibility, automation possibilities, and specialized functions all figure in the choice of what is the single most expensive piece of gear (digital multitracks excepted) to be found in a recording studio. While all of the above factors could be determined by comparing spec sheets, brochures and advertisements in trade magazines, objective decisions based on a console's sound quality are not so easily reached. Another difficulty arises when trying to



AHB Syncon at Air Craft Studios

second guess the board/room acoustics interface, and consoles cannot simply be A/B tested in a working environment.

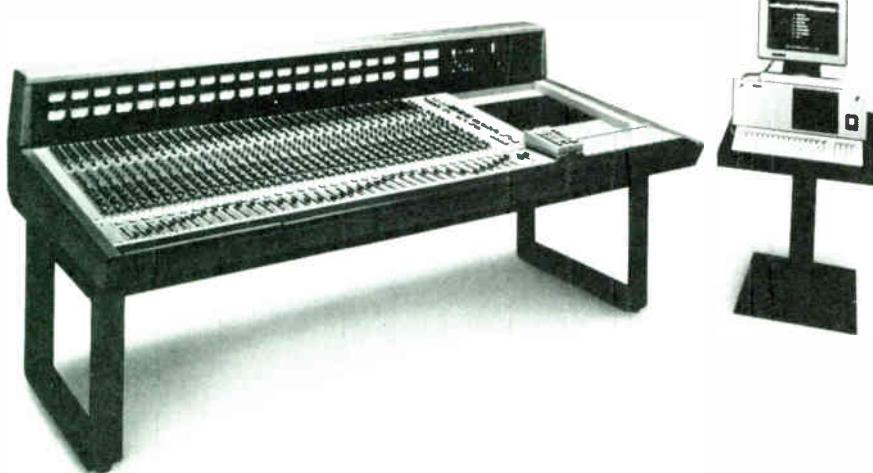
We talked to a number of 24 track studios who recently purchased consoles from a variety of manufac-

turers. The facilities surveyed ranged from large to small; some boards were bought as upgrades for existing gear, while others went into new rooms. In each case, the decision to buy a particular brand or model was influenced by the studio's needs, their wants, and price—which is of course the ultimate determinant.

AIR CRAFT STUDIOS Pittsburgh, Pennsylvania Barney Lee, Owner AHB Syncon Series B

Air Craft Studios chose an Allen & Heath Brenell Syncon Series B console when they were ready to upgrade. Owner Barney Lee selected a board in a 26x24 configuration for the 16-track studio, keeping in mind his plans to update their Ampex MM-1200 recorder to 24 tracks later this year.

"The AHB board has some



Sony MX-P3036

The Producer of the Year Owns Four SSL's

Trevor Horn was named Producer of the Year at the 1985 British Record Industry Awards. He was also named Producer of the Year in the recent Rolling Stone Magazine Readers' and Critics' Polls. His work with Frankie Goes To Hollywood resulted in No. 1 hits for their first three singles and their first album — an all-time record for a UK group!

Trevor Horn knows a lot about making records. In addition to his work with Frankie, ABC, Art of Noise, Buggles, Dollar, Malcolm McLaren, Propaganda and Yes, he operates two of England's hottest recording centres — SARM West and SARM East. And we're proud to say that all four of SARM's award-winning rooms are equipped with consoles and studio computers by Solid State Logic.

Solid State Logic

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of the nicer features when compared to others in that price range. Henry (Yoder), our technical engineer liked the fact that the boards are hand built. We tried one out—Mark Tarsus, a local fellow who reps gear, brought us a smaller version of the board to try. We really liked it—it's a versatile board, and if and when we decide to step up to automation, it's capable of that.

"The board just fit the bill all the way around: financially and technically. Our Synccon B has been a great board, we've had no trouble with it. It's not a Neve or a Harrison, but it sure pulls its weight around here."

AMIGO STUDIOS
North Hollywood, California
Chet Himes, Co-owner
Sony MX-P3000

Chet Himes, renowned engineer and co-owner of Amigo Studios placed an order for a 52 input version of Sony's new MX-P3000 modular mixing console to be used in the facility's most popular room, Studio E. The board, which was slated to go on line in June, uses a hard disk-based automation system, and an interchangeable selection of equalizers

and microphone preamps.

"Besides signal paths, the main thing I was looking for was automation. The board seems to be quiet and clean, and Sony is offering several different types of equalizers, and two or three types of mike preamps—transformerless and transformer types. I'm going to have Sony send me different equalizers to try out—they have a four-band parametric, a ten-band graphic, a fixed-Q, and one continuously variable. The automation uses a hard disk, and basically remembers everything you're doing.

"What this board should do is put the automation and features of a Neve or an SSL—with the capability of that much memory and storage—into the price range of a lot of studios. A 36x32 board is about 75 grand. It all comes down to features and price,

and this console looks like it's going to be real nice."

AMS
(ADVANCED MEDIA SYSTEMS)
Orange, California
Dan Van Patten, Owner
Neotek Series 3C

Producer Dan Van Patten's Advanced Media Systems features a Neotek Series 3C 40x24 console and Studer A80 24-track. On line since last summer, the studio recently garnered a fair amount of attention by being open for tours during the spring AES Convention, held in nearby Anaheim.

"I had been looking at and working with different consoles for quite a long time, and when I decided to do this room, it came down to a choice of two consoles. The Neotek

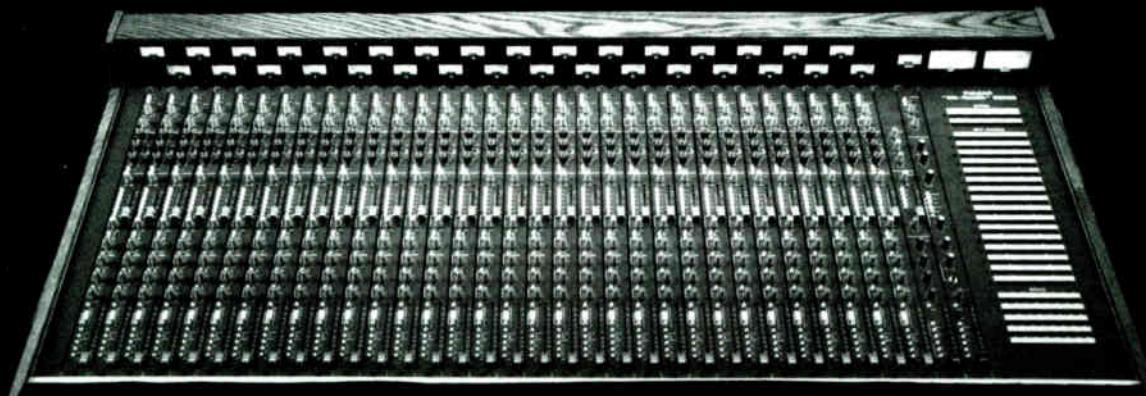
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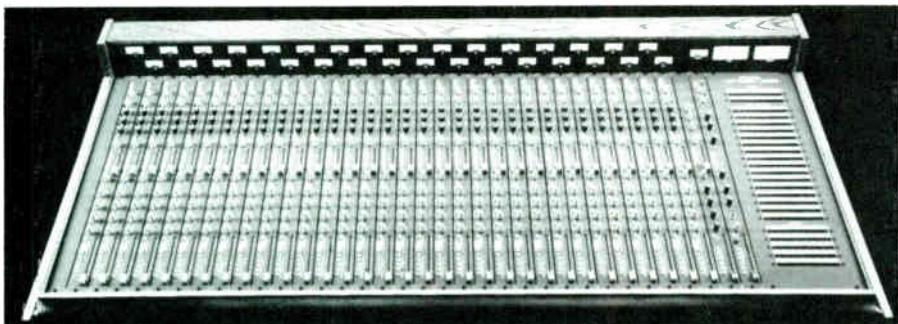
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Pulsar "On-Track"

has very musical sounding equalizers, really ideal, and the mike preamps are discrete, which was another big thing to me. I also liked the fact that the Neotek had non-VCA subgrouping—if I decided on an automation system I would want moving faders, like the GML system, which could be dropped in at a later date.

"The technical support has been really excellent. Out of all the gear I've bought, the only company that calls me on a regular basis to see how things are going is Neotek, Lincoln (Zimmerman) at Neotek West. Although there really hasn't been any downtime, one guy spilled some Seven-Up into the console which stuck two of the mute buttons. Otherwise, everything works perfectly."

"The Neotek is precise and more simple in design—I can get by without a lot of bells and whistles, and I think the sonic quality of the console can be kept at a higher standard that way. It's a quiet and good sounding console."

CHERRY BLOSSOM RECORDING Barberton, Ohio Bruce Hensal, Designer Pulsar On-Track

Cherry Blossom is a new studio in Barberton (Akron area), Ohio, which is owned by the band The Fugitives and is slated to go online in the middle of this month. Independent engineer Bruce Hensal, who is perhaps best known for working on The Eagles *Hotel California* as well as on platinum releases by REO Speedwagon, Boston, Julio Iglesias, and Dan Fogelberg, designed the facility. He recommended the band install a Pulsar 32x24 On-Track Series console and Otari MTR-90 24-track into the studio, which is housed in an older building with 18-foot ceilings with the original tin wall finishings intact.

"One of the things I really liked about the Pulsar console was that it comes standard with Penny & Giles faders, something you wouldn't expect to find on a board in this price range. If your final project is going to end up on any digital format, you want your board to be as clean as possible, and the conductive plastic

faders are the only way to go. Another thing I wanted to mention are the assignable stereo effects returns on each input which make it a really flexible board. With electronic music today, there are nearly as many effects as inputs in a lot of mixing situations, and you really need that flexibility unless you have enough

Soundcraft TS24



inputs so you could return effects into the console—but then you'd need 36 inputs to mix a 24 track tape.

"Obviously the Pulsar board is not a Solid State Logic or a Neve with Necam, but the band couldn't have done better with the money they had, and I find that Pulsar is very strong in that market. I've used most of the other boards in that price range and I haven't been very happy with them. I think Pulsar's big plus is the way that it sounds, which is very good to my ears."

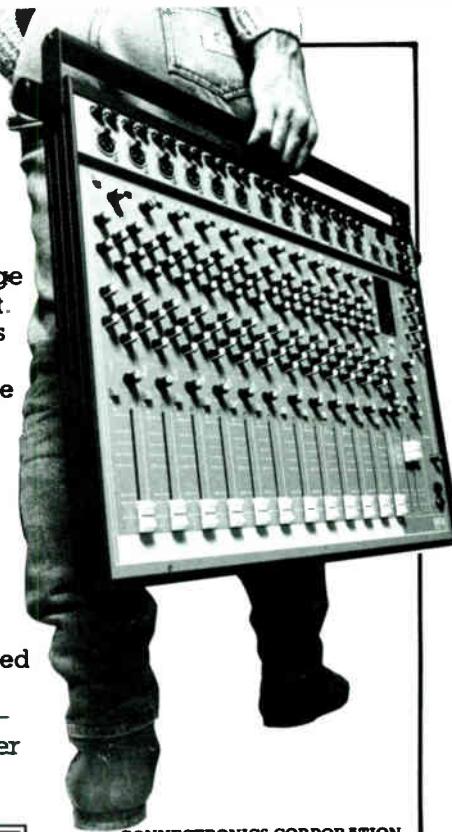
CUSTOM SOUND Shreveport, Louisiana Bill Moseley, Co-owner Soundcraft TS24

Custom Sound, a fairly new studio, replaced several modified Tascam boards they had been using

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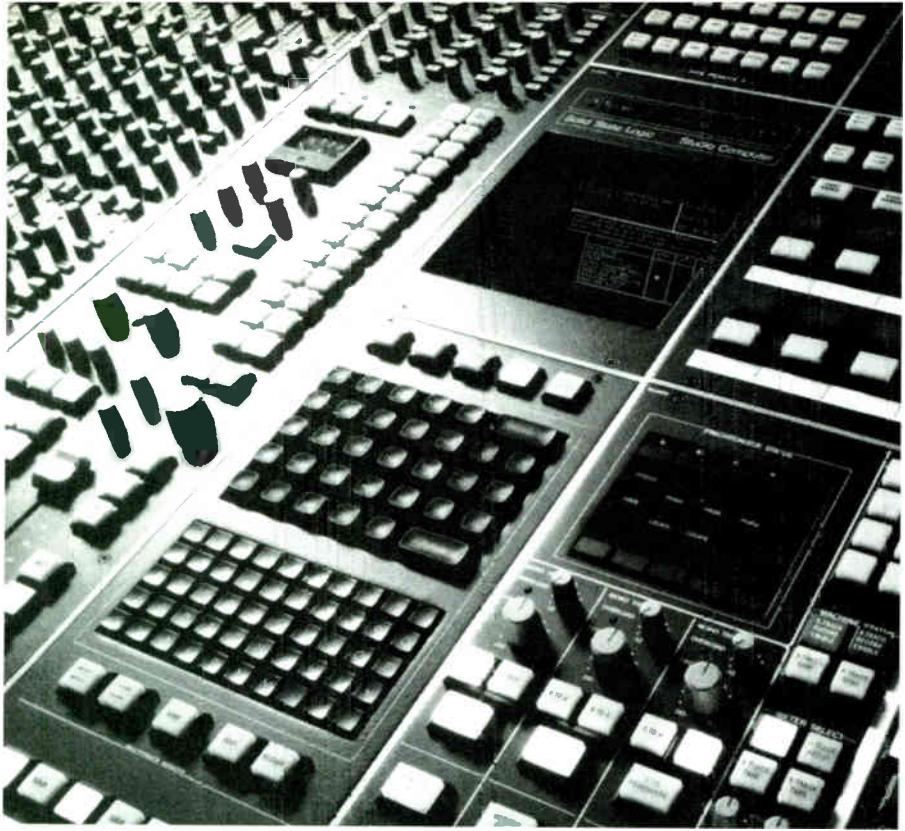
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Solid State Logic SL 6000E

with a new Soundcraft TS24 purchased from Midcom of Arlington, Texas, in January of this year. With a steady mix of rock, country and gospel projects coming in, as well as a fair amount of commercial and jingle work, co-owner Mosely felt the time was right to upgrade the studio.

"We wanted a lot of flexibility in the signal path without a lot of patching, and we needed a decent number of sends and returns available. We're a young studio, started a year-and-a-half ago, and we were looking for a flexible board that had a name worthy of helping us get new clients when we started. It did our hearts good to find a quiet, clean and flexible console that works well for \$49,500."

"We liked the TS24's in-line set-up, because we had been using some modified Tascam boards and we basically had them in an in-line configuration. At first it was a little strange getting used to the board, figuring out the signal and routing paths, but after two weeks, we really liked it, because of the board's flexibility. The TS24 gave us a lot more console for the price than we expected."

DALLAS SOUND LABS

Dallas, Texas

Russell Whitaker, Owner
Solid State Logic SL 6000E

A strong market in the area of video production, combined with a steady base of music clients prompted Dallas Sound Labs, located in the Dallas Communication Complex, to upgrade to a Solid State Logic SL 6000E Series Stereo Video System console earlier this year. Owner Whitaker selected a 48 input version in a 56 input mainframe and has so far been quite pleased with the console's flexibility and performance.

"I had been looking at SSL boards at AES shows for years. I've always liked them and I've always wanted all the features they offered as far as machine control, the gates and compressors on every channel, the Total Recall™, and mainly the transparent sound. Buying that board has really helped a lot: the Total Recall saves a lot of time when setting up to do another rhythm track—the board's already set up and it's just a matter of setting the mikes on the drums and amps. We can re-set up a whole rhythm track in 15 minutes."

"We also use the board for a lot of TV commercials—live work from the soundstage, sending feeds to tape, to satellite, and into the soundstage. The three busses (SSL's multi-channel mix matrix) really comes in handy in those situations."

"When Stevie Ray Vaughn heard I was getting an SSL board, he decided to stay here rather than go to New York to record. He strictly wanted an SSL board to do his project on. Our business is going 24 hours a day in that room—it's worked out really well for us."

FANTASY STUDIOS

Berkeley, California

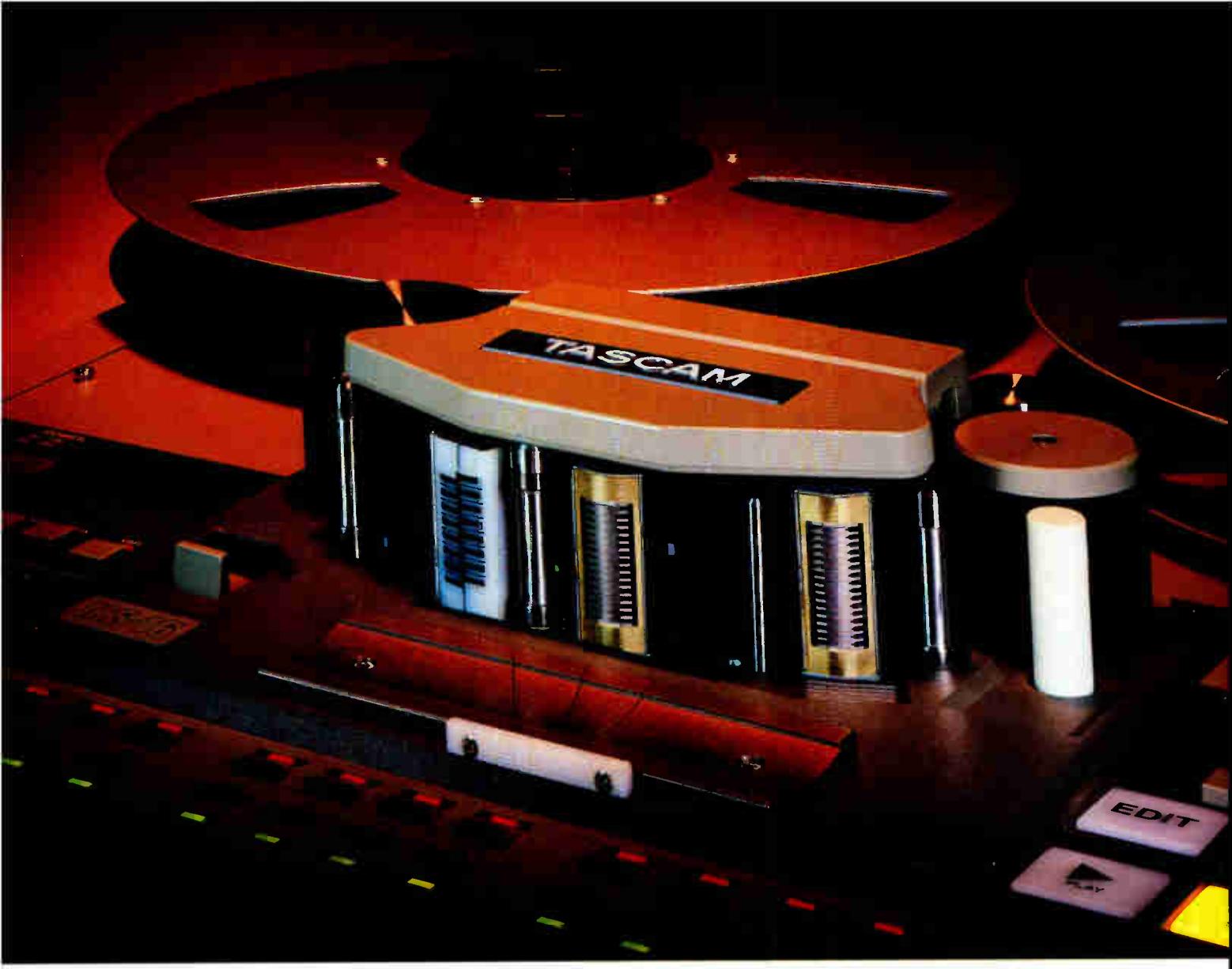
Roy Segal, Vice President
Trident Series 80

Three months ago, Fantasy Studios completed the renovation of their Studio B. Vice president Roy Segal notes that the console of choice for the room was a customized Trident Series 80 in a 32x24x32 configuration with the added plus of having three-band equalization on the monitor section.

"We were looking for a console that would sonically gel with our Neve consoles (in Studios A, C and



Trident Series 80 at Fantasy



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go back and listen a second time. You get what you want sooner and with fewer headaches.

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Harrison MR-4



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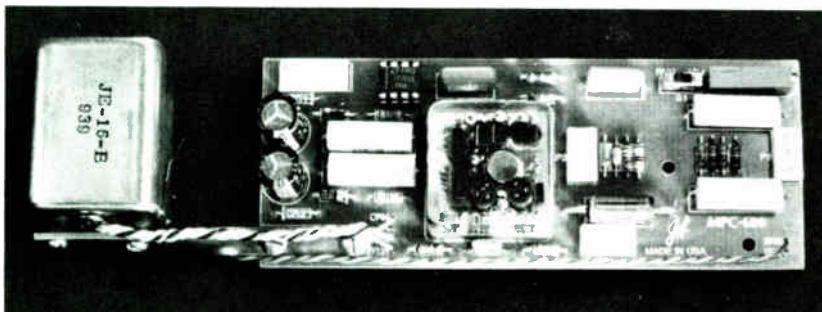
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D). We wanted a board with the best specs we could find—not just printed specs, but we tested each board we brought in. The Trident did pretty well head-on-head—it didn't have the total headroom that the Neves have, but it was very good.

"We were also looking for a less-expensive board for this room, which is being sold at \$75 per hour. We had a dollar figure in mind for this console, and Trident was able to deliver a very good board customized to our requirements. Another thing is that Trident boards are pretty well accepted in the Bay Area, but we just added a few tricks to make it better, including Optimix automation.

"Clients are getting a lot for their money in that room, which was our intention when we built it. It's worked out very well—it's busy and attracting new people all the time."

FLYTE TYME
Minneapolis, Minnesota
Terry Lewis, Co-owner
Harrison MR-4

The prolific production team of Terry Lewis and Jimmy Jam, who have worked with Cherelle, Patti Austin, Change, and Cheryl Lynn, (among many others) completed their private studio last month. Incidentally the team had two projects on the charts at press time: Alexander O'Neal, and the S.O.S. Band, something which is hardly unusual for these successful, hard-working partners. Co-owner Lewis says the facility features an Otari MTR-90 24-track and a Harrison automated MR-4 console with 40 inputs.

"We were looking for a durable, user-friendly board with good access to parts and service.



Everything on the MR-4 is laid out easy for the user, it's made in the States, here in Nashville, and parts are easy to get.

"The console had everything we needed. We were familiar with Harrisons, having used a couple. We've used a lot of the older design MCI boards, and the Harrison is similar, but it's upgraded a bit. We liked the Harrison a lot: it's a nice board, it's reasonably priced and it sounds great."

—PAGE 138

EIGHT BUSS CONSOLES

ALTERNATIVES FOR THE SMALLER STUDIO

A typical experience at an audio trade show is usually played out according to the following scenario: crowds pack into certain booths the first day—those featuring the newest, flashiest, and most expensive widgets. Later, on the second or third days, buyers start accessing real products that will meet their needs on a practical, day-to-day basis. This sort of behavior applies to any type of gear, whether microphones, monitors, multitracks or mixing consoles. To be sure, there is a substantial market for 24-track boards, yet there is a far greater demand for cost-effective recording consoles—specifically

designed for 8/16-track studios, video/broadcast facilities, and AV production houses, among other users—which are priced well below the cost of most 24-track mixers.

Whether looking for a large or a smaller console, buyers are seeking similar attributes: flexibility, and a good sound at the right price. At the same time, other factors, such as portability or compact dimensions become real pluses to an eight-buss console buyer. A 48-input board can be nice, but if it doesn't fit into your remote van or if it costs more than your entire budget for starting a studio, then what good is it?

—PAGE 28

MX1688 Recording Mixer

6 x 8 x 2 with control room mixing

The Carvin MX1688 recording console offers the professional quality features and signal performance you've grown to expect from Carvin! Use of the best components and professional audio design enable the MX1688 to interface with any professional tape deck. For additional info on this console and Carvin's complete product line send \$1 to Carvin, Dept. MX62, 1155 Industrial Ave., Escondido, CA 92025. A similar 16 x 2 MX1644 mixer is available for \$1995.

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—FROM PAGE 27, ALTERNATIVES

Fortunately, there are a fair number of boards available which fit nicely into nearly anyone's budget, and still offer good sound in a flexible package. While this article spotlights eight-buss consoles from ACE, Carvin, Rama, Tascam, and Yamaha, it is also worth noting that several manufacturers mentioned in the accompanying studio forum (AHB, Amek, Soundcraft, Sound Workshop, and Trident) also have models designed for this market, but will not be addressed here due to space limitations.

Several models of the German-made ACE console line have recently been imported to

Carvin MX1688



the U.S. market by Audio Productive, of Hawthorne, NJ. Available in stock configurations of 16x8x2 and 24x8x2, the ACE line comes in a 36 space mainframe, pre-wired for eight or twelve subgroups, and have the capability of expansion via an add-on 12 input frame.

Input modules feature switchable 48 volt phantom power; phase invert; input trim and -26 dB pad; adjustable high and low cut filters; four-band EQ with the two middle bands having variable frequency and bandwidth; four aux sends, switchable to pre- or post-fader; even/odd subgroup routing with pan control; channel off (mute); solo; peak LED indicator; and 100mm carbon faders. The master module features a five-frequency (plus

ACE 24x8x2



pink noise) test oscillator with routing controls; talkback section with routing, mike volume and XLR input/output—the extra output can be switched to be fed to outer office, lounge, etc.; and

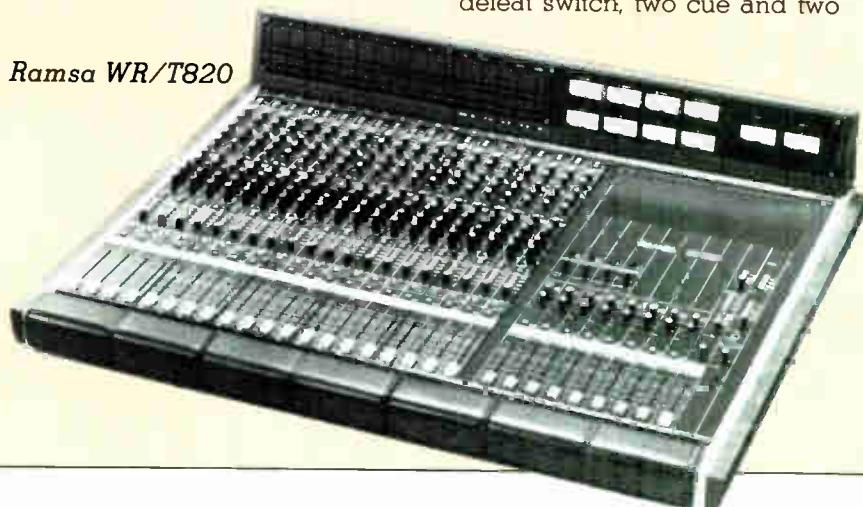
sends during mixing or live work; and master stereo outputs.

The ACE 16x8x2 and 24x8x2 consoles include eleven VU meters for visual control of subs, outputs, and solo, and the meter ledge is covered with a sheet of tinted acrylic material to reduce eyestrain. Microphone inputs are electronically balanced XLR-type, and line input, insert point, and a post-fader direct output is provided for each input module. Subgroup module outputs are XLR-type, and also included are two tape send and two return jacks (output adjustable from -10 dB to +6 dB) on each sub.

Prices are \$9,980 for the 16x8x2, \$11,980 for the 24x8x2, and both include a 19" rack mountable external power supply. Options include a console stand, 12 input expansion frame, patchbay, and additional modules.

The MX1688 is a 16x8x2 recording console available directly from the manufacturer, Carvin of Escondido, CA. The 1688's input channels feature mike/line input switching; phantom power, three band ± 15 dB parametric equalization with EQ defeat switch, two cue and two

Ramsa WR/T820



effects sends with separate pre/post switches allowing all four to be used for either function, solo, mute, pan and odd/even buss assignments, and a long throw 100mm fader.

Some of the board's other features include an independent 8x2 monitor mixer, an internal power supply, ITT Schadow switches used throughout, separate two-track master and control room monitor outs, headphone output, built in talkback mike with slate, +4 or -10 dB operation, and a BNC lighting connector. Internal construction is totally modular with individual circuit boards used for each channel and master strip. Hand wiring is eliminated via ribbon cable assemblies which allow for quick servicing. Manufacturer specifications state an input noise level of -127 dB, with THD under .05 percent.

The Carvin MX1688 carries a pro net price of \$2995, and can be shipped anywhere in the continental U.S. for \$49. Options include a "Littlite" BNC light (\$25), and an Anvil" flight case for \$269 plus \$15 shipping.

Introduced at the Winter NAMM show earlier this year, the Ramsa WR-T820 is a 20x8x2 console with the ability to simultaneously mix incoming line/mike signals with tape play feeds during overdubbing without the need to re-patch input connections. This is accomplished via a pushbutton selector for tape/mike/line, which is provided on each input strip, along with: 48 volt phantom power, phase reverse, 40 dB range trim control for mike/line, and a separate tape trim control, three-band sweep EQ with defeat switch, 80Hz high-pass filter, and direct out/insertion patch points.

Stereo send circuits are switchable between tape, program monitor (pre-fader), or effect (post-fader), and two auxiliary send circuits (with pre/post switching) can be used for either program monitor or effect sends. Stereo solo switches on all input channels follow pan controls right and left when in operation. A solo switch on each of the eight group outputs enables solo monitoring of each output buss.

The WR-T820 comes with a standard meter configuration consisting of ten 12-segment

-PAGE 136

-FROM PAGE 5, FEEDBACK

ing forward to updates on the S.P.A.R.S. (Society of Professional Audio Recording Studios) industry entrance exam for would-be audio engineers. I believe this is a fine idea and if administered fairly and non-politically should prove to be a very interesting assessment of certain levels of training in the industry.

Sincerely,
Niels Hartvig-Nielsen
President, Institute of
Communication Arts Assoc.
Vancouver, B.C.

Dear Mix,

Regarding the Artist Studio profile of Gnome Sound in the April issue: while the fictitious Gnomes were dancing in the control room, some real-life gremlins were getting their licks in on the typesetting equipment!

Although I did play my Strat (and lots of other guitars) on all of the post-1975 recordings of Brownsville Station, including their later chart hit "Lady Put the Light On," all of the credit for the performances on the classic "Smokin' In The Boys Room" should go to my friends and former bandmates, Cub Koda, Michael Lutz, and Henry "H-Bomb" Weck.

I certainly enjoyed the years spent on the road and in the studio with Brownsville, and would like to give credit where credit is due! Thanks for allowing me to set the record straight.

Oh, and by the way...for anyone else who may have been confused by the discrepancy between the index and the article, my name really is Bruce.

Sincerely,
Bruce Nazarian
Chief Gnome
Gnome Sound Studio
Detroit, MI

Correction: Our May Northeast Studio Directory ran an incorrect address for IAN Communications Group. Their correct address is: 10 Upton Drive, Wilmington, MA 01887, (617) 658-3700.

CORRECTION

In our Northeast Studio listings (May, 1985), the manager of the New York Record Plant remote facility was incorrectly listed as David Hewitt. The director of remote recording is actually *Phil Gitomer*.

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Console Basics

Operation and Maintenance

by Greg Hanks

The centerpiece of any working recording studio is the console, the one element of capital equipment that does not change with rentals, track formats, or equipment substitution due to failure. Even the multitrack can be replaced for a quick fix by renting another, but it is very difficult to wheel in another board and re-wire it in short order to satisfy the session needs. Therefore it becomes of paramount importance that the console functions reliably and consistently. To this end we dedicate this piece to the operating engineer, the less experienced maintenance person and studio owners who must care for their own equipment.

Consoles come in a variety of sizes, shapes, complexity and colors. But all in all, they have the same basic functions. Many people like to take the channel directly to the multitrack to avoid the mix buss and its associated circuitry, whereas others always monitor the tape returns, with the recorder output switched to "input" to accommodate buss monitor. Manufacturers attempt to follow the trends of studio work styles and therefore design the console operation around those ergonomic demands.

The console must process mike inputs, line inputs, multitrack returns, echo returns, outboard equip-

ment returns, multitrack sends, echo sends, cue sends, two track inputs/outputs and provide monitoring of the various signal sources present in a control room. Most every desk manufactured today will accommodate these requirements. Common to every board is the necessity of operating in a number of different modes. The following definitions will explain what we mean.

MODES OF OPERATION

Recording—For the process of recording tracks, the console is most often configured as follows: The microphone pre-amp is normalled to the equalizer, channel fader, send controls and the output assign matrix. The matrix accesses the multitrack busses and feeds the multitrack recorder. The busses also feed a monitor mixer that is then fed to the control room monitor selector, through a level control and then to the monitor amplifier(s) and speakers. Almost every console does this, and only the specific order of EQ/fader, normal to direct output, placement of monitor mixer controls and such illustrate the differences between consoles of different manufacture. The idea to grasp here is that they all perform the above functions. (Two possible exceptions are one manufacturer who does not provide console buss monitor but always

looks at the multitrack return, assuming that the multitrack will provide input/repro/sync monitor selection itself; and another that doesn't provide buss monitor, but rather feeds the monitor mixer with the program material that appears in the channel, rather than the buss signal.) The basic process of putting signal on tape however, remains unchanged.

Overdubbing—The process of overdubbing is accomplished with a limited number of inputs functioning as listed above, with the multitrack being monitored for the majority of the tracks, with the new signal either being monitored through the machine, or from the buss. This requires that the channels (being defined below) be configured in the "mix" (see below) status with the exception of the channels being used in the "recording" status.

Mixdown—When the console is used to mix down a multitrack tape, the channels are arranged so that the channel fader and equalizer are fed by the multitrack or line input. The output of the fader/equalizer feeds the sends, (echo, cue and aux) and the stereo buss through the pan network. Some of the older "split" consoles required the channels to be individually switched to line input, and the channel output was then assigned to two (or four for quad) multitrack busses, which then were sent to the two track often through the monitor pots of the multitrack monitor mixer.

All of the above can be accomplished with almost any console on the market today, including many consoles that were intended for the PA or broadcast market, even though the latter would require serious technical creativity to be feasible. It can be seen that today's recording console must incorporate considerable switching circuitry, to accommodate various modes of operation with increased operator speed.

Functions common to the desk are input, processing and output. These operations can be described in terms that will cut across brand name boundaries and help to make "console" a generic concept.

Input: Mike inputs are processed by the microphone pre-amp, and usually have either a gain trim or a pad on the front end. Line inputs are usually the multitrack tape return input port. Accessible at the patch bay, this input most often also appears as a feed to the "monitor" selector (to be discussed soon). The line input is also fed to the channel input for mixdown.

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The mike input is usually routed to the channel input, where it is equalized, leveled, and sent to the multitrack recorder, usually through a buss. Most all consoles incorporate a mike/line selector to the channel so as to accommodate track bounces, line level feeds from synthesizers, outboard equipment and echo devices.

Channel: The channel is the grouping of control elements that are used to get the signal from the source, be it microphone or line input, to the multi-track recorder. The channel, in the recording mode, usually comprises the pre-amp, large fader, equalizer, sends and output assignment matrix. When mixing or overdubbing, the channel is most often the large fader, equalizer and send controls. It is fed by the multitrack, and returns to the two track mix buss.

Track: The track is the location of the signal on the master tape recorder. Track 19 would be either the return from the master tape track #19 or the signal on the buss #19 going to the master tape recorder.

Buss: This is the mixing structure

used to group different 'channels' to go to a common track. The buss is accessed by the output assign matrix at each channel.

Monitor: This tricky little devil has two meanings; first it is the feed to the monitor speakers, but more importantly, it is the facility to observe the signal going to and/or coming from the master recorder. The monitor, and the location of the buss controls are what differentiate between an in-line console and a discrete one. The in-line system integrates the monitor function and buss system in the same area as the channel controls, while the discrete-type systems group the monitor system in a separate place, the busses in a separate place and the channels in yet another. The only real difference between the two systems in operation is that when monitoring program material, the in-line system uses the stereo mix buss as the monitor mix, and the discrete system often treats the monitor mix and stereo mix as two separate, discrete functions.

TROUBLESHOOTING— GENERAL THOUGHTS

Far and away, the greatest

source of system malfunction in the studio is caused by "cockpit error." When you can't get any monitor—it's probably a dead track in solo, or the track sheets/ashtray/roll of scratch tape or a telephone on a talk-back or slate button causing the malady. Something so simple as the phantom power supply being switched off can often hang up a tracking session. Because today's consoles offer such vast control and versatility, that same sea of operating controls may have one switch inadvertently engaged rendering your attempted action impossible.

Operator error aside, the most common gremlins present in most well designed systems are the moving parts. Most specifically relays, switches, patch bay normals and pots require more attention than their passive cousins. Contacts are generally designed to be self cleaning through the action of "wiping" and many a seemingly dead connection will come to life with but a bit of switch operation. The preceding statement is particularly true in the case of seldom used controls.

The second most prolific cause of session woe is the active building blocks, such as op-amps

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and transistors. Many a time the failures will be of a non-repetitive type, and in these cases the mere replacement of the defective device will put the system back in operation. Afterwards we are left to scratching our heads as to what caused the failure. (Most often such failures can be attributed to a random device failure caused by minute impurities in the silicon die). Sometimes, however, the chip will fail shortly after replacement, indicating that there is something causing the device to self-destruct. In these cases it is imperative to locate and repair the offending component. It seems that at this point we are starting to get a bit ahead of my intended sequence so let us return to a session in progress—with trouble come-a-calling!

Whenever a client is in attendance at a session it behooves those in control to always keep the session moving forward in a smooth manner. It sometimes comes to pass that the system will decide that it no longer wishes to respond to the engineer's caress. At times like this a bit of quick system evaluation is required: Was this I/O working just a second ago? Is there a misplaced patch? Is the mute engaged? These are meaningful and required questions; if this type of quick analysis serves up the answer that the system is at fault, then an unused channel is hopefully there to be accessed via the patch bay. If none is available then the expedient troubleshooting of the session engineer is in order. With an independent engineer who is unfamiliar with the studio, the second engineer should be there to lend a hand. It is at this point that familiarity with the operating habits and vagaries of this particular console is necessary. Do the EQs sometimes "crap out"? To check, remove them from the circuit! Does the re-mix relay get stubborn? Exercise it and see if the signal comes up, if only for a moment, to try and pinpoint the problem. The first order of business in these situations is to get back to work as quickly as possible with a minimum of creative compromise. At this point, if by using the patch bay, bypass switches and whatever else is available on the console for self troubleshooting has brought no answers, a little deeper level of troubleshooting is in order. Let us deviate from the control room environment a bit and discuss the philosophy of troubleshooting.

TROUBLESHOOTING— SPECIFIC THOUGHTS

Troubleshooting is the art/science of finding the cause of a problem. The science of troubleshooting

involves breaking a system down into its component subsystems and determining which has failed. An understanding of the system and the intricacies of the interaction of the subsystems is necessary for this scientific approach. To implement this method efficiently, a test signal is injected to the input, and the output(s) are then measured for proper behavior. Proper behavior is usually acknowledged when the signal is present at its proper amplitude. If the signal is incorrect, then the logical midpoint of the subsystem chain is examined. If the signal is found, then the point that is logically halfway between the middle and the output is checked. In this way it is possible to make a minimum number of tests to determine which area the fault has occurred in. Branching systems, such as an input module feeding the #2 mix, aux sends, and multitrack assign busses are an example of such, and are handled in much the same manner. To facilitate such an examination a signal flow diagram is very useful and should be considered as an integral part of every tool collection. The drawbacks of such an approach are only those of time expenditure, which may be at a premium. A large number of the technical personnel in the industry today forego a number of steps outlined above, and will often make a few cursory tests and then go to the heart of the problem. Intuition and experience with the system at hand are the two tools that are used in exchange for the rigor of the scientific method. As stated earlier, familiarity with the system under test is the most proficient ally of the technician. When the heart of the matter is not readily noted then the full rigor is needed.

TEN STEPS FOR PROFICIENT TROUBLESHOOTING

1. Determine what the problem is.
2. Confirm that the problem exists and that you have defined it.
3. Reason logically
4. Examine, using your senses—sight, sound, heat, smell etc.
5. Isolate the faulty section
6. Isolate the faulty stage
7. Isolate the faulty circuit
8. Isolate the faulty part
9. Replace the faulty part
10. Test for proper operation and determine that the replaced component will not fail in the immediate future.

1. Determine what the problem is:

Generally the problem is evident, but be certain that you understand it clearly. If you are the engineer, then this is easy, but if you are in

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maintenance, talking with the engineer is definitely in order. Try to insure that you are not looking at just one of many symptoms, but have an overview understanding of the fault condition.

2. Confirm that the problem exists and that you have defined it:

After talking to the engineer, confirm all of the conditions and symptoms yourself, as the problems and defects may be very different from what was described to you. These two first steps are often overlooked, leading to a wild goose chase.

3. Reason logically:

By logically analyzing the symptoms the system presents you with, it is often possible to isolate the trouble to a specific section of the console, where previous knowledge of the system will tell you what is most likely to have failed. When applying the more substantive troubleshooting methods presented here, it is wise to follow reasoning with some simple "what if" types of tests to isolate the problem to the suspect area. It is essential that one understands whether the symptoms or the operation of the system are abnormal. You must be able to differentiate between proper and incorrect operation.

4. Examine using your senses:

A defect in the system will sometimes present itself by evidence of charring, the smell of burned parts, hissing, milky looking solder connections, traces with the ends curled up

and things of this nature. Most components have characteristic smells when dying, such as resistors, transistors, transformers and ozone with high voltage. Feel the parts—a hot electrolytic is a dead give-away for a short or leaky condition. In only a few seconds you can go over a section with your senses and often spot the defect. This section of the analysis is used once the symptoms are noted and you have an area to suspect. If you don't have a definite section of suspicion you must proceed to the following.

5. Isolate the faulty section:

Once the symptoms have been confirmed and analyzed, the next step is to localize the trouble to the most likely functioning unit of the console or studio system. The term "functioning unit" is used here to mean an electronic operation performed in a specific area of the equipment. For an example, the equalizer, power supplies, and pre-amplifier are functional units in the console. It is at this stage that the block diagram is the most necessary tool. This is where our previous discussion of "input, output and middle" testing is first appropriate.

6. Isolate the faulty stage:

"Stage" refers to the sub-system functional block, such as the mid-EQ bandpass filter section of the equalizer, or the regulator of the power supply. Again, with a knowledge of what the circuits should be doing, one can use the "front, back and middle" analysis method.

7. Isolate the faulty circuit:

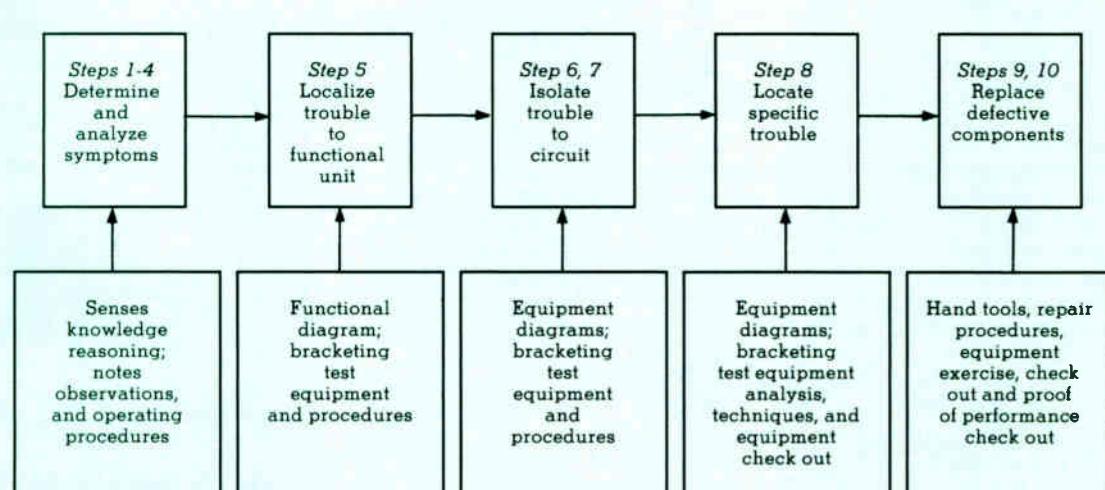
While a little redundant, in a complex circuit, life is much easier if the system operation is broken down into successively smaller operational blocks. For this discussion, the faulty circuit may be the op-amp used anywhere, the bias circuit for single ended supply operation of an op-amp, the power output of a line driver or any other such subsystem.

8. Isolate the faulty part:

Once you are down to this level, the defective part(s) have usually brought themselves to your attention. If this is not the case it is time to look for the most likely culprit. Using your senses again is one of the first things to do. Prod the parts, looking for bad solder connections. Inspect for evidence of previous repair in the area by noting the presence of flux around a transistor mounting pad, look for small solder bridges and other types of defects in the malfunctioning circuit. A circuit operating intermittently can usually be traced through the use of a heat gun or freeze mist; prodding with a pencil, or banging the suspect area with the eraser end.

9. Replace the faulty component:

It is obvious what this entails, but a bit of attention must be paid to the cautions that should be used. When replacing an IC, make sure that all static precautions are noted and observed and that pin one is where it should be! When the area between pins is very small, ensure



Logic flow chart for studio troubleshooting



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that no solder bridges form. Cleaning the flux from every repair section is important, so the repair should be visually inspected.

10. Test the unit for proper operation:

Often times a component fails as the result of another part not operating properly. In situations like these we must find the cause of the problem, not just the motivation of the symptoms. When replacing a part, look at the schematic logically and ask what could have caused the component to fail and test those parts. If everything looks fine, proceed with the initial repair, power the system back up and see if it survives after a half hour of rigorous use. Subject it to a heat gun, freeze mist, prodding and

other non-destructive forms of exercise. When the system has passed this test it can usually be said that the repair has been effective.

The above ten steps can be summarized in the following diagram. It will be noted that there are not ten logical steps, but the grouping of the ideas serves to outline the type of thought process for eliminating problems with a minimum amount of wasted exertion.

PREVENTATIVE MAINTENANCE

"Prevention is the best medicine." This quote is oh so true in the studio industry where downtime is a tangible economic loss. To keep the console in fine fettle requires very

little work. It makes a lot of sense to take the system down every couple of months and perform preventative service. Tasks should include:

—Clean the power supply areas out. There is usually a large quantity of dust and debris that collects on the heat sinks and power devices, undermining the ability of the heat sinks to perform their function.

—Clean the faders and apply a little lubricant to the guiding elements. This will also provide an opportunity to view the condition of the fader element. When cleaning up the notorious "coffee with cream and sugar in the fader," water is the best solvent to break through the layer of crud that this most pernicious substance leaves.

—Remove the modules and vacuum the mother board area to remove airborne contaminants. It should be noted that compressed air is often villainous in the console as it forces contaminants into switches and connectors.

—Measure and adjust (if necessary) the power supply voltages. Check the amount of ripple present to avoid future problems and correct if any deficiencies are noted.

—Switches are lubricated during their manufacture. When they are cleaned with a solvent such as freon, it should be noted that the lubricant is removed and should be replaced. Contact the manufacturer's representative for information and supplies for the proper lubricant and cleaning procedure.

—When a console achieves a substantial age the capacitors in the equalizers sometimes change value. Every five years or so it is a good idea to run a sweep response on each equalizer to determine that it is operating properly. Bypass capacitors will age with time, but the service history of the console will show when it is time to think of replacement en masse.

—Meter calibration will make life in the studio much more bearable. It is truly a joy when the multitrack, noise reduction unit, and the console all show the same readings when alignments are underway.

With attention and logic it is possible to locate most console problems in a rapid manner. Hopefully this piece will assist in that endeavor. A little care in repair, and a bit of prevention should allow your console to provide you with many years of (mostly) trouble-free performance.

Greg Hanks is the technical director of New York Technical Support Ltd., a company that provides service and technical consultation to the professional audio industry. ■

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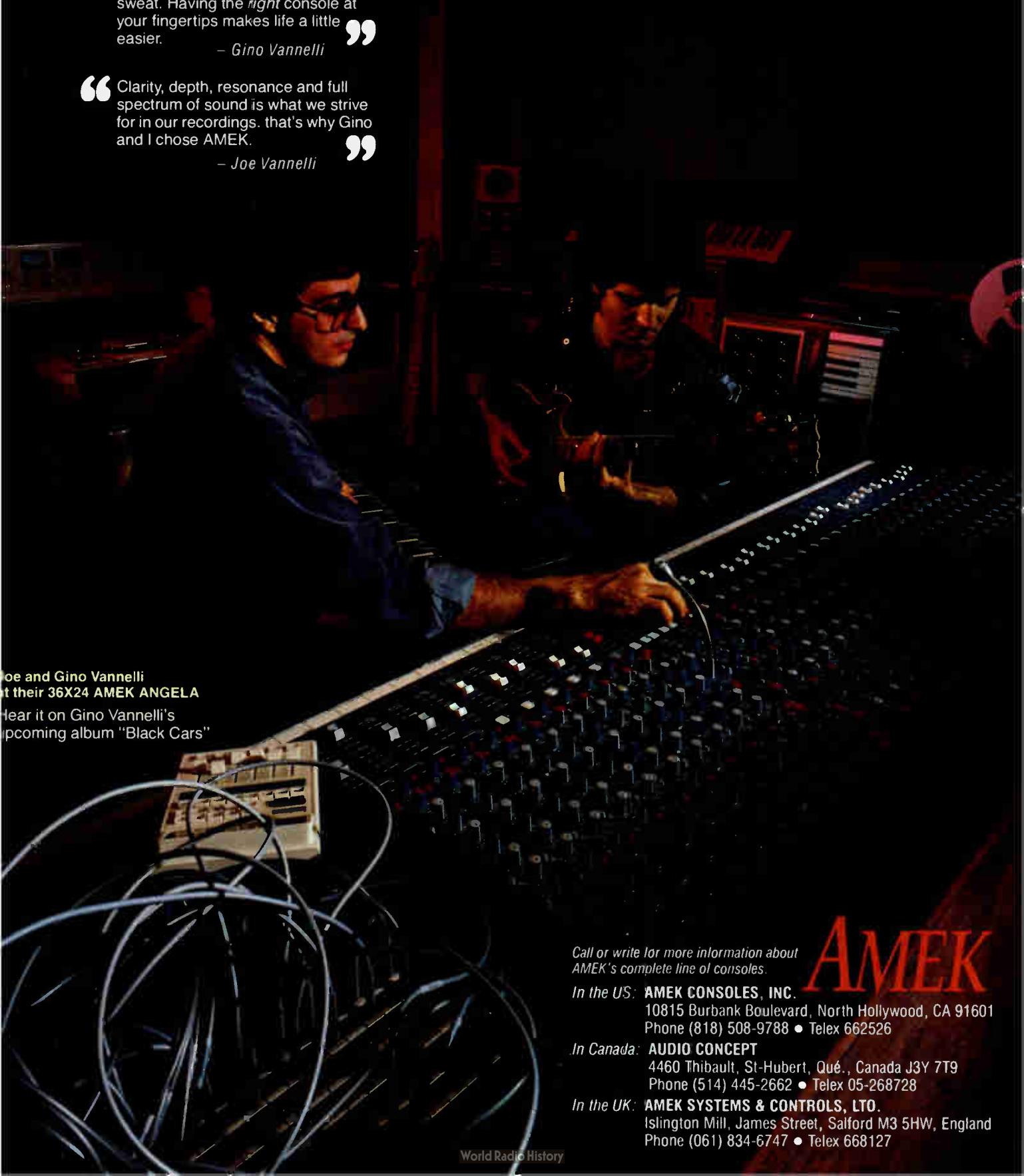
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PHOTO: SHERRY RAYN BARNETT

JOHN DENVER & ROGER NICHOLS

on the Dreamland Express

by Robyn Flans

"Maybe the guitar is a little too dark for this," producer Roger Nichols comments to engineer Daniel Lazerus and second engineer Russ Bracher in the control room at Amigo Studios.

John Denver pops his head into the room: "I think the guitar is a little too dark for this song." Denver exits for another few minutes, then reappears. "What about adding a guitar part there?" There is a moment of silence. "If it's 50/50, let's consider trying it. If it's 51/49, let's pass all together," he says, deferring to Nichols.

No ego problems here. But then, Denver is honest with himself. He hasn't had a hit in a long while and knows it's time to change his tactics. That's why he's enlisted Roger Nichols to work on his new LP, *Dreamland Express*.

"I don't think that recording is necessarily the best thing I do," admits Denver, who despite his recent lack of radio airplay, consistently plays to sell-out audiences throughout the world and sells at least half a million copies of all his releases. "I don't really know recording, the process, the sounds and everything. Some people have said that my music is dated, but I don't agree with that. I do agree that my perception of sound, my hearing, is perhaps dated. One of the values of working in the studio constantly is that you become really familiar with the equipment that's being used, how they're getting a certain kind of sound and the kind of instruments to use. So I defer to Roger because he has been in the studio constantly, working with the most contemporary artists. I really have confidence in his knowledge, in his perception, his understanding



PHOTO: SHERRY RAYN BARNETT

Denver: "It's
important to me to
stay as contemporary
as possible to do
everything I can
to get my music
out there."

and sensitivities to me and my music, "so if I'm coming in here hoping to take a step forward, it really does behoove me to give it to him. If I keep it myself, it's going to be the same thing I've been doing all this time. It's important to me to stay as contemporary as possible to do everything I can to get my music out there. The work I am doing around the world with regard to hunger, the work I hope to do with regard to the end of nuclear weaponry on our planet, the work I hope to do in bringing people closer together, understanding that we're all part of a family, all comes from music. So it really behooves me to pay very close attention to my business and to do the most effective work I can with this instrument that's been given to me, because it furthers everything else out there. I think to a degree, I have neglected being so right up to date with it on the last several albums. I've been doing all the work around the world and have been making the records the way I hear them. This bit of a step was needed."

Instrumentally, there is nothing unique on this album, although for Denver, much was out of the ordinary. Robbie Buchanan added synthesizers, the first extensive use Denver has had on an album, and session players such as Dean Parks, Jerry Carrigan, James Burton, Marty Walsh, Jerry Scheff and Glen D. Hardin were recruited. Chuck Findley, Jim Horn and Pete Christlieb supplied horns, which are not typical in Denver recordings, and Nichols used his own sophisticated \$80,000 drum machine, Wendell, on the tracks.

It's Denver's third digital recording and he definitely prefers the experience to analog recording.

"The first time I sat in a room and listened to digital and then

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MIDI

Of course we're doing MIDI. MIDI will be available in June as a simple retrofit to any Synclavier system.

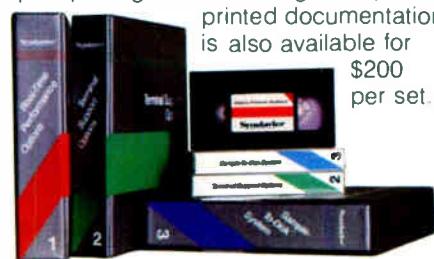
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engineers have been busy restructuring the software interface to be very user-friendly. In addition, the system will feature a rhythm input page software routine for quick and precise entering of rhythm parts. Plus, an easy-to-follow set of menus which guide the user through any part of the system quickly.

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compared it to an analog tape of the same thing, there was simply no comparison," he says. "You get spoiled very quickly. The cleanliness of the sound, the purity and crystal clarity spoils you. I don't like listening to analog tape anymore. All I hear is the hiss and the noise that goes along with it. The thing that's more challenging about it is that because it's so clear, it picks up all the little mistakes more. If the strings squeak, you can hear it or even the



PHOTO: SHERRY RAYN BARNETT

sound of fretting a string. When you're doing a vocal, you can't even swallow to clear your throat. It's very, very demanding."

Nichols wouldn't have it any other way. On this project, he used the 32-track 3M digital mastering system and the Mitsubishi X-80 two-track digital for mixing. Nichols hates analog for all of Denver's reasons. And more.

"There are some people I talk to who say, 'Gee, the hiss is part of what we want. The way the analog tape compresses the snare drum is the sound we want.' That's fine if that's what they want. That's why there's more than one type of car. Everybody has different taste. I just prefer digital recording. I can still get that sound on the snare drum if I run it through a piece of equipment that has that type of compression or put the snare drum onto a piece of analog tape and put it back on the digital machine. Then the snare drum has that compression that ana-

A "Drummer" Named Wendell

In 1976, when anybody asked Roger Nichols what he was doing over the weekend, he replied, "I'm staying home with Gertrude." That was the name of the computer which was the forerunner to Wendell. Nichols was tired

(Below) Roger Nichols at New York's Soundworks studio. The three computer terminals are extensions of Wendell's personality.

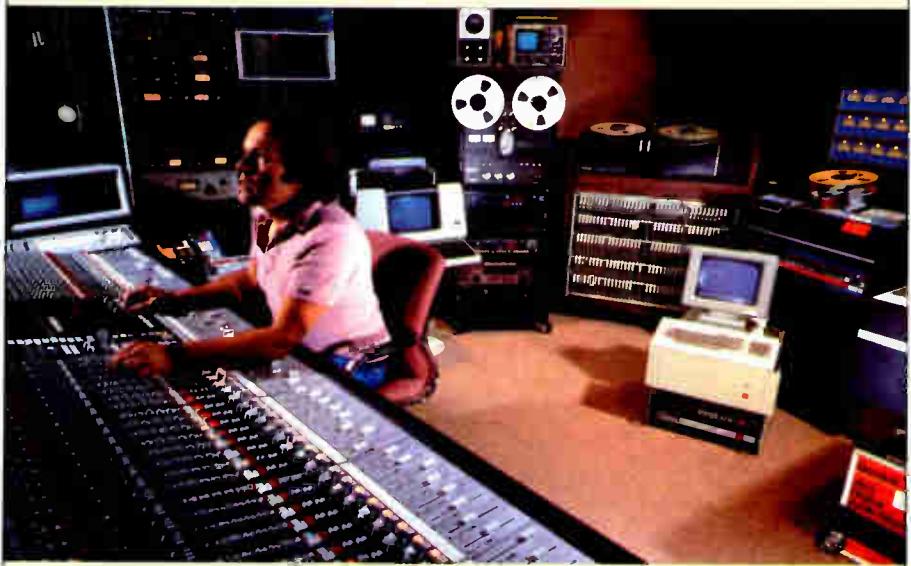


PHOTO: LIONEL FREEMAN

of the reaction he got when he said he was staying home to play with his computer, hence the female name. With Gertrude, he learned about programming and then decided he'd build one from scratch to be used on Steely Dan projects. It had to bear a male name because, "I had Gertrude and Wendell, and I was going to mate them to raise calculators, but it never quite worked out."

Instead, what Nichols got was an incredible state-of-the-art computer. In fact, the day we met, he boasted to me that Wendell was the best drum machine around. Naturally, I wasn't going to let that definitive statement pass without question. His comments on Wendell follow.

"One reason is the frequency response," he says. "It's 50 kilohertz sample rate, 16 bit linear, which is the same as or better than any other digital recording machine that is out. The Sony is 41 or 48 kilohertz and the

Mitsubishi is 48 kilohertz. The length of the sounds that are in it make it unique. The normal drum machines use what is called eight-bit companding, so it's like compressing something when you record it and then expanding it when you play it back. In a little dynamic range, that allows you to get more dynamic range. It's cheating. In most applications it works fine. That's how dbx noise reduction works. It squashes the signal down to a smaller dynamic range so it fits on the tape. Then it expands it when it plays it back. The chips in most of

the drum machines are a finite length, 32K bits, which would be 4K bytes. That's 4,000 samples of 8 bits in one of these little chips. A snare drum in one of these other machines will fit in that size of a chip. A snare drum in Wendell takes 64K words, 64,000 16 bit words which is 128,000 bytes. That would be about 20 of those little chips. So it would take 20 chips for one snare drum beat. Your drum machine that costs you \$2,000 can't cost that anymore. Now it's going to be \$10,000 or \$12,000 and there aren't too many people who are going to spend that. Having a mega byte of memory, fast enough to store all the drum sounds, plus a hard disk to catalog everything, it cost \$80,000 to build. The criteria was that we just had a job that needed to be done, a drum machine or something that could straighten out the beats. It had to be as hi-fi as the digital record-

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log tape does to it, but everything else I want nice and clean is nice and clean. I pride myself even with analog technology and all the Steely Dan stuff. We spent a lot of time making everything clean and master-

fully recorded. You can tell it's a Bosendorfer piano. You can hear every single instrument with hardly any equalization on anything, where we're not trying to make something do what it doesn't normally do. We

—FROM PAGE 42, WENDELL

ing or else it was pointless. The whole idea was not to build it for sale, but just to build it because I needed it or Donald [Fagen] needed it and we needed it to perform this certain job.

"As far as editing, in Wendell you can actually move the beats around in increments as small as one sample time. That means in a pattern that is playing, you can make the snare drum a 50,000th of a second later or earlier, which is hardly measurable. It doesn't have to be all the snare drum beats. You can move just the snare drum beat on 4 of bar 15. You can make it just a hair earlier, or any combination so it's always in high resolution mode. What I've used it a lot for is replacing drum sounds. Somebody would write a tune which is done with a Linn machine, DMX or the Yamaha, and we'd just play the tape.

"Wendell is fast enough at seeing the sound and triggering off of the sound that's on the tape, that there is absolutely no delay. It can actually see the beginning of the sound because it digitizes the sound that it's triggering from, and since it's a computer, you can program it to recognize what it is triggering and in less than one sample time. So in less than 50,000th of a second, it can start putting out the sound. You don't have to do things like play the tape and make it memorize where all the beats are. It can just trigger off of something in real time and follow the dynamics.

"There are software algorithms for drum fills for when you have eight different snare drum sounds in the computer at one time. A fast drum fill would be played with both hands. We have all the snare drums sampled in as a right hand hit and a left hand hit because they sound a little bit different and they hit in a little bit of a different spot on the snare drum. When a fast drum fill comes, Wendell sees, 'Wait a minute, there's another trigger I'm getting, but it's too quick for a real drummer to have played it

with the same hand. Therefore, it must be a drum fill, so I'll use this other drum sound,' so it puts out another one. It makes all those choices, so in a drum fill, it plays it like a drummer would, with two sticks and different intensity because a snare drum doesn't just sound louder when you hit it harder. It sounds different, the snares rattle differently, it decays longer and all that kind of stuff.

"On things like ride cymbals, you can put in one that lasts for ten seconds. A lot of tunes where you have a two bar break, a drummer will hit the ride cymbal and the cymbal will ring through the break. Our criteria were that it should be exactly the way a real drummer would do it, so you wouldn't have a ride cymbal that just went 'ding' and quit. It would ring through the two bar break until he started playing again. With a regular drum machine, when something is re-triggered like a ride cymbal which is going 'ding, ding, ding, ding,' it just cuts off what's there and starts over again, so you can actually hear the little breaks. With Wendell, it does cross-fade. It keeps playing what the cymbal is doing, plus it starts over again, so there's no difference between the computer and a drummer. You can hear that on the shuffle, 'Walk Between Rain Drops,' on Donald Fagen's album.

"Now that memory and computer parts are much cheaper, it's to the point where we can manufacture Wendell Jr., which will perform some of the functions Wendell does. The first thing we're putting together is a little box which is triggered from a regular drum machine which everybody has. But inside the box is the snare drum we've recorded digitally and they will be 16 bits, 50 kilohertz sample rate. It will have the decay of a regular snare drum. We're going to have the same kind of filters Sony uses in their digital multitrack and the sounds will be in a little plug-in cartridge, like an Atari game cartridge."

—Robyn Flans

would change guitar amps, guitars or studios to get the right sound. That would have priority over adding equalization or limiting to try to fake a sound.

"I like the fact that if there's an error, you really know it's there with digital recording and you can repair it. If there are errors on analog tape, you just get a little bit of a drop out or something and the thing just sort of disappears for a minute. With the digital machine, if there's something bad, there's a click or a pop or it's gone. It's either perfect or it's not there. So you can start concentrating on something else and not be thinking, 'Gee, is this playing back the way it was?' I don't remember it sounding like this when I recorded it.'

"Doing the Steely Dan records, we never bounced something to another track, because it's a generation loss. Say we did five tries at a saxophone solo on five different tracks and there was a bar we liked from track one and a bar we liked from track four and a bar we liked from track three. We would erase what we weren't using on each track, keep them on separate tracks and switch between them. That caused a lot of problems in recording other things because you'd have to record the first four bars of it on this track and then part of the saxophone solo was in the way, so you had to switch over and record the next four bars of something else on this track. But it was all worth it because it was crystal clear. With digital recording, you can bounce things from track to track in the digital domain, so all you've done is move it to another track. It hasn't gone through any converters, it hasn't done anything except change tracks and it's still as clean and new as it was when it was recorded."

Considering both Denver's and Nichols' backgrounds, they seem a most unlikely pair. Denver, whose real name is Henry John Deutschen-dorf, began his career with a two-and-a-half year stint with the Chad Mitchell Trio before deciding to attempt a career as a solo artist. Having written the Peter, Paul & Mary hit, "Leaving on a Jet Plane," Denver soon began to amass his own MOR hits, including "Sunshine on My Shoulder," "Take Me Home Country Roads," "Rocky Mountain High," "Annie's Song" and "I'm Sorry." "Thank God I'm a Country Boy" seems a far cry from any Steely Dan tune Nichols engineered.

Nichols, whose initial career was as a nuclear engineer, made the foray into music in the late '60s when he and a couple of friends

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World Radio History

opened a recording studio in Torrance, California called Quantum. He worked with such people as Karen and Richard Carpenter (prior to The Carpenters) and Larry Carlton and soon found himself getting into building studios for others. Finally he left Quantum to work at ABC Records and worked with Steve Barri, engineering records for The Grassroots, Hamilton, Joe Frank & Reynolds and the Four Tops. Gary Katz came to work at ABC as a staff producer and got Donald Fagen and Walter Becker positions as staff writers. Roger began working with them by default when he was the only engineer available and soon they all realized they had the same quest for excellence. Having worked on all the Steely Dan records (for which he won several Grammy Awards as engineer) Nichols wasn't sure working with John Denver would be his cup of tea when he received the call to meet with him about five years ago.

"I never was a John Denver fan, musically," Nichols says. "I'd hear his stuff on the radio and go, 'Okay, next.' I sort of liked 'Annie's Song,' but that was about it. Then I met John and I fell in love with the person. I don't want to sound corny, but it was almost like meeting a long, lost brother. We just hit it off and that was it."

In a separate interview, Denver reiterates, "Somehow when we met a few years ago, there was just that click, like somebody you've known all your life. Where have you been? It's really a wonderful relationship. We have a lot of love for each other, a lot of respect and we're happy we can be together. When we're working together, it's the best of all possible worlds."

Nichols engineered Denver's *Perhaps Love*, some of which was never released, and then *Seasons of the Heart*. This current album, however, is the first that Nichols has produced.

"When we started this project, because Roger had not produced before, I wanted to co-produce with him," Denver explains. "I really think he's produced the album. There are a few ideas that I've had, but he really organized the material and certainly the songs that are on the album that I didn't write. I wrote four songs on the album and Roger brought the rest to the project. In coming to the studio and seeing how well organized he was and how wonderfully he was directing things, I tried to step back, not be in the way and give him a free hand. I'm having my little ideas and am able to make any contribution I can, but

really the production is Roger's."

Nichols is pleased with the variety of material on the album. "John's an amazing performer. He sings great, so we wanted to spread

Nichols: "I never was a John Denver fan, musically. Then I met John Denver and I fell in love with the person."

him out a little bit. He can do the funky rendition of 'Claudette,' he can do the rock and roll song like 'The Harder We Fall' and the ballads, which he excels in. He can hold notes in tune for weeks. We've pretty much covered every avenue in this album and it's important in John's career. He's right, it's not John who is outdated. There's nothing more topical than a song like 'African Sunrise.'

As a member of the board of directors for The Hunger Project and having served on President Carter's commission studying hunger in the world, Denver finds "African Sunrise" the song nearest and dearest to his heart on this album.

"There are still pockets of poverty even in our country, but the seat of hunger in the world is Africa. Some people say, 'You can end hunger, but not in Africa.' We don't believe that to be true. In fact, our commission, the Brant Commission and the Global 2000 report all say we have the wherewithall to end hunger on this planet. We produce enough to feed more than twice the population. So how is it that hunger persists? Our hunger commission said all that's missing is the political will to do something about it. I disagree. I think what is missing is the popular will. When it becomes the will of the people, that will make it political and we can see an end of this obscenity. We got out of the war in Vietnam when it became the will of the people. So we went to Africa to make a film hopefully about another side to the story.

"I have to tell you, having made a commitment to end hunger, to do whatever I could do with my life to see the end of hunger, I was a little nervous about going to Africa. I

was thinking I was going to find out that it was not possible and it would really alter my commitment and dampen my enthusiasm. We were in Somalia and Mozambique, where I saw the most desperate conditions. Still, I came back convinced that we can end hunger. Dori is a village of 10,000 people and there has been a drought. There's a lake that surrounds three sides of the village, but we did a piece of film with me standing where the water should have been over my head and I'm on dry ground. Seven kilometers outside of Dori is a village called Jomga. We talked with the chief of this village. In July of last year, the millet, their primary crop, should have been seven to eight feet high and so thick you can't see through it. The end of September, when we were there, they were little plants which stood barely a foot out of the ground. There was no sign, no hope for rain, no hope for a crop, but the people were still out in the field. They were also picking grass because they put it in water and boil it to make a stew they are living on. There are 300 families in this village. One hundred of the men have left to go south to find work and buy food to bring back to their families. You could see the pain in the chief of this village in his sense of responsibility. We asked him about the future and he said, 'The future is ours. We have learned a great deal and we know now what to do. If the rains come, God willing, we will know what to do. The future is ours. It was a very moving experience for me.'

"That night we stayed in Dori. We were staying outside in this little courtyard with mosquito netting over our beds. I couldn't get to sleep. I would start to drift off and something would jar me awake. All of a sudden, the sky started to lighten and I heard roosters crowing. I lived part of my youth on a farm where we had one rooster and it's a very beautiful sound, which has to do with the beginning of day. In Dori, maybe every one out of ten families had roosters and when the sun started coming up, there was a rooster right next door. And there was one on the next block and it became an orchestra of roosters. I got lost in this and started thinking about African sunrise, but something kept jarring me out of it. What was that? So I started listening to the thing that wasn't going along with the rest of the picture. It was babies crying. You knew there was a baby there who was crying in agony and had diarrhea. The mother and father were there and could do nothing about it. I'm a

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I N . S Y N C

by Bruce Nazarian

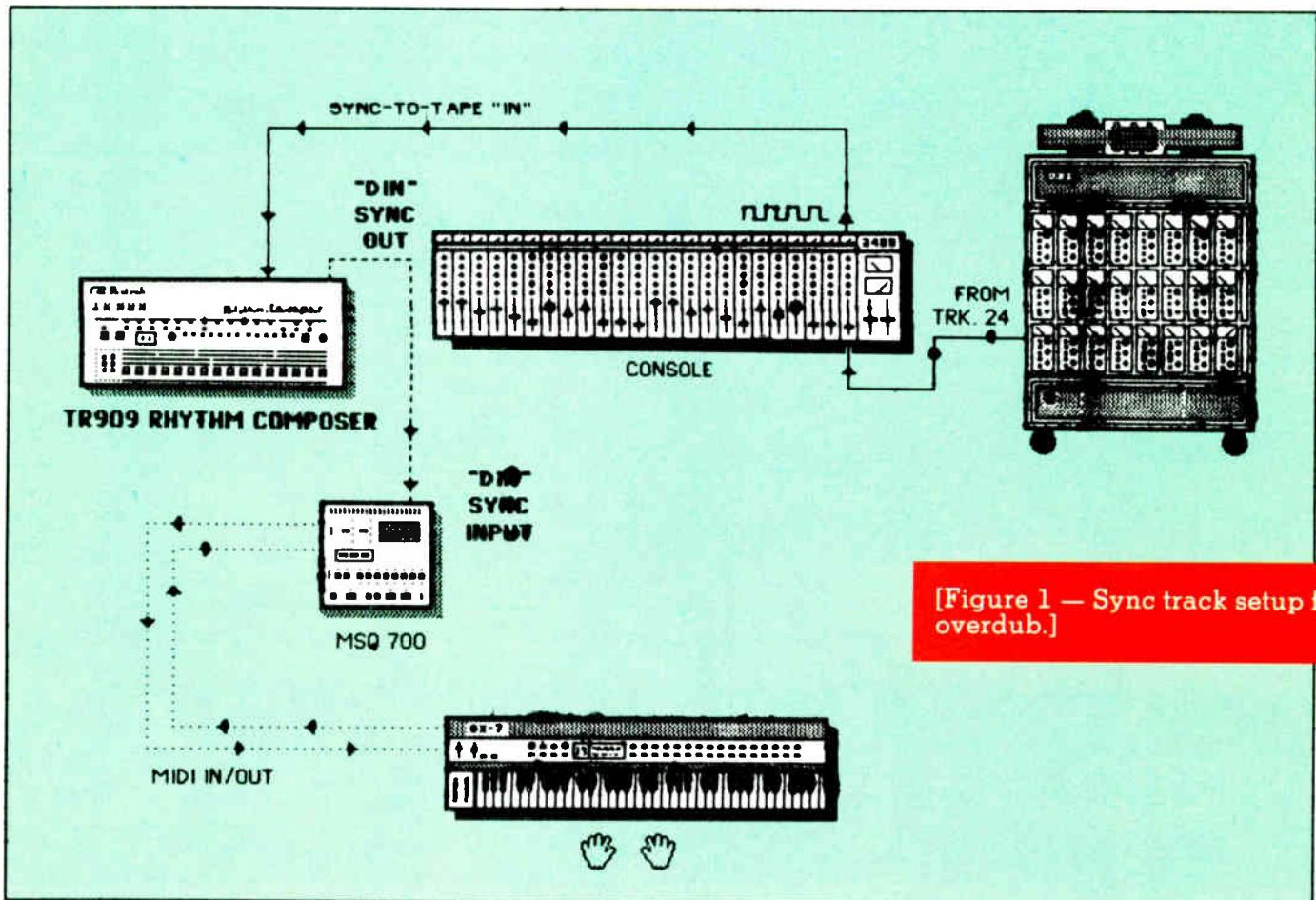
In computer music production, various types of computers react differently to the processing of a sync track. Some computers respond quickly, while others take more time. These minute differences, known as "processor delay" can affect the timing relationships between sequencers, causing a "sloppy" track, or overdubs that feel "strange" or not quite "in-sync." To remedy this, you need complete control of the sync track. Here's how to get it...

Figure 1 shows a sync overdub situation. The sync track has already been recorded, and the instruments are being prepared to overdub to it. Case in point: when using the Oberheim DSX sequencer with a LinnDrum as master, the DSX will sometimes tend to "lag" the Linn when overdubbing bass lines. Since

TROUBLE- SHOOTING DIGITAL GREMLINS

this "lag" is not always desirable, how is it possible to "slip" the sync track forward a little to help "push" the feel of the track? Easy! By using a digital device to delay the sync track by a precise amount when originally overdubbing the drums, it is possible to "slip" an overdub "on top" of or "behind" the beat by adjusting the amount of delay used on the sync track when you overdub that track.

Another variation on this technique: after recording the sync track, use the "repro" head on the tape machine to feed the sync signal to the drum computer when you lay down the first overdubs. This gives you a fixed offset from which to work. Switching to the "sync" head and using a digital delay on the sync track allows you to dial in the feel you want for subsequent overdubs. I frequently use this technique to match the attacks of different percus-



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sion devices. By soloing the snare and/or kick drum along with the new part to be recorded, you can hear any minute timing differences in the parts. When they start to "phase," you know they're close.

What if it's not your master tape?

If you are working with a client's master tape that has already been heavily overdubbed from the sync head, and you find you need to "slip" the feel of an overdub, you can use this trick:

- Find an empty track that is not close to any existing low-level tracks.
- Reverse the tape (yes, turn it upside down), then
- Bounce the sync track from its original location to the unused track, but use the Repro head as the source. Normally this would create an out-of-sync bounce. With the tape "upside-down," this operation creates a new sync track that starts a little "in advance" of the existing sync track. Once this new sync track has been recorded, you can return the master tape to its "right-side-up" status and use last month's digital delay trick to "slip" the overdubs around until they feel right to

you. Remember, what you are controlling is the timing relationship of the overdubs; you want them to lock exactly where you want them to be, not where the computers try to put them!

Most drum machines sound too "stiff" and "mechanical."

"Re-humanizing" Computer Drum Tracks

Another variation on this technique involves overdubbing drum fills, particularly tom-tom rolls. The precision which most drum machines offer by "quantizing" or error-correcting the programmed beats also can have a backlash effect: it can make the track sound too "stiff" and "mechanical." I personally believe that part of this can be corrected by programming with a little

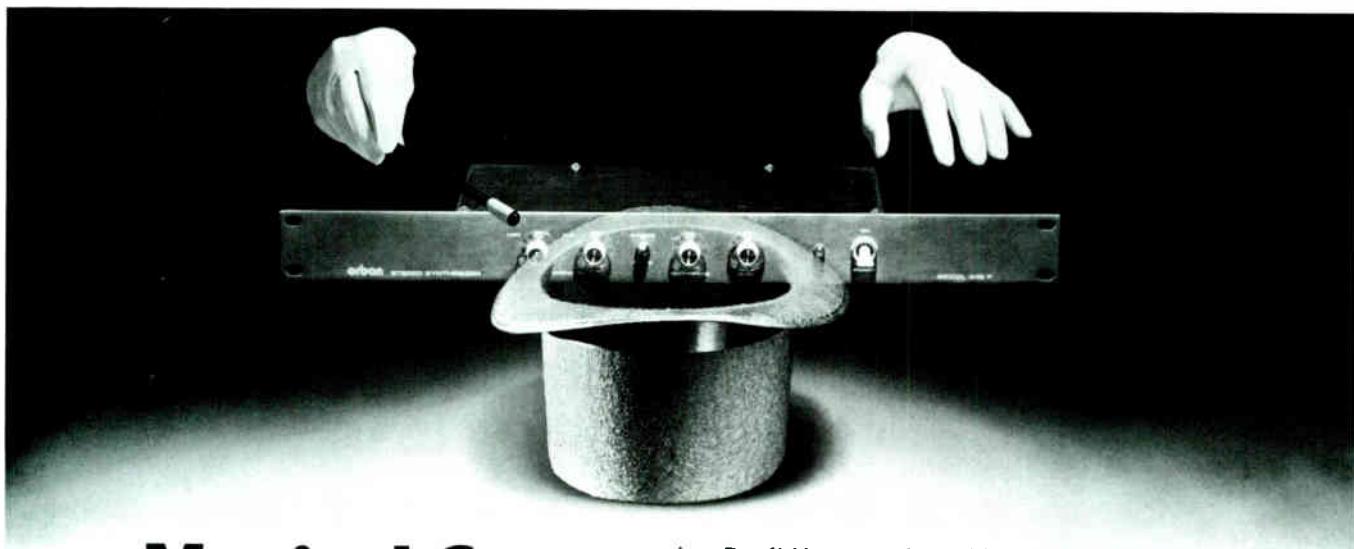
more feel in the first place, but sometimes you need a little more help. Try using this trick:

When overdubbing, set up to run the sync track thru a digital delay unit, as explained before. Start by locking up the sync *exactly on the beat*, so the toms are in precise time sync. Then add a small amount of sine wave modulation to the digital delay unit. What you are doing is, in effect, giving the perfect sync track a touch of non-perfect meter, since it is this slight imperfection that gives music much of its "human" feel.

I would be careful using this technique: it would probably work better with a medium tempo track, or a ballad. Trying to "warp" the sync track on a 120 BPM+ disco scorching would probably make this imprecise overdub stand out like a sore thumb!

Next time

Next month, we'll have a look at wiring these computerized devices. Knowing how to properly interconnect them can sometimes be more help than knowing how to program them!



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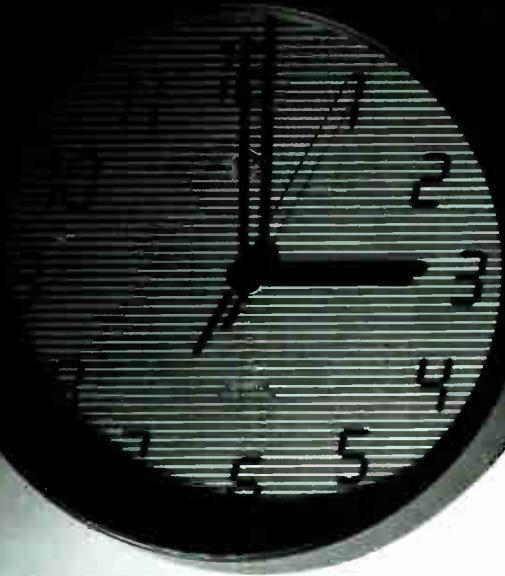
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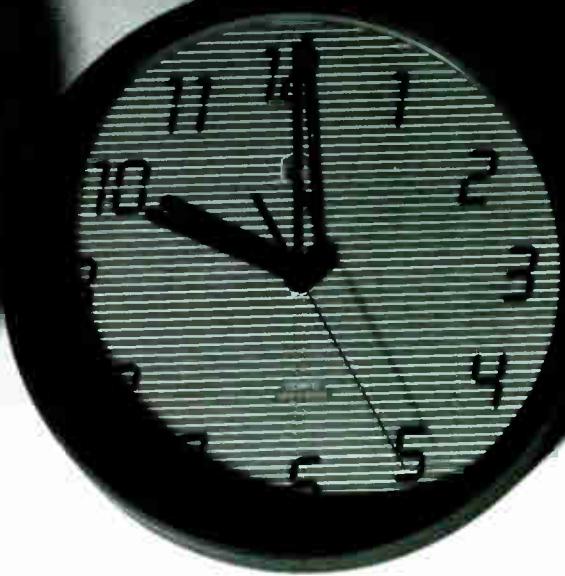
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STUDIOSCOPE

by Peter Bergren

In the past ten years, there's been tremendous growth in the number of independent recording studios. I believe many were started because of what I call "The Razzle-Dazzle Factor." Lavish color spreads of studios commonplace in industry magazines and intense promotion of recorded product give the studio business a high and attractive profile. It's no wonder so many have joined it, or want to join.

TAKING CARE OF BUSINESS IN THE STUDIO GAME

"Running a recording studio is a business, but if your cash flow can't meet your monthly expenses, then you can be out of the business fast."

But all that Razzle-Dazzle has to be paid for. If there was anything we learned from the recent recession, it's that running a studio is a *business*. It's also a stimulating way of life. But if your cash flow can't meet your monthly expenses and then some, you can be out of business *fast*. You've got to learn to think like a business-person to insure this doesn't happen. That means learning to anticipate and control problems before they get out of hand and damage your profitability. While what I'm about to describe will be all too familiar to old hands at the studio game, allow me to examine some of the most common business problems for those with less experience.

GETTING STARTED

Suppose you've always wanted a studio, and suddenly come into a large amount of money. Should you go ahead and build your dream? Remember, rooms went begging for clients during the past few years because there were just too many facilities chasing too few clients. This was especially true of rooms that did a majority of their business with record companies. Hard times for your chief customers can take you out of the game amazingly fast. This is a service business, after all. If you lack a diversified clientele, or a cushion of cash,

you can fall awfully hard. This happened to many studios because they were often started by a group of friends with more talent than money or contacts. And even those who managed to stay in business found that competition from other rooms forced their hourly rates below what is required for adequate maintenance or staffing. If this describes your situation, put your inheritance from Uncle Harry into the Money Market: at least it's a sure thing.

Before you build, survey your market. What rooms are already in operation? What is their primary business? Their clients? Rates? Try to plan for several different but related services you could provide that aren't adequately covered in your area. Imagine who your clients could be. Talk to them, survey what they want. Then write a business plan, detailing what you've found out and want to do, and project income versus expenses over time. Write this plan whether you already have the capital you need or not. It's helpful to enroll in courses at your local university that deal with starting your own business. And by all means, scale your initial investment to what you can realistically expect to see returned your first year.

PARTNERS, LAWYERS, AND ACCOUNTANTS

If you can avoid taking in general partners in your studio business, do so. Lots of partners running the facility can be a case of "too many cooks spoiling the broth." Silent partners, who put up capital in exchange for a share in the business, have no day to day responsibility by definition. But general partners are liable for each other's actions (like erasing a master tape accidentally). Naturally, this fact tends to make everybody feel responsible for everything that goes on; not a very efficient way of working. General partnerships can be just like a marriage, and it's wise to spell out individual responsibilities and areas of authority.

If one or more general partners are necessary to get the studio started, get what you expect from each other down in writing in a Partnership Agreement. It should state, among other things, who the partners are, what interest they own in

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the studio, what they are investing for that interest, who's responsible and has final say for what, and what happens if a partner wants to leave. A lawyer should definitely be consulted in writing this agreement. You should also consult the lawyer about other forms of business organization, including incorporation, which is one way around the mutual-liability problem. A good lawyer can fill you in on the licenses and other paperwork you'll need to apply for to legally do business in your state.

When do you need an accountant? Probably before you spend any of your investment capital, or take in any income. There are tax implications to almost any money you spend or earn, and the tax code keeps changing. For example, there are advantages to leasing big ticket items rather than buying them outright. It's a lot easier to convince tax agencies of your deductible expenses if you spend money from your cash flow on monthly lease or loan payback, which is often of interest only. If you pool your excess cash in a bank, then spend it, it might be looked on as profit by the IRS. Have a good accountant explain these points to you. He or she can also help you set up a bookkeeping system. Do the books daily, or keep simple records and have someone put them in the books weekly. If your business warrants it, get a small business computer and accounting software. And keep all receipts and statements, naturally. Knowing where you stand financially is a key factor in being able to take advantage of opportunities as they arise.

CLIENTS

You've got to have a few dependable, steady clients from the

very start of your operation. Generally, studios start with something in the works; perhaps local bands that trust them and need demos or EPs for sale at concerts. Or, a market need can be created. For example, you might propose classes in recording to the local college or university. Look into the growing independent record industry, especially music that is relatively simple to record. But whatever you do, get something steady going, on a weekly basis. If you don't, you'll find it difficult to find the time to go out and develop new clients. Such promotion is essential. Someone needs to be on the phone and in their car making sure your potential market knows who you are and what makes you special. If you're not the salesperson type, join forces with someone who is.

PAYMENTS AND STUDIO RATES

Let's assume that you're in operation, and have a reasonably steady income. One of your clients is into you for 100 hours of time, and skips town without paying. This situation would have less chance of happening if you have a payment policy from the beginning of your operation. For example, your policy might be prepayment upfront of 50% of booked time, payable by cash, or cleared personal check. This would always be the case for first time clients. After the session, you could insist on payment of the balance owed before turning over the master tape. After all, that tape is the only item that can change hands in exchange for payment. Credit arrangements should be reserved for clients with a known credit track record, and then should only be extended for a set period of time. You could offer to knock 5% off the bill for pay-

ment in "net ten days." This is a good way (along with cash payment) to minimize your cash flow problems. You don't want to find the lease or rent payment coming due, and have to go to court to recover your income.

Make sure your payment policy is down in writing, and shown to all new clients. Explain it verbally also. Be firm but friendly about it. Legitimate clients will appreciate your needs, because they have many of the same concerns as you do.

How about setting hourly rates? Many studios don't have published ratecards so they can have some bargaining room. This flexibility allows you to offer what the client perceives as a bargain, without sacrificing the quality of your service. Being able to do this is a critical factor in "closing" the sale. But a "bargain" rate is no bargain at all if it's so low that you can't provide proper maintenance or studio staffing. Compute your lowest possible hourly rate with these two factors in mind. You'll lose clients anyway if you take in too little income and can't please them with your technical quality or engineer's enthusiasm. And don't forget your own needs when computing minimum rates. While it may be OK for a studio owner to go without pay while the business is getting off the ground, it's definitely *not* OK for this to drag on for years at a time.

A source of outside income will help, but running a serious recording studio takes almost as much time as running a family farm. Considering your investment of time and money, you should look on it as a full-time business, if possible. And businesses should be able, after time, to provide for their owner's material, as well as spiritual, needs. Join a local or national studio association (such as S.P.A.R.S.), and trade experiences with other members. You'll pick up a lot of useful help and information if you don't go overboard in looking at them as "the competition."

INSURANCE

The master tape on your multitrack can be worth hundreds if not thousands of dollars, as measured in studio and musician time. If your recorder decides to go into hyperspace overdrive and stretches the master, who's responsible? You are, naturally. The same is true if one of your goboes falls over and crushes someone's \$15,000 cello, or if someone falls down your stairs. Get insured against these liabilities; there are too many things that can go wrong in this business not to have some kind of reasonable liability coverage. Shop around for a policy

Peter Bergren is currently Director of the Recording Program at Loyola Marymount University, and a freelance recording engineer. This article draws on his experiences while he was part-owner of Sound Arts, a 24-track studio in Los Angeles.

The recording program at Loyola Marymount University (Los Angeles) consists of a two-year curriculum of technology, music and business courses. The program has a practical, "hands-on" slant, with access to two 24-track studios available for classes and individual work. Those interested should call (213) 642-3034 and ask for the Recording Arts Director.



Peter Bergren

with a good insurance broker. It's the things that just can't happen but do that hasten the gray hairs. Insurance can even cover lost musician's time in the event of equipment failure. And that kind of insurance can be very comforting to clients already in a risky business.

PERSONNEL

At some point, your studio will be large enough to require employees to sustain expanded operations. While it's possible with enough general partners to cover all jobs in the studio, it's hard to criticize the performance of someone of equal status. And it's potentially very expensive to "fire" them. So, if your work and cash flow permits, hire good people, pay them as well as you can, and set clear standards for their performance.

Engineers are critical. They must be technically and musically adept, and also fast. The prime thing they must do is to please both the client's ears, and their pocketbook. No matter how good the tape sounds, if a reasonable client finds their bill to be unreasonable because of what they feel is inefficiency, you may not see that client again.

So hire first engineers on the recommendation of someone you trust, perhaps one of your clients. If possible, hire them part-time at first, on a provisional basis. Second engineers should be hired who have a background gained either from work in other studios, or from completion of a comprehensive program in recording arts. These courses have sprung up all over the country, and many are capable of providing potential employees with a solid background in the technical, musical, and business basics of the studio business. Whoever you hire should be someone capable of moving up rapidly in the studio. Clients return again because of good experiences with the staff of a room, and you're acting against your own interests if you hire anybody and let them stagnate.

There are many business problems I've not touched on, or barely touched in this article. I think I've gotten across some of the most common, however. If you want more information, take local business courses, or watch for a new book on studio management to be published soon by Mix Publications. The important thing is to not look at business thinking as grim thinking, but rather as an insurance policy. It's a policy that will insure you can have fun in the studio. And isn't that what attracted you to it in the first place? ■

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Teachers of the Art on State-of-the-Art

Picture yourself participating in the following scenario...the setting is the control room of a 24-track studio, the cast a diverse crew of folks listening to their leader speak:

"Alright, class. Tonight I'd like you to write a thousand-word essay that answers the question: 'is it important to have practical knowledge of digital and computer technology in the audio field, considering the lack of standardization and budget-blasting price tags?'"

How would YOU respond?

by Linda Jacobson

The digital revolution is on. State-of-the-art technology, evolved to new heights of sophistication and creative potential, has made it from the lab to the field, even to the home. Although digital audio recording isn't exactly run-of-the-mill, both the artistic and technical hemispheres of the recording world are growing increasingly enchanted by the microprocessor.

So how do studio owners and their employees, as well as future recording industry personnel, stay well-armed during the revolution? By reading trade journals and books ...by joining professional organizations and attending meetings and

Cal State Dominguez Hills Recording and Synthesis Program Profile

The marriage of recording and synthesis is an inevitable consequence of the technological revolution currently overtaking the music business. An increasing number of studios are taking steps to accommodate this swing towards electronically-based music by enlarging their control rooms and installing MIDI-based synthesis and synchronization equipment. One school taking advantage of the union of these two rapidly developing sciences is Cal State Dominguez Hills, located about 25 miles southwest of downtown Los Angeles.

The Electronic Music and Audio Recording programs peacefully coexist under the same roof in a relatively unique arrangement as equal partners in the production and reproduction of sound. Such an arrangement produces an accurate model of the real-world recording environment in which artist and engineer must work together. According to John

Hill, who is in charge of Audio Recording, and David Bradfield, who heads Electronic Music Synthesis, this is by design and not by chance. Students from both departments are encouraged to work together and learn from each other to develop a mutual respect and understanding of the other's chosen field.

Available to the budding recordist and synthesist is one of the few Synclavier II digital synthesizer systems available on a college campus in Southern California, an Apple Computer running Soundchaser computer music software, and a fully-equipped 16-track recording studio. The large control room features the recently installed Soundcraft 24 by 24 desk, a Westlake/Carver mid-field monitor system, a 3M 16-track recorder, mastering recorders and an impressive array of effects. The studio, which doubles as a classroom, is a relatively live room

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Learning Alternatives

Perhaps you want to learn about the latest technology, but don't have the time/budget/inclination to enroll in a school. Well, you don't have to pursue a sheepskin to obtain practical knowledge.

Most schools offer one-time seminars for industry pros and interested folks. Often held in conjunction with professional groups or recording studios, these seminars last anywhere from two hours to all day. Local chapters of pro organizations also provide seminars for members and non-members. The National Academy of Recording Arts and Sciences San Francisco chapter has presented MIDI seminars and home recording classes at music dealers, and a TV stereo symposium at a local TV station; the Society of Motion Picture and Television Engineers just held a seminar on stereo audio for film and tape at the University of Southern California's Cinema-Television Center.

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seminars...by traveling to trade shows and chatting with manufacturers...and by going to school.

Scattered across the continent are dozens of accredited establishments that are ready and able to enrich people's knowledge of audio art and science. Their scope, student body, and enrollment costs vary greatly. Some schools stress development of engineering skills; others emphasize production; others give equal time to copyright law and management skills. Some take a "hands-on," studio-based approach; others instruct in formal classroom situations before entering the button-pushing phase. Some programs take ten days to complete, while others require that you sign on for five years.

Despite the vast differences, all the programs are successfully attracting many students, both "pre-professionals" and industry members (most schools let non-matriculated students enroll in a course or seminar to catch up on, say, studio maintenance in the '80s or stereo audio for television). All the school/program administrators concur "the majority of our graduates are getting jobs in the field." And, despite the fact that few are using all-digital technology, all the schools are offering access to

state-of-the-art multi-track set-ups, complete with outboard gear and editing facilities.

A quick look at this issue's directory reveals that each school or program falls into one of four categories:

—multi-disciplinary university or college, where programs culminate with the handing out of bachelor's degrees in recording arts technology; —"dedicated" recording school, where, much like trade and vocational schools, graduates receive certificates or diplomas upon successful completion of their chosen program; —college or school of performing arts and music, which may or may not offer a degree in recording; —regional program, community college, or state school, offering a degree or diploma.

The various educators are reacting divergently to the recording industry's new friendship with digital-based, computerized, "the future-is-here" technology...

DIGITAL AUDIO & DIGITAL-BASED RECORDING TECHNOLOGY

Reflecting the industry, some educators feel that digital is in, and others, not—not yet, anyway. Those

who have committed themselves to digital audio, both financially and theoretically, total 65% of the schools surveyed for this article. Fifteen percent of the schools and programs study digital audio from a hypothetical point of view. The remaining 20% are still dubious about it, though some have long-range plans to incorporate digital audio within their facilities.

At Eastman School of Music (Rochester, NY), Peabody Conservatory of Music (Baltimore), and Middle Tennessee State University, recording industry students have already engineered and produced Compact Disc recordings, due for commercial release, featuring musical performances by alumni, faculty, and students. These large institutions have easier access to financing and performers, but there are plenty of opportunities to explore digital at the smaller "dedicated" schools.

The College for Recording Arts in San Francisco is focusing heavily on digital recording, following the process from the original performance recording to the final master disk and pressing. Says C.R.A. director Leo de Gar Kulka, "As the quality and capabilities of the new technology advances, it's becoming

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—FROM PAGE 58, DOMINGUEZ

which is large enough to accommodate a large group comfortably and houses acoustic and electric pianos. Since the studio and control room were not purpose-built, some acoustical anomalies linger which will soon be remedied by selective application of acoustic treatment.

The first electronic music studio is analog, and houses mostly older vintage modular synthesizers such as ARP 2600s and Electro-Comp units which are used for introductory synthesis classes along with the Apple Computer and music software. The second synthesis room is "digital" and contains the Synclavier II with terminal and disk drives, a Yamaha DX7, a small console, an Otari 8-track 1/2-inch recorder controlled by the SMPL system and a pair of JBL monitors. The recording and synthesis studios can operate autonomously, or the installed audio tie-lines permit the Synclavier and other synthesizers to be connected directly to the console, allowing the recordist and synthesist to work on mutual projects. Racks also exist for students to bring in their own

synths, drum machines and effects gear. Planned expansions to the basic system include updates to the Synclavier, a custom high-powered full-range monitor system, a 24-track recorder and a variety of other synthesis and studio equipment.

The instructors are well-qualified and dedicated to their respective fields: Hill, who is also a pianist and composer, studied at McGill University in Montreal, which is known for its excellent audio recording program and facility. Bradfield, who has an affection for avant-garde music, holds post-graduate and graduate degrees in music from North Texas State University and is equally at home at the keyboards of the synthesizer and the computer. The curriculum of the school reflects its dedication to the dual disciplines of recording and synthesis as well. Cal State Dominguez Hills offers B.A. degrees in Audio Recording and Electronic Music Synthesis as well as certificates in Audio Recording/Electronic Music Synthesis and Audio Technology.

—Tony Thomas

—FROM PAGE 59, TEACHERS

more important for the engineer to know all the techniques, all the choices, and all the consequences of making a choice. You can't use the excuse 'we'll fix it in the mix' anymore, because with digital, the sins you create in the studio will follow you to the finished product. And you can't teach that unless you have a way of demonstrating it."

The Trebas Institute of Recording Arts agrees. Trebas, with four Canadian branches and one opening in Los Angeles in the fall, offered their first digital audio course in 1979, and is now concentrating on Compact Disc technology. "We believe," explains executive director David Leonard, "that if people come to a school, they should be taught not only what's going on in the field now, but what's going to happen five years from now. If you read the *Audio Engineering Society Journal* and other professional magazines, you see five or six years ahead what's going to happen. We don't want our students to come out with dated information, so we do crystal ball gazing and hope it works."

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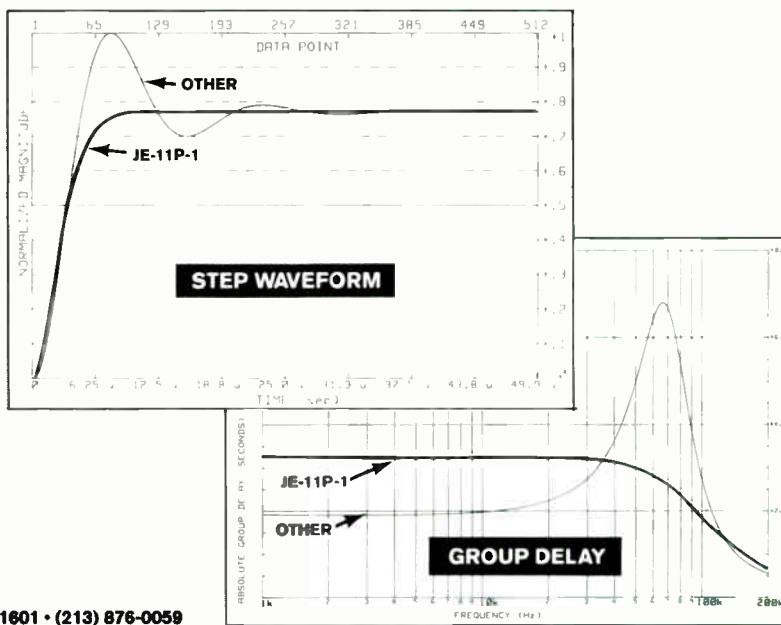
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computer-assisted automated mixing and postproduction gear include the Recording Workshop (Chillicothe, Ohio), community schools (Fullerton College in California), universities (Indiana U. in Bloomington), and music schools (Berklee in Boston).

Although Berklee has purchased a digital audio processor for recording direct to two-track, the school has delved further into the technology by borrowing a 24-track digital recorder from its manufacturer. Other schools, wanting their students to get into digital but lacking the funds to purchase gear, have manufacturers' demos or rented gear, or have rented time at nearby professional studios.

At Columbia College in Chicago, department head Al Parker claims, "We're going with all the latest technology in our sound classes by spending four to six hours a day at a major Chicago production house and soundstage. There's no way that a school in any market can compete with the facilities offered by big studios; we find it much more practical to rent facilities." Likewise, Studio Production Techniques (with branches in Tulsa, Nashville, and Dallas) is, according to Terry Pope, "going with all-digital, fully state-of-the-art gear by leasing a full-fledged 24-track studio in Tulsa, and a Solid State Logic console at the Dallas Sound Lab."

A few of the schools have touched upon digital in theory only, intending to eventually purchase the equipment. The University of Lowell (Massachusetts) College of Music has long-range plans to expand their analog studio to 24-track digital with complete automation ("in the meantime, our 8-track capability provides an excellent preparation for the industry, by forcing the students to obtain results that are much more easily obtained in a larger track format"). At the Institute of Communication Arts in Canada, Niels Hartvig-Neilsen's instructors are "handling the new digital technology by approaching it hypothetically; right now buying the equipment isn't in the budget, it would raise tuition too much. We're trying to cover it as in-depth as we can, using documentation and literature sent to us by the digital equipment manufacturers." At the Institute of Audio Research in New York City, which features a 16-track analog studio, dean Miriam Friedman explains that students are given "a fundamental understanding of digital logic so they can grow with digital as it grows in the industry. It's not a knob-diddling course; we don't want the students to just know how to use one machine, but to understand all con-

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—Arif Mardin

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soles from the inside-out."

And some of the schools aren't into digital at all, although they have complete, up-to-date multitrack facilities with racks of reverb and EQ gear, delays, limiters, and all the mikes you'd ever want (in fact, that describes the set-up at Brigham Young University's Department of Music). At the unique, publicly-funded Hillsboro Recording Program (located at Hillsboro High School in Nashville), department head Vic Gabany says, "Here in Nashville, we only have about four facilities that are all digital, so the new technology hasn't affected Hillsboro at all. Right now there's no need for digital; not that it shouldn't be used, but you've got to justify the cost with the industry's demands."

Also in Nashville is Belmont

College's School of Business, where you can earn a bachelor's degree in music business administration. Although Belmont held a seminar in digital audio last spring, department director Dr. Jay Collins says, "We haven't purchased that stuff yet; we're all analog, using a Studer A-810. We view ourselves as a training lab and we couldn't shift into training people on something they wouldn't actually be using in the field. There's very little digital involvement in Nashville; people don't want to make that large a financial commitment to equipment until we know where it's going.

"On the other hand," Dr. Collins continues, "we're very sensitive to the computer side of music technology." Oh, yes, the computer. How are educators facing up to it?

COMPUTERS IN THE STUDIO & MIDI

One of Belmont's course offerings is an introduction to data processing: "Our recording engineering students are learning microprocessor applications, word processing, programming in BASIC," says Collins. "Everything is approached from the music industry angle." Hollywood's Institute of Audio/Video Engineering is putting together a sequence of computer classes to teach BASIC and assembly languages, where students write their own audio/video applications programming. New England's University of Lowell, too, has a class that introduces their recording technology students to the PASCAL language.

The University of Lowell, as well as just about every university

Institute of Audio Research

Albert Grundy is not so proud that he won't tip his hat to other schools, but he insists the one-year course he directs at New York City's Institute of Audio Research is a practical way to prepare for the on-the-job training position that could lead to an upwardly mobile career in engineering.

"I've had industry people say to me, 'I hired one of your graduates, and we had to show him how to use the studio,'" says Grundy. "They say that at first maybe, because when you hire one of our graduates you're getting someone who can absorb everything at an incredible rate. Someone who understands *how* and *why* things work. You don't necessarily have someone with the button-pushing experience that you get with OJT." Grundy, who is also president of the Audio Engineering Society, goes on to say that, "Later, that same industry person came back to me and said, 'Your student is great. He can keep up with everything I tell him to do.'"

Grundy believes a foundation in physics and electronics is what propels a student from the robotic underling to the insightful engineer who can keep current with whirlwind technological changes. The Institute's curriculum is equally divided between classroom and laboratory experience with emphasis on multi-track recording technology. In the

labs, Grundy says, "We start out with using the information learned in the classroom setting. That is, first, a basic electronics lab with currents, power, voltage, impedance—the basics. Then, on to labs that teach how these principles work. Signal processing labs show procedures with equalization, compression, limiters and the like."

Grundy says the Institute's 16-track studio provides the hardware for the final exercise: a live recording and mixing workshop. Students are evaluated on both multitrack and live two-track recording. These workshops are limited to seven people per session; classrooms have 20, and labs have up to 18 students. The entire course costs \$5,000, and total enrollment is 380 people.

"Students generally just want to play with the equipment, but that's not really the best way," Grundy observes, drawing on 16 years of experience with the school. Back in 1969, the Institute started teaching technicians who were already in the industry *what* they were actually doing when they turned those knobs. That led to a more comprehensive list of courses, and eventually, to building the 16-track Ampex-equipped studio.

Grundy makes clear distinctions among the types of schools that are available to potential students. He applauds the four-year programs at such universities as

Miami and John Hopkins, "but not everyone can afford that kind of time and money." The programs he warns against are the ones that are not really schools at all, but studios who are looking for additional income. "You have to be careful that the curriculum is of some rational length. A couple of weeks just might not give someone enough time to do anything. It just gives you some diploma, but no real knowledge that prepares you for the industry."

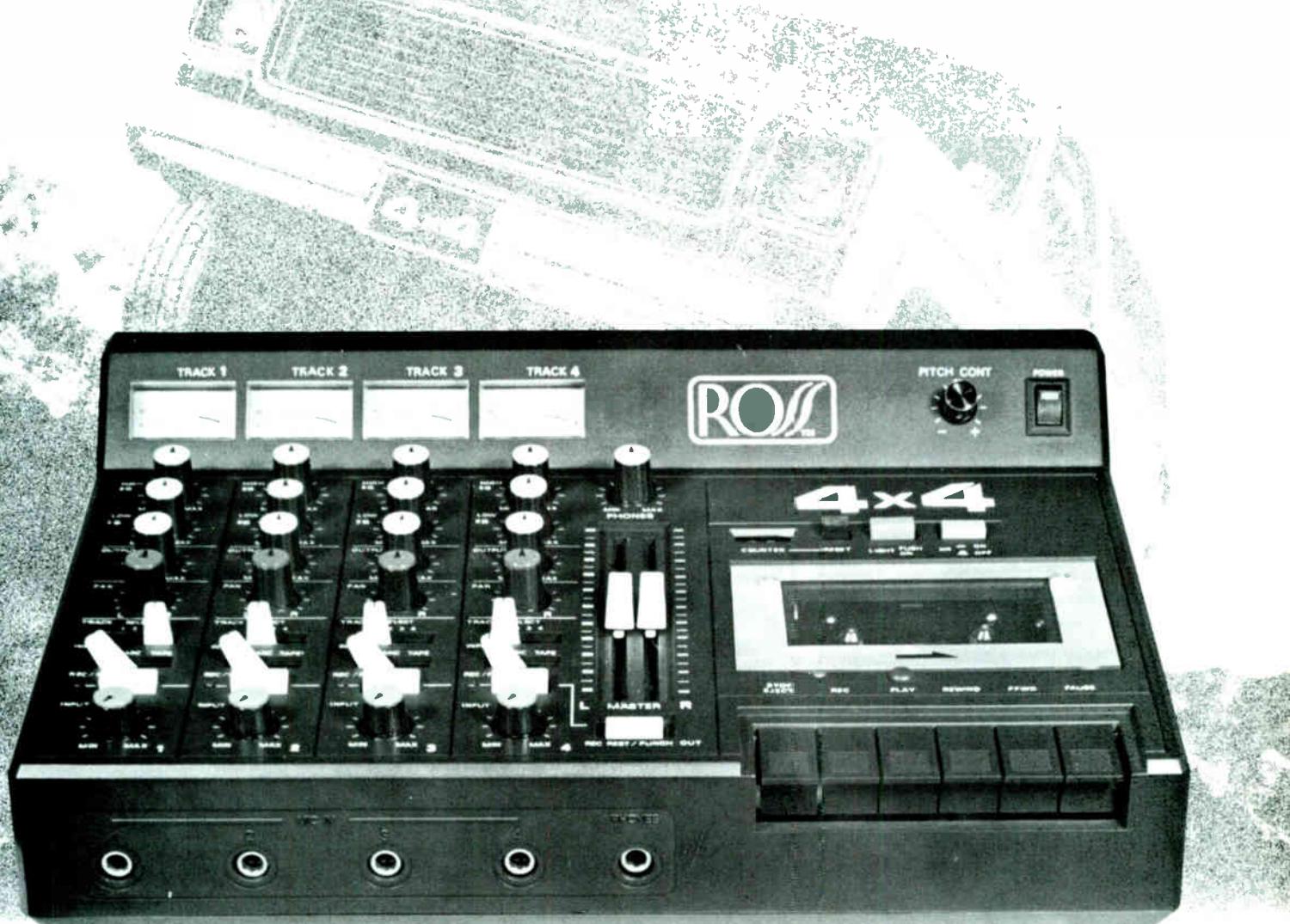
Overall, the most annoying attitude Grundy says he runs into says that an engineer can't learn in a classroom; that such information is too theoretical, and not practical enough. Grundy feels that audio engineering requires specialized understanding: "Some people feel, in error, that a recording studio is like an automobile. That it is made so that people with little particular, specialized knowledge can operate it. Automobile manufacturers have spent years learning to make cars so that anybody can use them. Audio manufacturers have been working to make the best products that professionals can learn to achieve the best sound from and with hundreds of manufacturers, correct interface alone is a kind of expertise. Our emphasis is on learning the *technology* so the student can do problem solving."

—Elizabeth Rollins



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with a recording industry program, also applies the computer to music making. The school's Electronic Music Studio, built around a Synclavier digital synthesizer, is used for teaching electronic music composition and analog and digital sound synthesis, in a course designed to complement recording technology studies.

Some schools boast electronic music labs and studios that are running MIDI software, controlled with IBM or Apple computers, including Fullerton College, Brigham Young and Indiana Universities, and the Institute of Communication Arts. Other schools are enjoying computer-less yet advanced, versatile set-ups of digital and analog synthesizers, drum machines, sequencers, signal processors, and related gear, including Studio Production Techniques, Institute of Audio Research, the Recording Workshop, the Trebas Institute, the Peabody Conservatory, and the Berklee School of Music, where one faculty member is assisting Ray Kurzweil with programming research.

There are some places where MIDI isn't. At the Eastman School of Music, for instance, director Ros Ritchie says the students "aren't into MIDI. And so far they've been light on effects like chorusing and signal processing. They've been shy of it, but now are starting to approach it. We have several of the older portable Moogs and some Roland equipment, as well as a DX7. Here, you're very busy with the basics. When you consider how fast this paraphernalia changes from year to year, that influences your decision to buy or not. The budget is a big consideration; rather than buy new technology, we'd rather get more mikes or another console."

UNITING THE SOUND WITH THE IMAGE

One theme continually popping up when educators speak is that there's a whole big world out there that needs people who know the audio craft. Students are being advised almost everywhere they go that they shouldn't limit themselves to the recording industry. There's the television industry, too, where people are finally looking to improve the quality of TV sound. And that means more jobs for qualified audio engineers, producers, and technicians.

Several schools emphasize the audio/video marriage, while others offer students the chance to learn about it in optional courses. "Our students deal with the image immediately upon entering our audio classes. They don't graduate until they can step up to a SMPTE editing

system and do audio/video lock-ups, offsets, and sweetening, working with a 16-track machine and a video machine," says Harry Hirsch of his Center for the Media Arts. And from John Holloman, who's in charge of the studio facilities at Brigham Young's film/video/music department: "We have a video postproduction suite and a SMPTE-controlled editing table; the music student and the video student interface is new, but we feel it's necessary. That's the direction of the business."

Other schools that place emphasis on preparing students for careers in broadcast or cable television sound/music video production are the University of Lowell, Institute for Audio/Video Engineering, Center for Music Business Studies (in Elmhurst, Illinois), and the Music Business Institute (Atlanta). At the College of Recording Arts, the course that covers the audio/video combo is mandatory.

Other schools offer optional video courses. New York's Institute of Audio Research has an intensive eight-week course, only offered at night to post-grads and pros, that concentrates on audio sweetening for video. Trebas has been teaching video recording since 1979. The Recording Workshop wants their students "to feel in place at a video production house as well as a recording studio," so they offer an optional Music Video Production Seminar. Other institutions that allow their students to experience video include Hillsboro, Eastman, Institute of Communication Arts, Fullerton, and Indiana U.

There's a lot to consider when choosing a program: some schools ask only that you can write a paragraph in English before enrolling, while several require audition on an instrument, letter of recommendation from someone in the industry, or demonstrated knowledge of certain skills. Geographical location and pursuits of other students at the school seem to affect one's course of study. Also, you can do a lot more in four years than you can in four weeks, but you might not have the time to spare.

Fully digital consoles aren't yet readily available or affordable—but they will be; studio owners might well consider training themselves, or their employees, on digital gear before making any capital purchases. Just starting out? Specialize in Compact Disk and digital technology, and it won't be long before you're working. Students learning now have a better chance later. Whatever angle you look at it from—knowledge is power.

-FROM PAGE 58, ALTERNATIVES

In Northern California, Bay Area Lawyers for the Arts holds weekly seminars on legal issues for artists of all disciplines, covering everything from contract negotiating to income tax preparation. On-Stage Music holds weekend-long "music camps," providing a recording program as well as hands-on experience with PA and mixing systems.

Music instrument/equipment dealers are educating their customers, too. Several publish useful magazines, like *The Mail*, a 60-page quarterly from Daddy's Junky Music in New England, with articles about lighting control, new gear, and home recording techniques. Sounds Great of Springfield, Missouri publishes a ten-page mag providing a musician's referral service and articles about their products and staff.

Like many stores, Daddy's and Sounds Great hold a variety of "classes," from keyboard seminars to PA clinics. Dealers generally make such programs available for free, covering everything from the basics to intermediate and ad-

vanced sound technology concepts. Some classes feature prominent members of the recording community as guest speakers.

Stores often hold workshops in conjunction with equipment manufacturers, who are actively and responsibly helping people understand and utilize audio gear. Many synthesizer and music software manufacturers are going out into the field with factory clinicians, composers, and musicians, to enlighten and entertain. E-mu Systems, Korg, Passport Designs, Roland, Simmons, and Sequential are all very active.

Audio manufacturers who are sending staff into the field include AKG, Altec, Electro-Voice, Klark Teknik, Peavey, and TOA. The Fostex Corporation has held workshops since the company's inception almost four years ago. The workshop (which Fostex makes available for free to schools and dealers) covers basic multitrack concepts, mixing techniques, locking up to video, and signal processing, all via lecture, demos, instructional video tapes, and a 40-page workbook.

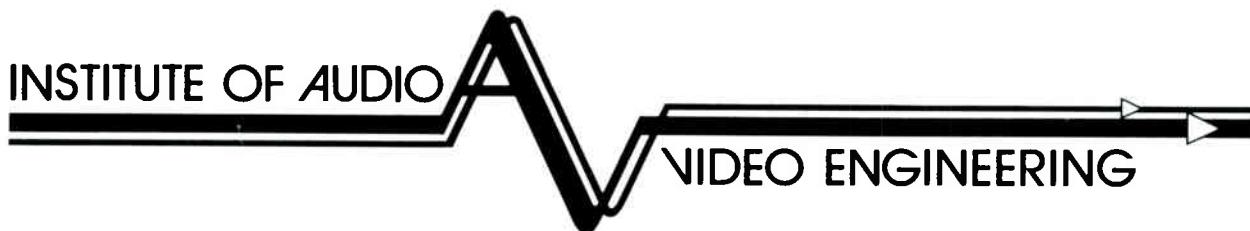
Tom Lubin, an engineer, producer, and writer, leads about 200 Fostex recording workshops each year. Formerly an editor of *RE/P*, Tom teaches at the Institute of Audio/Video Engineering and has engineered about 150 major album releases. "My thing at the Institute is 'this is how you do it,' while at the workshop we take a lighter approach. For instance, I say that recording is a creative tool: if music is paint, then your brush is the mike, your palette is the console, and your canvas is the tape deck."

"I start off answering questions to get a feel for their interests and experience; one workshop is geared specifically towards musicians, another towards producers. Either way, I can't stress the excitement that happens when people drive 100 miles to hear someone talk about recording. These are people who don't have access to information at schools—so we're taking that information into the heartland of America. It's wonderful watching the light turn on in people's eyes!"

—L.J.

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Mix Directory of Recording Schools, Seminars & Programs '85

WEST

THE ASPEN AUDIO-RECORDING INSTITUTE

Box AA, Aspen, CO 81612
(303) 925-3254

Chief Administrator: Dan Craik

An intensive, full-time clinic workshop which helps prepare students for the occupation of recording engineer. Hands-on participation in recording the daily concerts and rehearsals of the Aspen Music Festival is emphasized. Students have full use of professional recording equipment. Conducted in (4) two-week sessions throughout the summer, classes combine work experience with lecture demonstrations by a faculty drawn from noted representatives of the recording industry. Session 1: July 1-14 (Introductory Level), Session 2: July 15-28 (Intermediate Level), Session 3: July 29-Aug 11 (Introductory Level), Session 4: Aug 12-25 (Intermediate Level)

AUDIO CONSULTANT COORDINATION

P O Box 865, Venice, CA 90291
(213) 306-6736

Chief Administrator: Claude Venet, BS, MS, M.Arch

Offered to audiophiles, engineers and architects, our seminars cover acoustics for recording studios, theaters and sound systems design and operation. Curriculum topics include: basic physics of sound, psycho-acoustics, wave propagation, room acoustics, architectural acoustics, noise and vibrations, sound reinforcement systems, noise and vibrations, sound reinforcement systems, electro-acoustics, and electro-acoustical design. Two types of seminars are offered: (1) During one 3-day weekend in 30 hours, (2) Over four weekends in 40 hours. One seminar of either type is offered alternately each month. Either seminar is \$195.00 and includes calculator, class textbook and graduate certificate. Seminars are usually held in Santa Monica, California, and are available worldwide in 4 languages.

AUDIO PRODUCTION TECHNIQUES

4033 Aurora Ave N., Seattle, WA 98103
(206) 632-8300

Chief Administrator: Candace Williams

AUDIO WAVE PRODUCTIONS

1966 Rosswood Dr., San Jose, CA 95124
(408) 559-0558

Chief Administrator: Bruce McIntire

KEARNEY BARTON AUDIO RECORDING SCHOOL

4718 38th Ave N.E., Seattle, WA 98105
(206) 525-7372

Chief Administrator: Kearney W. Barton

The course is for 3 months, 2 nights per week, 3 hours per night. It is entirely hands-on with live performers in all music forms from rock to classical and ethnic. Emphasis is on developing engineer skills; also includes editing & disk cutting. The cost of the course is \$450.00. No prerequisite, with the approach of beginning through advanced training, and only one lecture. The remainder consisting of "learning by doing."

Following is a briefly annotated list of schools and programs offered in the areas of audio and music education, compiled from questionnaires received from those institutions during April and May, 1985. The courses vary greatly in scope, intent and cost and we urge those interested in attending any program to investigate very carefully before making their decisions. *Mix* claims no responsibility for the accuracy of the information provided by the institutions.

three options in the music B.A. program, five certificate programs and a degree minor option. Core requirements for all programs include: lecture and lab courses in audio recording and music synthesis; music production/analysis of recordings, studio electronics/maintenance. Elective courses in music theory, history, physics, computer science and video technology are determined by program option. The 16-track control room features a Soundcraft 2400 console and equipment by 3M, MCI, Otari, Lexicon, Hafler, Carver and Ursa Major. Available synthesis gear includes a Synclavier 2, Yamaha DX7 and Mountain Music system. Inquiries by post/telephone and on-campus visits are invited.

CALIFORNIA STATE UNIVERSITY, LOS ANGELES MUSIC DEPARTMENT

5151 State University Dr., Los Angeles, CA 90032
(213) 224-3348 or 224-3448

Chief Administrator: Michael Fruchter, Recording Instructor
Program: Recording Arts Certificate

COLLEGE FOR RECORDING ARTS

Sponsor: Bi-Cultural Foundation, Inc.
665 Harrison St., San Francisco, CA 94107
(415) 781-6306

Chief Administrator: Leo De Gar Kulka, President
 One year course for recording engineers and others intending on a career in the music/recording industry. C.R.A. is accredited by the National Association of Trade and Technical Schools (NATTS), approved by the California Superintendent of Public Instruction, approved for veteran training, and authorized under federal law to enroll non-immigrant alien students. Semesters start the first full week of June, October, or February. Over ten years of providing quality graduates to the music/recording industry!

THE EVERGREEN STATE COLLEGE

Olympia, WA 98505
(206) 866-6000
Chief Administrator: Terry A. Setter
Program: Multitrack Audio Recording & Synthesis.

FANE PRODUCTION STUDIOS

115-B Harvey West Blvd., Santa Cruz, CA 95060
(408) 425-0152
Chief Administrator: David Gibson

FULLERTON COLLEGE, MUSIC DEPT.

321 East Chapman Ave., Fullerton, CA 92634
(714) 871-8000, ext. 336
Instructor: Alex Cirma

The recording program encompasses 2 semesters of theory and practice in our fully equipped 16-track studio. It covers business practices, sound, microphone techniques, outboard signal processing, monitors, mixing consoles, tape recorders, session production, and hearing conservation. Music business and synthesizer classes are also available. The College is in the process of organizing a certificate in recording/production. Fullerton College is a public community college and is fully accredited by the California State Department of Education and by the Western Association of Schools and Colleges. Contact admissions office for enrollment information.



CALIFORNIA STATE UNIVERSITY
Carson, CA

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS, SCHOOL OF HUMANITIES & FINE ARTS, MUSIC DEPT.

Victoria St., Carson, CA 90747
(213) 516-3543

Chief Administrator: David Champion, Music Dept Chairman; John Hill, Audio Recording; David Bradford, Music Synthesis

CSUDH offers programs in audio recording and music synthesis within its music department (NASM accredited). There are

GABRIEL SOUND & ENGINEERING
833 W. Main St., Mesa, AZ 85202

(402) 969-8663

Chief Administrator: Brent Gabrielsen

Program: Recording Seminars

Four week Recording Studio Techniques Seminar for beginning students. The classes meet twice a week for 2½ hours. Topics covered in the class are: Introduction to the Recording Chain, Sound and Instruments that Produce Sound, Microphones and Speakers, Recording Consoles, Signal Processing, Tape Machines, Student Recording, Student Mix Down. Hands-on experience is stressed. Enrollment is limited to 10 students per class. The total fee for the class is \$150.00.



GOLDEN WEST COMMUNITY COLLEGE
Huntington Beach, CA 92647

GOLDEN WEST COMMUNITY COLLEGE

15744 Golden West St., Huntington Beach, CA 92647
(714) 895-8780

Chief Administrator: Evan Williams

A two-year Recording Engineering Program is conducted in three multitrack recording studios. Students begin recording projects the third week. Advanced students make an annual record highlighting work of student songwriters, arrangers, producers and engineers. A well-rounded understanding of the music industry is developed through courses in music theory, composition, arranging, business management, synthesizer programming and record production. The program has a 10-year track record of graduates fully prepared for entry-level jobs. Entrance to the program is by exam, given annually in August, with the top 80 students accepted. The exam covers basic recording theory, electronics and music theory.

HEAVENLY RECORDING STUDIOS

F.O. Box 2424, Sacramento, CA 95811
(916) 446-3088

Chief Administrator: John Baccigaluppi

Program: Professional Recording Techniques



INSTITUTE OF AUDIO/VIDEO ENGINEERING
Hollywood, CA

INSTITUTE OF AUDIO/VIDEO ENGINEERING

1831 Hyperion Ave., Dept. E, Hollywood, CA 90027

(213) 666-3003, ext. 6

Chief Administrator: J. Fred Munch, director, Larry Cook, administrator.

Program: 524 hour diploma program is a combination of record engineering, sound reinforcement, production video for

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665 Harrison Street, San Francisco, California 94107
Phone: (415) 781-6306

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Los Angeles Recording Workshop

10 Week Recording Engineering Certificate Program

5287 Sunset Boulevard,
Hollywood, CA 90027
(213) 465-4254

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television & film, video editing, audio for video & film, telecine/broadcast engineering, studio maintenance, and internship. In-house facilities include: 24 track recording studio with automated console, 24 track audio sweetening room with Fairlight CMI music computer, video editing bay (3/4 & 1-inch), film to tape transfer system, and audio & video duplicating rooms. Prerequisites: high school grad or equiv for diploma students. Class size: max of 10 in some workshops, 6 in others. Accreditation offered: diploma for those completing entire sequence. Certificate for those completing individual classes. Cost of individual classes: \$95 to \$595, diploma program: \$4,915. New classes start approximately every ten weeks. The institute is approved by the California State Dept. of Education. All instructors are working professionals and have state authorization to teach. Call or write for free brochure.

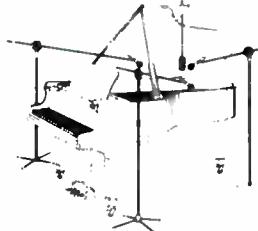
KUNV

4505 Maryland Parkway, Las Vegas, NV 89154
(702) 739-3877
Chief Administrator: Neyesah Abiku

LANEY COLLEGE, MEDIA COMMUNICATIONS DEPT.

900 Fallon St., Oakland, CA 94607
(415) 834-5740
Chief Administrator: Bill Hutchinson

Los Angeles Recording Workshop



LOS ANGELES RECORDING WORKSHOP
Hollywood, CA

LOS ANGELES RECORDING WORKSHOP

5287 Sunset Boulevard, Hollywood, CA 90027
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Chief Administrator: Christopher Knight

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MEDIA SCIENCES INSTITUTE

3465 El Cajon Blvd., Box 4678, San Diego, CA 92104
(619) 280-7454

Chief Administrator: Richard Bowen

□ Media Sciences Institute is a state approved school with the following courses available: Audio Engineering, Video, Electronic Music, Record Production, Acting, Studio Maintenance, and Music Theory. All classes are held in a state-of-the-art 24-track studio facility. For admittance information and a catalog, please mail to above address.

MELON STUDIO

286 Divisadero St., San Francisco, CA 94117
(415) 552-0600

Chief Administrator: Steve Rosen, Robin Woodland
Program: Hands-On Recording Workshops

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MILLS COLLEGE

Box 9991, Oakland, CA 94613

(415) 430-2191

Chief Administrator: Maggi Payne, instructor
Program: Sound Techniques 161-162, 261-262

MIRACOSTA COLLEGE, MUSIC DEPARTMENT

One Barnard Dr., Oceanside, CA 92056

Chief Administrator: Dave Megill, studio recording, John Gordinio, music video
Program: Studio Recording and Music Video Programs

MT. HOOD COMMUNITY COLLEGE

26000 SE Stark, Gresham, OR 97030

(503) 667-7410

Chief Administrator: John M. Rice
Program: Radio Production Technology

MUSICIANS INSTITUTE

6757 Hollywood Blvd., Hollywood, CA 90028

(213) 462-1384

Chief Administrator: Pat Hicks

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4230 Leary Way N.W., Seattle, WA 98107

(206) 783-3869

Chief Administrator: William Stuber

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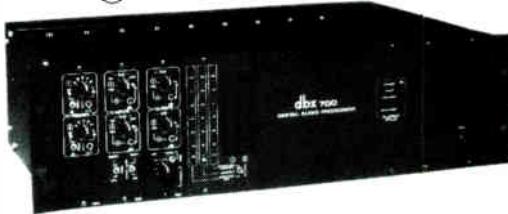
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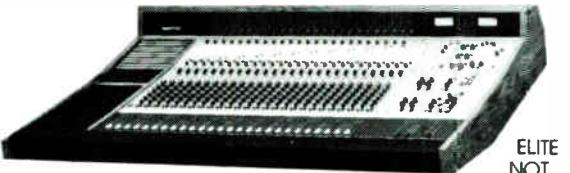
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P O Box 683, Kentfield, CA 94914
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Program Fred Cato's "Everything About Recording" and
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Program Recording Techniques and Technologies

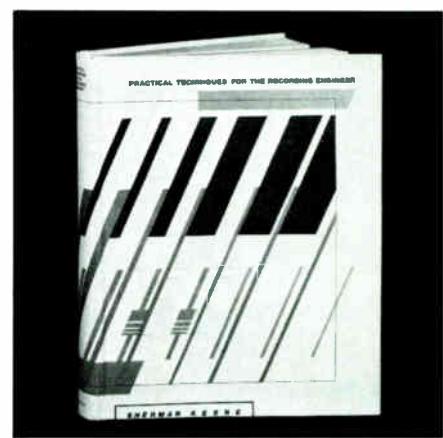
POEMA STUDIOS
P O Box 651, Camarillo CA 93010
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We publish a complete curriculum for individuals, schools or recording studios wishing to teach the study of sound and recording engineering. Already in use by over 75 universities, colleges and studios throughout the world. Includes two textbooks, Teacher's Manual, Answer Key, Student's Workbook and Final Exams. Teacher's Manual - complete lesson plans for a two textbook, 24 module course in three levels. Progressively intensive coverage. Homework/verbal review questions for each module, suggested session content for studio work. Three comprehensive final exams. Keene Textbook over 250,000 words of real, practical, useful content. Covers all specialized information while Runstein's book covers conventional subjects. Write for more information.

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Chief Administrator John Hildebrand
Program: Recording Techniques Program

UCLA UNIVERSITY EXTENSION
PERFORMING & INTEGRATED ARTS DIVISION
Rm 414, UCLA Extension, 10995 Le Conte Ave., Los Angeles, CA 90024
(213) 825-9064
Chief Administrator: Ronnie Rubin
Program: Professional Designation in Recording Engineering

UNIVERSITY OF ARIZONA, SCHOOL OF MUSIC
Tucson, AZ 85721
(602) 621-1655
Chief Administrator: Dr. Robert Werner, director

UNIVERSITY OF SOUTHERN CALIFORNIA
MUS 318, Los Angeles, CA 90089
(213) 743-2627
Chief Administrator: Richard McIver
Program: Recording Arts Workshop

CENTRAL

BOWLING GREEN STATE UNIVERSITY
COLLEGE OF MUSICAL ARTS
Bowling Green, OH 43403
(419) 372-0405
Chief Administrator: Dr. Burton Beerman; Mark Bunce, engineer
Program: Electronic Music/Recording Studio

CAPITAL UNIVERSITY
CONSERVATORY OF MUSIC
2119 E. Main St., Columbus, OH 43209
(614) 236-6474
Chief Administrator: Larry L. Christopherson
 Bachelor of Arts degree with a major in commercial music is a new, four year program designed to provide undergraduates with a solid base of traditional and commercial musical training. This music core is supplemented with extensive studio recording techniques taught in conjunction with "the Recording Workshop" in Chillicothe, Ohio (see ad in this section) and career preparation electives in business administration, computer science, or radio and television broadcasting

CEDAR VALLEY COMMUNITY COLLEGE
3030 N. Dallas Ave., Lancaster, TX 75134
(214) 372-8120



Chief Administrator Dr. M. Davidson, chairperson of Div. of Com/Hum
Program: Commercial Music Recording Technology (2 year Associate's degree)

This two-year program is designed to provide the technical and musical skills necessary in the field of recording technology. In addition to preparing the student in vocal and instrumental commercial music techniques, training is provided in basic recording skills such as microphone selection and placement, mixdown techniques, master tape production, studio techniques; trouble shooting, and session procedures. Emphasis is placed on the specific needs of the commercial musician in the field of recording

CENTER FOR MUSIC BUSINESS STUDIES
110 Schiller, Suite 205, Elmhurst, IL 60126
(312) 279-8325

Chief Administrator Paul Kelly, director
 Professional school for the music industry—Certificate Programs in Music Business and Audio-Video Production; Diploma in Music Business Studies, Study Tours to Los Angeles, Tokyo, London, and New York, Hands-on experience in state-of-the-art production and editing facilities. The Center is approved by the Illinois State Board of Education and requires a high school diploma or equivalent for admission. Work-study and financing plans available. Contact Gracie Bittner for enrollment applications, general information, and seminar reservations

CENTRAL STUDIOS—CENTRAL HIGH SCHOOL
275 North Lexington, St. Paul, MN 55104
(612) 645-9217

Chief Administrator Ben James, studio manager
 Central Studios is a multitrack studio for secondary vocational students. Instruction is offered in 2-track, 4-track, and 16-track recording, as well as training in popular music ensembles, songwriting, theory and composition, radio-playwriting & improvisation. Equipment includes 24x16 Tanger Board, Tascam 8516 Deck, loads of outboard, Prime Time, Echo-Plate Two, and Ampex ATR700

CHAPMAN RECORDING WORKSHOP/CHAPMAN RECORDING STUDIOS
228 W. 5th, Kansas City, MO 64105
(816) 842-6854
Chief Administrator Chuck Chapman

COLUMBIA COLLEGE CHICAGO
600 South Michigan Ave., Chicago, IL 60605
(312) 663-1600
Chief Administrator Al Parker, Chairman, Broadcast Communications

Sound Engineering is offered in a three-semester sequence. Sound Engineering I deals with electronics, the basics and language of recording. Sound Engineering II is taught in a multi-track professional recording and film studio, where each link of multi-track recording chain is explained and demonstrated as our entry level skills such as editing and production work. Sound Engineering III is split into small teams, each required to set up, record and mix a professional quality session. Each team is allowed 20 hours studio time, with professional engineers available to assist at all times. A certificate is issued upon successful completion of the course.

Additional sound related courses are offered in the Arts and Entertainment Management Department, such as Fundamentals of Record Production I/II, The Record Producer/Arranger, Survey of the Recording Industry and Career Opportunities in Music, Art & Business of Recording I/II, Music and Sound Industry Marketing, Record Production in the Studio, Decision Making in the Record Business, Music and Sound Industry, Retail Sound courses are also offered in the Film Department such as Sound Studio, Sound Technique and Introduction, and Special Seminar The Mix in Music and Sound Effects Editing

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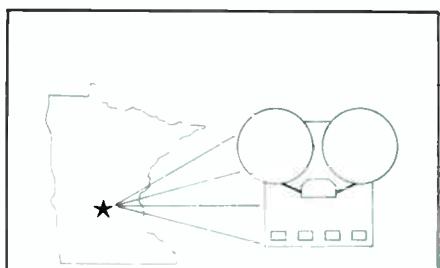
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Chief Administrator: Warren E. Macemon
Program: Audio Tech

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INDIANA UNIVERSITY, SCHOOL OF MUSIC

Bloomington, IN 47405
(812) 335-1613 or 335-1900

Chief Administrator: Ted W. Jones, Director of Technical Studies; David A. Pickett, Director of Recording Arts

Program: Associate of Science in Audio Technology

□ The Associate of Science in Audio Technology offers training in audio recording, reinforcement, and media production. Courses in audio techniques, equipment operation-maintenance, acoustics, electronics, and musical styles stress practical experience and aural awareness. Professional equipment includes 2-track digital and up to 16-track analog. Over 900 concerts are produced annually in a 500-seat recital hall and the 1460-seat Musical Arts Center, one of the most advanced opera and concert halls in the country. Audio Technology courses can be used also in the Bachelor of Science in Music and the Bachelor of Arts, Individualized Major. Apply to the Music Admissions Office.

JEWEL RECORDING COMPANY

1594 Kinney Ave., Cincinnati, OH 45231
(513) 522-9336

Chief Administrator: J.R. Bennett

Program: Audio Engineering

□ Our main goal is to give you the highest quality instruction in a short term course. Each student can learn the "how-to's" of editing, splicing, mixing, soldering, alignment and many other aspects of



recording, and mixing on our equipment. You will work in a state-of-the-art 24-track studio equipped with MCI, Studer, Neumann and top quality tape machines, dbx noise reduction on all channels. Also offered is a 2 week course for out of town students.

LAKELAND COMMUNITY COLLEGE, MUSIC DEPARTMENT

Mentor, OH 44060
(216) 953-7000

Chief Administrator: Dr. James Catanzaro, President
Program: Recording Studios Studies

□ Lakeland Community College is responding to the need for professional recording preparation by offering a unique series of recording studio courses. These courses offer "hands on" experience in a professional recording studio where state-of-the-art equipment and facilities are available. They cover the basics of technical operation and care of professional recording equipment as related to the production involving musical artists in the recording studio. Three successive courses in production deal with a survey of the facility, recording techniques, related business aspects of recording, broadcast advertising and approaches to music production styles for records. Three additional courses in engineering deal with the basics of technical operation and care of professional recording equipment as well as the use of this equipment in professional production.

L.B.J. HIGH SCHOOL, INDUSTRIAL VIDEO TECHNOLOGY
7309 Lazy Creek, Austin, TX 78724
(512) 926-7983
Chief Administrator: James A. Albright, III
Program: Audio and Video Production

LINCOLN INSTITUTE

7622 Louetta Rd., Spring, TX 77379

(713) 376-9679
Chief Administrator: J.E. Lincoln, Program Director
Program: Audio and Video Engineering

□ The Lincoln Institute offers a complete two-year curriculum in audio/video recording arts. Located near Houston, TX, the multi-track facility uses state-of-the-art equipment to instruct audio engineering and video technology in a three-camera production studio using broadcast quality video equipment. Digital synthesizers and editing, audio for video, audio sweetening, A/V synchronization, computer graphics, MIDI interfacing and total production with emphasis on hands-on. Texas Education Agency approved curriculum includes electronics, music theory, and detailed support courses in music business operations. Professional staff. Reasonable tuition and fees. Write or call for informative brochure.

McLENNAN COMMUNITY COLLEGE
Waco, TX

McLENNAN COMMUNITY COLLEGE
COMMERCIAL MUSIC DEPARTMENT

1400 College Dr., Waco, TX 76708

(817) 756-6551

Chief Administrator: David Hibbard, Director of Commercial Music Program

Program: Audio Technology

□ A comprehensive degree program in Audio Technology, part of the McLennan Community College Commercial Music Program. Students will study all aspects of sound, acoustics, production, engineering and music business. Learn to work in our new state-of-the-art 24-track analog-digital studio, engineering and producing actual sessions with country, rock, jazz and classical groups. Fully accredited degree includes approximately 480 hours of studio experience, a portfolio of your recordings, music theory, performance and music business training. For more information contact Program Director, Commercial Music Program, McLennan Community College, Waco, TX 76708 (817) 756-6551.

MIDLAND COLLEGE

3600 North Garfield, Midland, TX 79701

(915) 684-7851, ext. 202

Chief Administrator: Ron Franklin

Program: Audio Technology

MILLIKIN UNIVERSITY, SCHOOL OF MUSIC

1184 W. Main St., Decatur, IL 62522

(217) 424-6300

Chief Administrator: Dr. A. Wesley Tower, Dean; Stephen L. Beck, Director of Commercial Music

Program: Bachelor of Music - Major in Commercial Music

□ The Bachelor of Music degree with a major in Commercial Music is a new, four-year program of study designed to provide undergraduates with a solid base of traditional and commercial music training, complemented with extensive course work in audio recording engineering and production techniques, specific training and practical experiences in composing, arranging and performing; and, extensive laboratory experience in the 24 track recording studio.

The commercial music recording studio features an MCI 636 recording console, MCI JH24 24 track recorder with A/L III, and two MCI JH10 2 track mastering recorders. Complementing the major equipment is JBL monitoring with Yamaha power amps, Echo-plate reverberation, signal processing equipment by coax, Audioarts, Omni-craft, UREI, White, Dolby, and, microphones by

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MINOT STATE COLLEGE
Minot, ND 58701
(701) 857-3186
Chief Administrator: Robert Larson
Program: Recording Arts Minor

NORTHEAST TECHNICAL COMMUNITY COLLEGE
801 East Benjamin Ave., P.O. Box 469, Norfolk, NE 68701
(402) 371-2020
Chief Administrator: Timothy Miller
Program: **Audio and Recording Technology**
Offering a two-year Associate of Arts and/or Associate of Applied Science in Audio and Recording Technology. The Audio and Recording Technology Program is a balanced mix of music, audio theory, application and hands-on experience in a recently updated control room and sound studio. NTCC is accredited by the North Central Association of Colleges and Schools and the Nebraska State Department of Education.



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(312) 336-OPUS
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Program: **Recording, Engineering & Acoustics**

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ing, audio/visual productions, acoustics, microphone techniques, tape recorder maintenance, peripheral equipment. Our students have graduated to become sound and broadcast engineers in radio, recording studio, and TV industry.

PURDUE UNIVERSITY
B-10 Stewart Center, W. Lafayette, IN 47907
(317) 494-8150

Chief Administrator: Rick Thomas
Program: **Broadcast Sound and Theatre Sound Design**

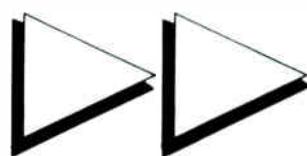
RECORDING INSTITUTE OF DETROIT, INC.
14611 E. 9 Mile Rd., E. Detroit, MI 48021
(313) 779-1380

Chief Administrator: Robert Dennis
Established in 1976, The Recording Institute of Detroit is licensed by the Michigan Dept. of Education. The school is a member of the Michigan Organization of Private Vocational Schools and Michigan Chamber of Commerce. The program consists of two classes, 93 hours of class time in a fully-equipped 24-track, automated recording facility. A 90 hour recording internship is available to A students. Credits transferable to Institute of Audio & Video Recording, L.A. Total program cost \$1090, including materials. Eleven starting dates each year.

THE RECORDING WORKSHOP
Licensed by Ohio State Board of School & College Registration 455 Massieville Rd., Chillicothe, OH 45601
(614) 663-2544, (800) 848-9900

Chief Administrator: Jim Rosebrook, Director
Founded in 1971, The Recording Workshop is dedicated to teaching the creative operation of professional recording equipment. The Workshop's primary goal is to prepare qualified assistant recording engineers, but the training is also very useful for the aspiring recording artist or producer. The main program offered is the Recording Engineering and Music Production Workshop. Its curriculum is an effective combination of in-depth lectures and extensive hands-on experience in the Workshop's well equipped, 5-studio recording complex. Classes for this intensive program start seven times annually.

To supplement the main program, two optional programs are available: The Studio Maintenance and Troubleshooting Workshop, and The Music Video Production Seminar. In addition,



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Chillicothe, OH

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SOLID SOUND RECORDING STUDIO

2400 W. Hassell Rd., Suite 430, Hoffman Estates, IL 60195

(312) 882-7446

Chief Administrator: Judd Sager

Program: Recording Engineering classes in an automated 24-track studio

SOUTH PLAINS COLLEGE

1401 College Ave., Levelland, TX 79336

(806) 894-9611, ext. 271

Chief Administrator: Randy Ellis

Program: Sound Technology

□ South Plains College's two-year sound technology program awards an associate in applied science degree. The program trains students in recording engineering, sound reinforcement, sound and recording equipment repair and maintenance. Facilities feature a scientifically designed control room and Waylon Jennings Recording Studio, a 16-track studio with the latest MCI multitrack, 18-channel console and 2-track. On line this year is a new 8-track mobile recording studio with 8-track Tascam gear and SMPTE synchronizer for video; and two 4-track studio learning modules. Studio is fully equipped with other professional gear. Courses taught in fall and spring. For information, contact South Plains College at the above address.

STUDIO PRODUCTION TECHNIQUES

P.O. Box 741444, Dallas, TX 75374

(214) Hands-On (426-3766)

Chief Administrator: Terry Pope

Program: Studio Production Techniques

□ General function: private school for audio and video education and music producing. Also available: consultation for high school and college music programs including courses on video. Private and public seminars. Course description: a 100-hour course in basic audio engineering and music production, with emphasis on 'Hands-On' experience. Each class limited to 10 students, each of whom mixes on their own separate professional console. Designed for anyone interested in multitrack recording technology, live sound mixing, music producing, equipment maintenance, and business tools for the audio and music industry. Each class visited by top industry engineers or recording artists. Cost includes books, materials, housing and meals. Also available: advanced level audio course and video courses. No previous experience needed. Courses available in Dallas, Tulsa, and Nashville. Free brochure available upon request.

TEXARKANA COMMUNITY COLLEGE

RECORDING STUDIO SCHOOL

2500 North Robison, Texarkana, TX 75501

(214) 838-4541

Chief Administrator: Dr. Murry Alewine

THE UNIVERSITY OF IOWA

RECORDING STUDIOS, SCHOOL OF MUSIC

2057 Music Building, Iowa City, IA 52242

(319) 353-5976

Chief Administrator: Prof. Lowell Cross

UNIVERSITY OF TEXAS, MUSIC LANE RECORDING

P.O. Box 3829, Austin, TX

(512) 447-3988

Chief Administrator: Lynn Gathright

Program: Recording Engineer Internship



UNIVERSITY OF WISCONSIN, DEPARTMENT OF MUSIC

Oshkosh, WI 54901

(414) 424-2273

Chief Administrator: Dr. Thomas Neice

Program BM Music Merchandising: Recording Technology

EAST

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3625 5th Ave. S., Birmingham, AL 35222

(205) 595-8497

Chief Administrator: Noah White

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222 Waverly Ave., Syracuse, NY 13210

(315) 423-3477

Chief Administrator: William D. Storn

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1140 Boylston St., Boston, MA 02215

(617) 266-1400

Chief Administrator: Don Puluse

Program: Music Production & Engineering

□ Music Production and Engineering is the 1st program of its kind in the United States. Our goal is to provide the music industry with highly skilled, disciplined and responsible producers/engineers. Students receive extensive hands-on training and individual instructor-assisted time in the college's six professionally equipped recording studios, culminating in individual productions of studio-quality master tapes. Courses are designed to teach acoustics, recording technology, business procedures and sound production for records, film and TV soundtracks and commercials. Berklee is an accredited college and offers degree and diploma programs.



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New York, NY

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(212) 807-6670

Chief Administrator: Dean Harry Hirsch

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432 Western Ave., Albany, NY 12203

(518) 454-5178

Chief Administrator: J. Robert Sheehan, chairman; M.A. Nelson, director.

Program: Studio Music

□ The College of Saint Rose's Studio Music program leads to a B.S. degree in Music with a concentration in Studio Music. The studio music component focuses on strong musical performance, writing, arranging and improvisation, as well as studio production, recording technology, and television production. Admission by audition. Catalog and application information: CSR Admissions Office, 432 Western Ave., Albany, NY 12203, (518) 454-5150.

EASTERN ARTISTS RECORDING STUDIO (EARS)

36 Meadow St., East Orange, NJ 07017

(201) 673-5680

Chief Administrator: Leslie Ballard

Program: E.A.R.S. AEC (Audio Engineering Course)

□ The E.A.R.S. Audio Engineering Course is offered in two levels. Level I is introduction to multi-tracking, level II consists of advanced engineering and mixing techniques. Each class is 2 weeks in duration, and is held in the studio during weekend hours. The E.A.R.S. AEC features a hands-on approach to teaching skills necessary to become an engineer. Students will get in-depth experience in techniques involving microphone technique, console routing, tape machine operation, effects patching, mixing and editing. Classes restart every 12 weeks and are limited to no more than nine students. Applications are available upon request and should be submitted 1 month prior to the start of class.

FULL SAIL CENTER FOR THE RECORDING ARTS

660 Douglas Ave., Altamonte Springs, FL 32714

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Digital

REVERB

PART THREE

setting the stage

by Larry Oppenheimer

The Mix Digital Reverberation Roundtable, held on May 4, 1985 in the Coronado D Room of the Disneyland Hotel at the 78th Audio Engineering Society convention in Anaheim, California, consisted of half-a-dozen professionals who play a significant part in the world of digital audio, but on the whole don't talk about it a lot. Not the company founders, not the marketing directors; but the design engineers that directly translate their visions into the tools that we use daily with scarcely a thought to the Edisonian genius (2% inspiration and 98% perspiration) that went into their creation. These men (and the companies they work for) graciously agreed to take several hours to talk about their work and views on the subjects of digital reverb and signal processing.

The discussion proved to be so interesting that it was decided one article could not do it justice. For this reason, the roundtable will be presented in two parts. In this part, the stage will be set: the cast of characters will be introduced, and their basic viewpoints established, plus a few details of the recording method will be explained (see sidebar). In the next part, we will get into the discussions that took place in greater depth.

THE PARTICIPANTS

There are probably only a

few dozen people in the world who are or have been seriously involved in digital reverberation research and development. The six attendees represented a good cross-section of these engineers:

ANTHONY AGNELLO

Eventide

Agnello has been at Eventide since their early days, more than 12 years ago. He received his B.S. and M.S. degrees, both in Electrical Engineering (EE), from City College of New York. While working on his master's he also worked as a recording engineer, but the studio life didn't agree with him. Agnello encountered Richard Factor (founder of Eventide) after hearing of his shift-register-based delay line. At the time, Agnello had a good background in signal processing, but little background in manufacturing. He joined Eventide and brought them the device that became the H910 Harmonizer. He learned at Eventide, and went on to design the later H949 from top to bottom, including the PC artwork. Agnello is also responsible for the SP2016 Effects Processor/Reverb. He has most recently been heading the development of the Signal Processor User Development (SPUD) system, which enables sophisticated users and third party developers to write their own reverb and effects programs for the SP2016.

JEFFREY BORISH

The Droid Works, Lucasfilm Ltd.

Dr. Borish served as a wild card; he was the only one at the table not connected with a commercial digital reverb manufacturer. However, SoundDroid, the machine Borish is currently working on at the Droid Works, is a far more powerful and sophisticated digital signal processor which is capable of performing reverb and several other processing functions simultaneously in real-time. Borish comes by his technology honestly, having received a B.S.E.E. from Massachusetts Institute of Technology, an M.S.E.E. from Stanford, done a stint designing consumer audio ICs at Fairchild Semiconductor, and another designing digital signal processors at Sound Technology, before returning to Stanford for his PhD in EE. While at Stanford, Borish did work on digital reverberation at the Center for Computer Research in Music and Acoustics (CCRMA), culminating in his dissertation on electronic simulation of auditorium acoustics. Shortly after receiving his PhD in 1984, Borish joined the Droid Works.

DAVID GRIESINGER

Lexicon, Inc.

Griesinger has approached the problem of digital reverberation from his background as a musician, recording engineer, and physicist. He received his B.S., M.A. and his PhD in low energy nuclear physics from Harvard, where he has since remained involved teaching electronics and physics. His recording career has centered around recording classical and other acoustic music, particularly early music, and he has made recordings for Noneuch, and Sheffield and Harmonia Mundi France, among others. Griesinger was responsible for creating the machine that became the Lexicon 224 and served as the basis for all of their reverbs, all of which he has written the software for, as documented in Part One of this series. Having published one article on digital reverberation in the late 70s, Griesinger continues his investigations into that area and into microphones, another of his great loves.

GARY HALL

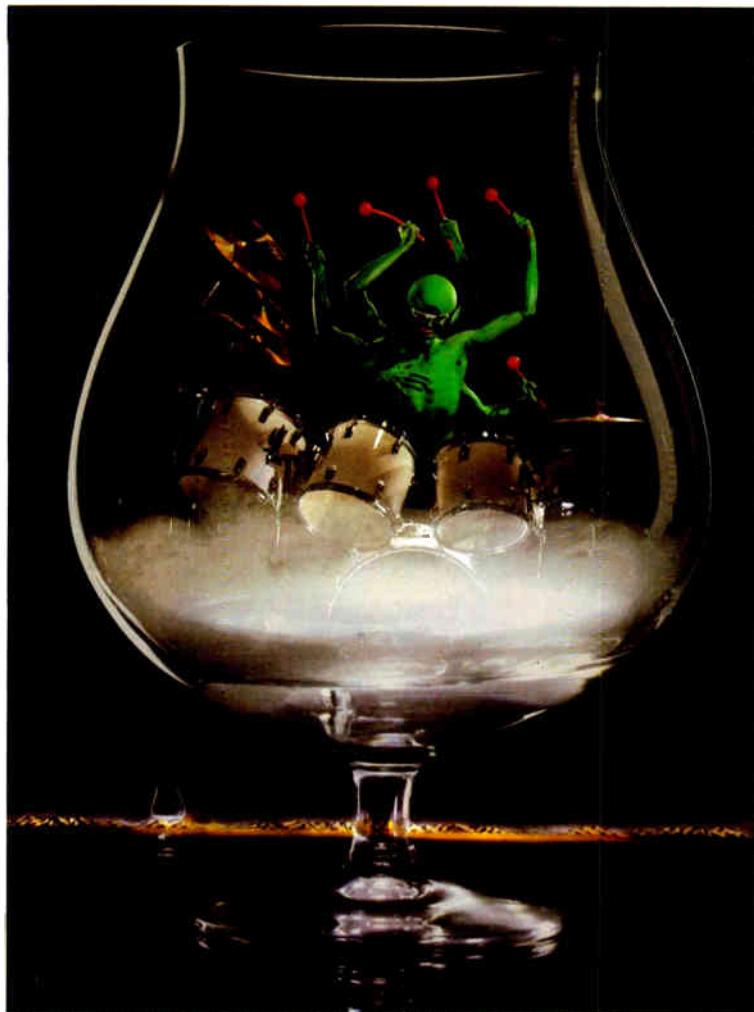
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World Radio History

his base in the New York City area he sees a lot of users and applications in the field, sometimes a difficult thing for an engineer to get out of the lab and do. Previous to Sony, Hall worked for seven years at Lexicon, Inc. and was involved with the development of the 224 and the 224X. Additionally, he did hardware and software design on products and marketing work during digital reverb's formative years (yet more field experience). Although he has attended several schools, including Berklee College of Music, the ill-fated Boston School of Electronic Music, and MIT's Lowell Institute School, he has managed to avoid receiving a degree. His orientation as a synthesist, computer musician, and part-time iconoclast provided a good contrast to some of the others. Hall is the author of Part Two of this series.

CHRISTOPHER MOORE

Ursa Major

Moore is the founder and president of Ursa Major, having started the company in 1978. After receiving his B.S.E.E. from Yale and teaching electronics at a school in Vermont, he joined KLH and designed tape recorders, receivers, and other consumer audio products. Four years later, he joined Lexicon's fledgling engineering staff at a time when they were just becoming seriously involved in the pro audio market; it is safe to say that both parties benefited from the association. As there were only eight people in the company at the time, Moore did a variety of tasks as a project engineer, including circuit design, product specification, package design, and marketing. He worked at Lexicon for four years on products like the Delta-T 102 and 92 delays, and the Varispeech 2 (a combination variable-speed cassette player and compensatory digital pitch-shifter which anticipated the technology used in the later Model 1200) before leaving Lexicon to pursue his own ideas in 1977. Since founding Ursa Major, he has designed the Space Station, the 8x32, and the recent Star Gate series of digital reverberators and ambience processors.

RICHARD NEATROUR

Applied Research and Technology (ART)

Neatrour is currently vice president of engineering at ART, and has been responsible, along with long-time associate Tony Gambacurta, for the development of the O1a and the new DR2 digital reverbs. After graduating with his B.S.E.E. from Rochester Institute of Technology in 1972, Neatrour encountered

Keith Barr and Terry Sherwood and their newly-formed Rochester Audio Services (RAS), a PA, audio repair and customization service. About the same time, Gambacurta also joined RAS, which mutated in 1974 into MXR Innovations. Neatrour worked as a project engineer at MXR until 1978 when he became chief engineer. During this period he worked on virtually all of the product line, including preamps, EQs, flangers, delays, choruses, and, of course, the original O1 reverb (for which Keith Barr was primarily responsible), which was the first digital reverb in the \$1,500 price bracket. In 1984, MXR broke up, and ART was formed from the ashes. Neatrour and Gambacurta continue to work together closely at ART on product development.

'What do you want from life?'

—The Tubes

In Parts One and Two of this series, the idea was put forth that digital reverberation design is still a relatively new, complex, and not as yet formalized combination of technical knowledge, intuition, a good "ear," and a lot of research work (not necessarily in that order). Consequently, only a small number of people have gotten involved with the work, and each has approached the problem with his or her own very individual ideas of what's good and how to go about getting it. This provided the framework within which the discussion took place.

Keep in mind that the participants are design engineers, and, as such, often think in a conceptual fashion, eventually fitting their concepts into the real world's limitations and making them into actual products. To start off the discussion, each participant was asked to talk a little about their motivations for getting involved in digital reverberation, and their approach to the subject.

David Griesinger: I was looking for a way of getting what I would now probably call spatial impression on a recording that lacked it. The only way I knew how to do that at the time was working with various kinds of microphone techniques in real spaces. The real spaces frequently weren't very good, resulting in more muddying of the sound than getting a convincing sense of envelopment or reverberation if you want to call it that, and consequently I thought that what I needed was a reverberator. Now I think maybe I don't need a reverberator, after working on it this long.

Mix: What might you need?

David Griesinger: I don't know. But

I'm saying that the field is still open, in my opinion; there's plenty of work that hasn't been done. Anyway, it was because I wanted to get a hall sound on tapes that I started developing the thing, and I was initially very satisfied with the results. Not very satisfied, but happy enough that I was really glad I'd done it.

This goes into the history of the algorithm a little bit. It took a long time to find the algorithms I first started using, what we call the (Lexicon) 224 hall sounds. (These) were a set of algorithms that nobody's published so far, so I won't talk about them, but the characteristic that they have is a rising diffusion as a function of time. That is to say, if you put a click into it, you can get a few discrete clicks out, or it may sound that way, but the diffusion builds with time, first slowly and then faster and faster, so that you get an exponential increase in diffusion with time. In the original hall algorithms, the rate of increase of diffusion is roughly like that of a room, and, unlike a Schroeder-type algorithm or parallel comb or something like that, instead of building up to some maximum and then holding it at that maximum until the sound decays, it keeps building until, about 200 to 300 milliseconds into the decay, it's high enough that it's not discrete anymore at all, and it keeps rising from there.

What does it mean to keep rising from there? What it means really is that by that time, you can't really look at it as a time process anymore, it's strictly a frequency process. Beyond that point, if you're talking about reverberant modes, the only reasonable way to describe those is in frequency space rather than time space. You can describe things like the rate of decay of those frequency modes with frequency, but you can't talk about impulses or discrete behavior anymore.

I'm not saying this is good. I'm just saying that this was the first thing I ran across that sounded at all reasonable, and I'm not even sure I'd be willing to defend it at this time. I don't use those algorithms anymore because they have other problems which are fairly serious.

Christopher Moore: My motivation was to see what could be done at the lower-cost part of the product spectrum. When I started work on the Space Station, the only alternatives were the original EMT (250) design, and I think maybe there was a Quad Eight unit that was around (unfortunately, it was erroneously stated in the May Mix that this product never came to market,) and they were both



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We tried to look enthusiastic. "Well, maybe it would help if you could just give us a few examples of these effects," we said.

"Good idea," they said. "One of the neat things the unit does is produce forward

and backward discrete repetitions. Then there's a traditional 'comb filter' stereo synthesis. And delay-based panning. And binaural image processing for Walkman applications. And delay clusters. And concert hall early reflections."

"That's better," we said. "We've probably got enough to do a pretty good ad for you. Before we go, though, you probably ought to run us through a quick demo. That might help if we get stuck for the right word to describe what the effects sound like."

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So we listened. Then we walked over to the typewriter, rolled in a blank sheet of paper, and typed a headline that seemed to say it all:

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in the vicinity of \$7,000 to \$12,000, or even \$9,000 to \$12,000, and I'd had this crazy idea of an algorithm that could be realized with lower cost hardware; that was the inspiration that led to the Space Station. The desire was to give an alternative much cheaper, and at that time, the Space Station was, at \$2,000, a sixth or a seventh of an EMT (in cost), and the algorithm was so much simpler that it didn't really require a digital number cruncher, a digital signal processor; it was done in a hybrid structure, using multiplying DACs and things. The curious thing about that algorithm is that it does have a rising echo density. It takes off like crazy. It takes

a little while to get going, but once it gets going it becomes very, very high.

That's really continued to be my motivation; I've oriented the products towards providing a lower-cost alternative in the market.

Mix: And you feel like the hardware is where those limitations have really hinged?

Christopher Moore: It has, yeah. I think that by this time, the digital realization of these products has the advantage in terms of cost and flexibility once they're designed. So the multitapped feedback architecture of the Space Station is not something I'll carry forward beyond the present products.

Mix: But in aural terms, what was the kind of sound that you were looking to hear and found acceptable?

Christopher Moore: I was after something which would sound as similar as it could to being in a real architectural acoustic space. That was the criterion in judging each thing: that the decay be smooth, the echo density be high enough to be convincing, the stereo perspective be sufficiently incoherent so that it sounded as if you were in a real space.

Anthony Agnello: Really, for me it started back in 1975. I was working on the design of a delay line for Eventide, and also doing some recording at night. We owned a studio with a couple of EMT plates and we had a small acoustic chamber at that time, which soon became a closet. I remember having delay lines in the studio: we'd actually started manufacturing the things. I was testing them in the studio—we had stacks of them—and just got interested in reverberation in general from using it. The difference between the chamber and the plate was marked. I went back to old AES journals, found the Schroeder algorithms, and actually set up Schroeder algorithms with six Eventide delay lines: adjusting delays according to Schroeder, bringing the outputs back through the board and doing the mixing there. Comparing it to a plate, it sounded dreadful.

It was obvious what was happening to this extent; either a room or a plate is really an infinite process. Any of these digital machines are really an attempt to use a decidedly finite device to fool the ear into thinking that it's hearing an infinite process. It seemed to me that there were a lot of possibilities, but it wasn't really clear to me what they might be.

I was using a 16-input console at that time, and I had to actually wire pots around the inputs and outputs to get the all-passes, because there was no clear way to do that at the console. I said to myself, "This is not the way to do this, even with unlimited studio time." At that point I decided that what I really wanted was a computer to play with this process.

Really, my motivation was that Schroeder's algorithms sounded so bad compared to a room or a plate, or even a spring, because a spring is again an infinite process; while its frequency characteristic is horrible, the echo density builds up more like a room does than like Schroeder's box does.

David Griesinger: More like a room does than a plate, in fact. A spring is a reasonably good one-dimensional analog of a room.

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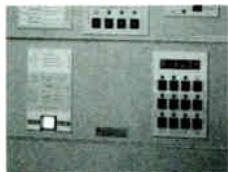
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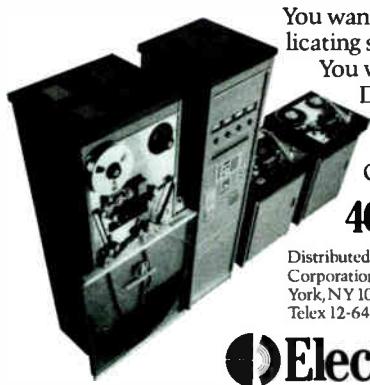


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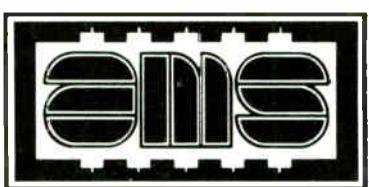
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Gary Hall: My orientation was processing of sounds for creative purposes, and toward that end, not necessarily thinking about always being totally natural or emulating a "natural" space, but that all of that has to be firmly under control in order to be able to manipulate the psychoacoustic cues that everybody's computer between the ears has got built into it. Those (naturalness and emulation of natural spaces) are very important points, but for my type of work, those tend to function as jumping off points and things to cue on. A point that came to mind when Chris was talking about sounds as being natural and being like a room—it's always struck me as a little bit funny that 400 tons or so of marble, concrete, wood, paint, and so on, to make a concert hall, could be called a natural situation.

David Griesinger: I'd like to point out that Gary was really largely responsible for the effects sounds that are currently in the (Lexicon 224)XL. I want to give him credit. In so far as the XL is an unnatural device and does that type of thing well, that has a lot to do with Gary's input.

Gary Hall: Say it loud, say it proud.

Jeffrey Borish: I guess I'm sort of the ringer here, in so far as I've never been commercially involved in reverberation. At the present I'm not really involved with reverberation in any way, shape, or form, but in my previous lifetime I did do quite a bit of research into the fundamental properties of reverberation; this was when I was a researcher at Stanford.

I had two motivations for the work that I performed there. On the one hand, I was interested in developing techniques that simulated the acoustics of concert halls with greater precision than had been possible in the past. The idea was that these techniques would make it possible for architectural acousticians to pre-audition designs of concert halls, so that they could detect any acoustical deficiencies before correcting them became expensive. In the course of that research I developed some fairly sophisticated computer models, and some new signal processing techniques that made it possible to recreate more of the aspects of reverberation than we'd been able to recreate before that time. It's a very laborious technique, and doesn't seem to have any obvious commercial applications, but it did seem to be fairly successful for that particular objective.

The other motivation that I had was along a more commercial line. In the course of the work that I was doing, investigating the fundamental characteristics of reverberation, I

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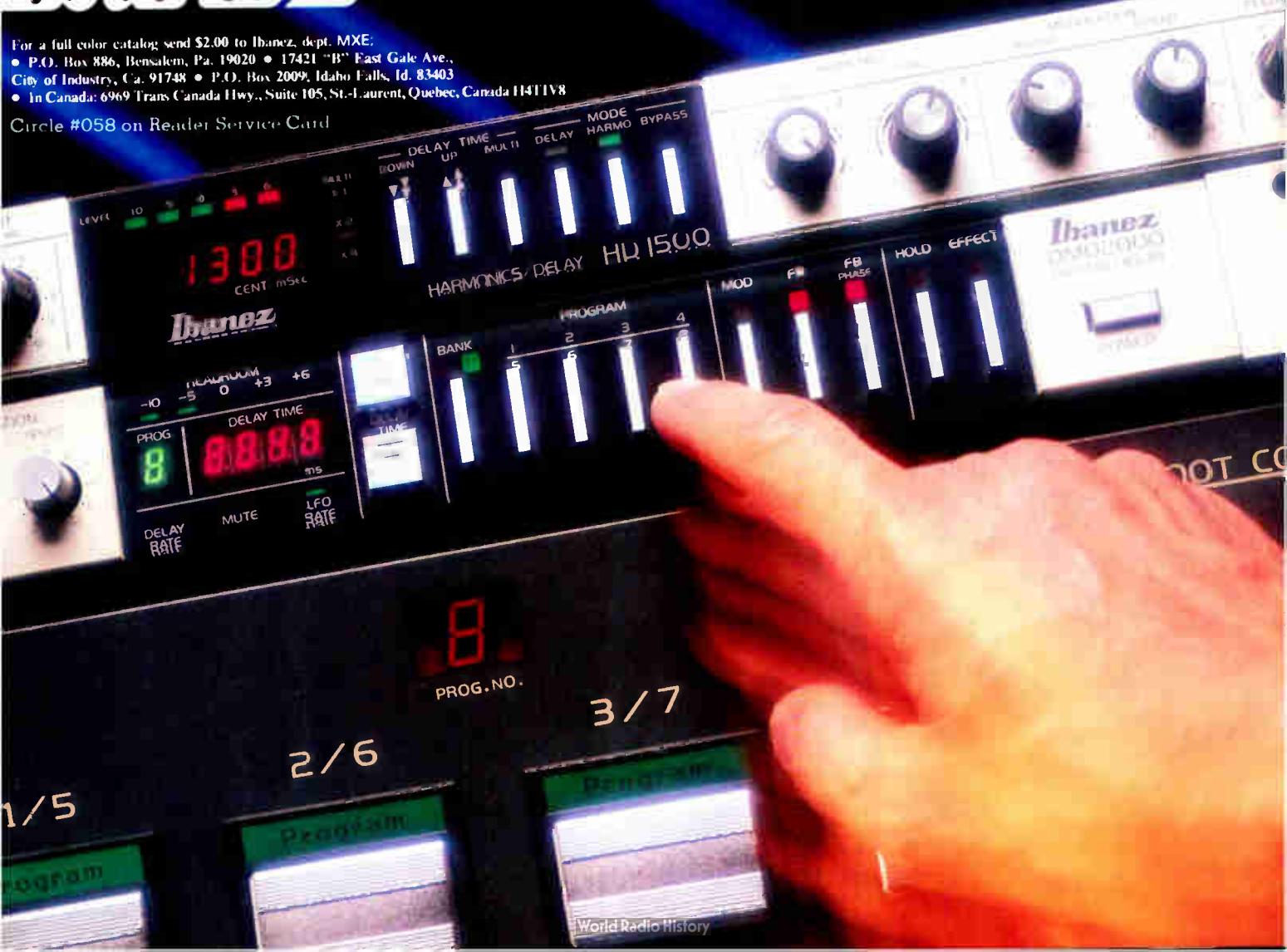
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found that there were ways to simplify the simulation to the point that it became a viable consumer product. There were certain limitations resulting from the simplifications, that is it's not nearly as precise a technique as the techniques that were to be used by architectural acousticians, but it did capture the salient features of concert hall acoustics, and therefore contributed something useful to domestic high fidelity reproduction.

In that work, I was primarily concerned with the early reflections characteristic of performing spaces, and in particular, the directional characteristics. So it's a bit different from most of what we're going to be talking about today, because in reverberance, which is a term I use for the later reflections, the directional characteristics don't generally matter in as precise detail as it does for the early reflections. Therefore, it's possible to do things with the reverberance that make it suitable for stereophonic reproduction.

David Griesinger: Jeff, can you define early reflections in terms of time?

Jeffrey Borish: Well, it depends. It seems to depend on the size of the concert hall. For a full size concert hall, I generally consider it to be the first 100 to 150 ms.

David Griesinger: That's quite long.

Jeffrey Borish: It might be somewhat less. I have performed some experiments that suggest that it is significant up to that area.

David Griesinger: Most people, when they say early reflections mean 40 or 50 ms., then they say there's a middle range...

Anthony Agnello: ...then there's the late early reflections... (laughter)

David Griesinger: So you're talking about the whole area where discrete lateral reflections are important, which might go from 0 to 150 ms. or so.

Anthony Agnello: Reflections that give you localization cues is, I guess, the way that you would put it.

Jeffrey Borish: That's exactly it. In the region of 100 to 150 it starts becoming arguable, so really to an extent I was using overkill just to make sure that I got all of them.

Richard Neatrou: As far as commercial product, the products that I am currently involved in, some of the work has been fairly recent, possibly over the last year. Myself, one of my current partners, and Keith Barr, however, have been somewhat gainfully employed over the last fifteen years in audio effects, including a number of digital delays, getting into pitch transposers; all of which dabbled with and kept driving us back to all

the studies in psycho-acoustics. Speech and hearing papers are as important as any of the currently published algorithms you'll find relating to reverbs, actually.

Over the years, I've been getting more into the world of digital and different effects; from more of a hobbyist's end until recently. Building up reverberators with bucket brigades, with CCDs... I do remember a couple points at our place when we kind of did what Anthony did. I happened to have about 15 of our newest DLLs at that time laying around, and a bunch of pots to wire together.

Our direction kind of led more towards the type of reverbs we, and possibly most of the other people at this table, make right now. For the last few years, we've been getting a little more involved in software design, which gives us the ability to look back and try different ideas, apply different research to a current product we make and modify the algorithms daily. You go home at the end of the day, and you think you had something that sounded good, and you come back the next day, and it sounds terrible. It sounded like a hall the night before, it sounds like a dumpster the next morning. (experienced laughter from all)

David Griesinger: I think we've all been through this.

Richard Neatrou: We can simulate dumpsters very well. Our approach in our product right now, and there are extensions we still have to make, is more trying to keep the hardware open enough that as we learn about different ways of simulating, we can be not only simulating rooms, but steel tunnels, all sorts of things in nature, or thought of in space. We want to have more of a software base, so that we can dabble, play around with those, offer them as new updates and products with someone, say, buying a product, but then two years later when some of us finally get it together enough and are able to simulate some of the different effects that take a lot of time to pull off in *Star Wars* movies, and simulate them on the fly, somebody can buy it, put it into their product, and play around with it. That's a lot of our goal.

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The next, and last part of this series, will present some of the discussions that followed these introductions. The author wishes to convey deepest appreciation to all of the participants, and the companies they represented, for allowing him the chance to pick their brains for a while. It was great fun.

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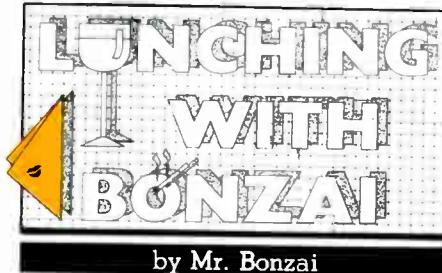
DR. DEMENTO

CURATOR OF THE CURIOUS

Dr. Demento is a gentle soul, despite the name and outrageous radio antics. He's a bit of a preacher, keeping the faith in humorous music alive; he's a bit of a hipster, reminiscing on the real cool cats of the past; and he's a bit of a lovable eccentric, a rumpled professor meandering playfully through musical history.

Dr. Demento was born and raised in Minneapolis, just six months and 20 miles from his contemporary, Garrison Keillor, of *Prairie Home Companion* radio fame. These two unlikely modern radio stars share an off-beat gentlemanly style; they take their Midwestern time and lend a leisurely mood to our hype-pressured age.

The *Dr. Demento Show* is a radio phenomenon, now in its 12th year of national syndication with over 175 radio stations heard in most



by Mr. Bonzai

cities on Sunday nights. Each week the good Doctor opens the floodgates and lets flow a torrent of musical oddities, scholarly and whimsical raps, true basement tapes from the nerd underground network, and of course, classics from the likes of Spike Jones, Tom Lehrer and Captain Beefheart. The show cooks like a hot pepper jambalaya—a musical goulash for strong ears.

I joined Dr. Demento during the taping of his show at the Westwood One studios in Los Angeles, origination point for some of the nation's most successful syndicated radio programming. He is recording in style these days, with his associate producer Robert Young (not the Sanka pitchman) and fast and fastidious engineer Chris Lindsley spinning the discs, punching up the cart machines and rolling the rare tapes.

The doctor is a rare survivor of radio's underground heyday of 15 years ago, when disc jockeys could actually pick their own records. Dr. Demento is still picking, from an eclectic private collection in excess of 150,000 records. After he blew his noisemakers and closed his show we sat down to chat about the flip side of modern music.

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Bonzai: How has syndication affected your lifestyle?

Demento: The bottom line is that I make a decent living doing one two-hour radio show each week, although it involves a lot of preparation. It's a full time job. We try and keep the casual and loose atmosphere, but you can see the show has to be produced to certain standards.

Bonzai: I was surprised to learn that you press records for the syndication.

Demento: Well, once you press more than a hundred or so records it is considerably less expensive than duplicating reel-to-reel tapes.

Bonzai: Thinking back to your famous discovery, Weird Al Yankovic, did you envision that he would be catapulted to such heights?

Demento: I suppose if I had been told the day after I discovered him in 1976 that nine years later he would win a Grammy and become a household name, I might have been pleasantly surprised. But as it's happened, I've seen his career grow in a series of stages. He's gone from little triumphs to big triumphs. First there was one song that he sent that was good enough to play on the air. His next songs started getting better, and then a song that was an across-the-board smash. We received a huge volume of calls for "My Bologna," his parody of "My Sharona." Then came the one that got such heavy requests on my show that it was lifted illegally by radio stations across the country and added to their playlists: "Another

One Rides the Bus." Finally it was released as a record and it might have been big if the record company hadn't gone belly up two weeks after it came out.

Bonzai: Who are some other artists who have achieved fame from your show?

Demento: "Fish Heads" by Barnes & Barnes was a hit on the show and they have gone on to make several albums that have done fairly well. Benny Bell is certainly a kind of success story. He made a bunch of records in the '40s and '50s, mostly Yiddish comedy and some rather risqué English language comedy. He recorded "Shaving Cream" in 1946 and although it was unthinkable to play it on the air then, by 1974 it was acceptable on my show. The song started getting airplay on many stations and when Benny heard it he announced his presence to the world and made a re-issue deal. It got as high as 30 on the *Billboard* Hot 100, 29 years after it was recorded—which makes it the slowest record to make the charts, I believe.

Bonzai: What is the story behind the famous farting contest?

Demento: There were many versions of "The Crepitacion Contest," to use its best known title. It sprang up after World War II and I've never been able to find much information other than heresay. It circulated widely on party records and seems to have been dreamed up by some people in the armed forces radio service.

It centers on a farting contest between Lord Windermere and Paul Boomer in the Maple Leaf Gardens in Canada. The record has been repressed many times and is now available in some of the larger record stores. Party records didn't really start happening until the World War II era. Before that, the three or four major record companies had a virtual monopoly and were pretty loathe to release anything as gross as the farting contest, although Victor and Columbia unwittingly released lots of pretty raunchy stuff by black blues artists and hillbilly artists in the '20 and '30s. I guess they figured it was just race music and nobody gave a damn.

The party record business really flourished after the war and there were hundreds of titles ranging from the titillating to pure raunch. In the late '40s and early '50s, a number of artists refined this genre, left the underground and sold lots of records. First there was Larry Vincent, Woody Woodbury, and then Ruth Wallis, who is still alive and well today, and Rusty Warren, who is probably the most successful of all with "Knockers Up" and "Bounce Your Boobies."

Bonzai: What kind of a guy was Spike Jones?

Demento: There's a new book about him that gives a lot of clues: *Spike Jones and His City Slickers* by Jordan Young. I wrote the introduction and he's certainly an idol of mine. I'm sorry I never got to meet him, but from all accounts he had a complex personality. His first hit was "Der Führer's Face" in 1942—that put him on the map. In '44 came "Cocktails for Two," his biggest hit, and another million seller was "All I Want for Christmas is My Two Front Teeth."

The book and people who knew him give the impression that he was tremendously imaginative, yet no-nonsense, very businesslike in running his career. I can compare him to Frank Zappa today, who has a somewhat goofy stage image. People assume that he smokes five lids a day, but in fact, he is also no-nonsense, is totally against drug use, hires only the best musicians and tolerates no mistakes on or off stage. I think Spike Jones was the same way, at least after he made it big. Apparently in his early days he was a little looser, and his band would raise hell, but later he decided he would have to run a very tight ship if he was going to make the most of his career. He formed a band that could do routines timed to the split second.

Bonzai: And it was all recorded live?

Demento: The records from the 78

WHAT ARE THE TEC AWARDS?

The Technical Excellence and Creativity Awards have been established by the Publishers of *Mix Magazine* to honor outstanding achievement in the professional recording and sound production industries. Encompassing three general categories (Technical, Creative, and Institutional Achievement) and nineteen sub-categories, the TECs will give audio and music professionals the opportunity to recognize the accomplishments of their peers. Recipients of the TEC Awards will be nominated and voted upon each year by the readers of *Mix Magazine*. It is our intention that the TECs will become an honored tradition, as well as occasion for audio and music professionals to gather together and celebrate the progress of our industry.

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Although there are awards programs in existence that recognize achievement in the fields of recording, sound and music production, the Publishers of *Mix* felt that an awards program was needed that spans these separate, yet increasingly inter-related fields. As design engineers seek to meet the needs of producers and creative artists, and as artists become increasingly more dependent upon technology to aid in their self-expression, Technical Excellence and Creativity become truly two sides of the same coin. The TEC Awards will recognize those who achieve notable success in this era of technical and creative fusion.

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era had to be recorded in one pass. Tape came in around 1948 and then they could edit, but before that it was rehearsed absolutely to the "T," perfectly mixed and then recorded, which is backwards from the way it is done today.

Bonzai: Do you think multitrack recording has improved the quality of goofy records?

Demento: I'd say on balance, yes. It has certainly enabled people to do many things they couldn't before. There was a perfect example on the show I taped today. Mel Blanc's "Toot Toot Tootsie, Goodbye" was one of the very early overdubbed recordings, back in the days when the only way they could do it would be to record on one machine and then ping-pong it to another machine while adding a new track—the way Les Paul did his early recordings. In the last chorus of Mel Blanc's song he did two voices at once, his Bugs Bunny voice and the Al Jolson mimic. This was around 1948, when Les Paul was doing his multitrack things. Patti Page was another artist who got into it at an early date. Then there was a session that got a lot of press when Guy Lombardo recorded "Now is the Hour" instrumentally in New York and the tape was sent to Los Angeles where Bing Crosby added the vocal.

Bonzai: Is there humorous music further back in history equivalent to, say, Spike Jones?

Demento: Well, I imagine people liked to laugh back then. There might have been performers who did it on stage, but because it wasn't written down or recorded they have been forgotten. In the movie *Amadeus* you see some people in a rather bawdy drinking establishment doing a parody of a Mozart opera—apparently that was based to some degree on historical fact.

Bonzai: Who is the Picasso of humorous music?

Demento: Captain Beefheart, and he's quite a good painter, too. I've had him on the show several times and he's great to interview—a wonderful man.

Bonzai: Who is the Attila the Hun of humorous music?

Demento: He was a fairly destructive person and I wouldn't want to brand anybody that I play on the show...but, Ted Nugent perhaps? He's a very bright fellow, which is not what you get from his music—but they speak through different tongues sometimes...

records because that's what I can translate to my show.

Bonzai: What do you think of P.D.Q. Bach?

Demento: He's great—I play his stuff occasionally, and I would play him more except that a lot of his stuff requires a certain familiarity with classical music for full appreciation and young people today are not quite as familiar with classical music as they were in the days when Spike Jones did "Lieberstrau" and "The Blue Danube." In Spike's day, classical music comprised over 40% of record sales. Now it's barely 10%, which is quite a change.

Bonzai: How did you get into this business?

Demento: I was a record collector first, and had been a record collector for many years before the *Dr. Demento Show* ever came into being. My first radio show just grew from my record collection. It was the scholarly side of me without the zany side. In college radio I did serious shows about blues and folk music, but in my senior year I did something called *The Musical Museum* which is a little bit like what I do now. Basically, that show consisted of whatever I found at the Salvation Army or the St. Vincent de Paul thrift shops that week. At that time you could still find huge piles of 78s for a nickel apiece. The nostalgia boom hadn't hit yet and you could find some real nuggets among the junk. Then I did serious music for KPFK in Los Angeles and the *Dr. Demento Show* started out as a fairly straight oldies show. After that I moved over to KPPC where I got my name—because everybody at that station had a funny name. So, you could say that I grew into the name. I took my general approach from the style of radio at KPPC and then moved over to KMET. I saw the whole process of gradual change from progressive radio to AOR at KMET. To put it simply, one day I arrived and noticed that all the classical records were gone. Next, the jazz records were removed, and then the blues and folk records were next to go. There were no constraints when I started working. I played a lot of old records and funny records, and eventually I was the only deejay choosing his own records.

Bonzai: Do you have any distinguishing idiosyncrasies?

Demento: Well, when I do the radio show I put my hat on and talk louder than I do when I'm in restaurants. I suppose my wife could name you a few...

"Young people today are not quite as familiar with classical music as they were in the days when Spike Jones did 'Lieberstrau' and 'The Blue Danube.' In Spike's day, classical music comprised over 40 percent of record sales. Now it's barely 10 percent..."

Bonzai: Is there anybody in the world you would like to meet?

Demento: Some day I'll shake hands with Tom Lehrer—we're friends on the phone, but we have as yet to be in the same city at the same time. He steadfastly refuses to perform and if he has written anything new, he hasn't deigned to show it to us. But he doesn't disown his old work like some people who have gotten out of the business. He teaches part time now at UC Santa Cruz and just takes it easy. Apparently he made good deals for his royalties and seems to lead a comfortable life with no more work than he feels like doing.

Bonzai: You have a special record collection coming out, don't you?

Demento: Yes, a six record set from Rhino Records. In fact, if I seem a little spacey, it's because I just went through four days of shooting the covers. The set is called "The Greatest Novelty Records of All Time," with each album covering the classics from a different era: the '40s, the '50s, the '60s, the '70s, '80s and we also have a Christmas collection. The records will be released individually with a special boxed collection with a bonus booklet I wrote for the true collector. It will be out this fall.

Bonzai: Who has the most bizarre live shows today?

Demento: Weird Al has a great show, Frank Zappa in his way. It's fun to see Gallagher smash watermelons. I'm not really much of an attendee of live concerts, though. I listen to

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Synclavier® Summertime Seminar

August 26-31, 1985

*Hosted by Dartmouth College, Hanover, New Hampshire
Sponsored by New England Digital Corporation*

Lectures • Private Instruction • Workshops

The Recording Industry is Changing . . . Learn and be part of that change!

New England Digital is sponsoring its 4th annual Synclavier Seminar at Dartmouth College. Enjoy the surroundings of this beautiful New England campus while learning about the most advanced computer technology in the recording industry from some of its leading professionals.

This year promises to be better than ever due to the recent introduction of exciting new Synclavier options such as Polyphonic Sampling, the Velocity/Pressure Sensitive Keyboard, and others.

As a seminar student, you will receive daily small group and private instructions. N.E.D.'s staff will be on hand to lecture on advanced hardware and software developments. There will also be a special Owners Exchange Forum, at which current owners can exchange sounds and ideas.

To complete the curriculum, you will attend daily lectures and hear prominent Synclavier owners describe how they use the Synclavier to realize and implement their creative ideas. Plus, there will be special musical events. Attendance is strictly limited and all participants must have a basic knowledge of synthesis or computers. New England Digital Corporation reserves the right to select all seminar students.

Lecturers:

Oscar Peterson
Renowned jazz pianist and composer

Trevor Horn, Producer
Steve Lipson, Engineer
Producer/Engineer for Frankie Goes to Hollywood and many other highly successful pop groups.

Denny Jaeger

Movie and television soundtrack synthesist and composer. Original consultant on Synclavier II development.

Kashif

Recording artist and producer for George Benson, Melba Moore, Hall & Oates and others.

Jack Nitzsche

Composer of major film scores: Starman, Cuckoo's Nest, Razor's Edge and others.

Brian Banks and Anthony Marinelli

Composers and synthesists for films, TV and commercials. Programmers for Quincy Jones, Jack Nitzsche and others.

The lecturers listed are currently scheduled to attend. Due to unforeseen schedule conflicts, it is possible that there may be a substitution or cancellation.

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Please remit \$400.00 tuition and a brief resume with your return address and phone number to:



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Dept. SEM
P.O. Box 546
White River Junction, VT 05001



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THE RECORDING INDUSTRY RESOURCE CENTER



The MIX BOOKSHELF Catalog is a selection of the best audio/video/music books and tape courses currently available from more than forty leading industry publishers.

Now it is simple and convenient to order these hard-to-find titles from a single source by phone or through the mail.

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AUDIO

101) PRACTICAL TECHNIQUES FOR THE RECORDING ENGINEER, Sherman Keene An excellent, down to earth instructional guide for the engineering/producing arts. Divided into three categories (basic, intermediate and advanced), the text is accessible and extremely useful to students at different levels of competency. Also available as a correspondence course and for school curriculums with Teacher's Manual, workbooks, and exams. 221 pp.(H) \$29.75

102) SOUND RECORDING, 2ND ED., John Eargle An updated edition of this highly respected book covering acoustics and psychoacoustics, devices, systems, and methods currently used in recording technology. New chapters have been added covering digital recording and building low-cost studios. Includes extensive coverage of signal processors. 355 pp.(H) \$26.95

103) MODERN RECORDING TECHNIQUES, Robert Runstein The completely revised and updated edition of this classic instructional text will be available 10/85. It provides a strong foundation for students of studio recording. It introduces the reader to the equipment, controls and techniques, and explains proper and creative production. 362 pp.(P) \$16.95

104) RECORDING STUDIO HANDBOOK, John Woram A complete handbook dealing with every major aspect of recording technology, including transducers, compressors, tape recorder alignment, mike techniques, limiting and expanding, noise and noise reduction, signal processing, magnetic recording, and recording consoles and techniques. 481 pp.(H) \$39.50

105) SOUND RECORDING PRACTICE, Edited by John Borwick Updated handbook compiled by the Association of Professional Recording Studios. Covers the principles, equipment, maintenance, etc., of studio and control room, techniques for studio and location recording, special problems of broadcasting, and tape/disc manufacture. Useful even without specialized training. 504 pp.(H) \$55.00

106) HOME RECORDING FOR MUSICIANS, Craig Anderton Easy to follow and well-illustrated, this book is written for musicians with little engineering experience. It emphasizes practical knowledge, techniques, and tips for making clean, quality demos at home. Also includes information on audio theory, acoustics, and equipment. 182 pp.(P) \$14.95

107) THE TECHNIQUE OF THE SOUND STUDIO, Alec Nisbett This comprehensive handbook covers sound and microphone characteristics, sound balance for speech and music, recording and mixing, echo and filter techniques, and tape and film sound editing. Discussed in terms of mono, stereo, and 4-channel techniques. 559 pp.(H) \$32.95

120) CRITICAL LISTENING COURSE, F. Alton Everest This invaluable course specifically addresses the important nuances of the audio world. The 106 page training manual with ten pre-recorded lessons on cassette tapes lead you from basic to advanced listening techniques in increasing progression. Topics include estimating frequency, frequency band limitations, sound level changes, components of sound quality, frequency response irregularities, various types of distortion, reverberation effects on speech and music, signal vs. noise, and voice colorations. \$129.95

130) BUILDING A RECORDING STUDIO, Jeff Cooper, M. Arch., S.M., S.B., B.S.A.D. A step by step guide to recording studio construction for small or large budgets. Thorough coverage of the principles of acoustics, how acoustics affect recording, soundproofing a room, plus chapters on the studio, the control room, and a glossary of the 100 most misunderstood terms in acoustics. 209 pp.(P) \$30.00

131) HOW TO BUILD A SMALL BUDGET RECORDING STUDIO FROM SCRATCH, F. Alton Everest Presents the information needed for design, construction, and operation. The emphasis is on budget studios suited to efficient production of audio/visual, radio, television, and film material stressing function, economy, and good sound quality. Includes 12 tested designs. 336 pp.(P) \$11.95

133) ACOUSTIC TECHNIQUES FOR HOME AND STUDIO, 2ND ED., F. Alton Everest This excellent sourcebook approaches environmental acoustic design from a practical rather than mathematical viewpoint with emphasis on the fidelity of sound reproduction and design of small recording studios. Includes vital info on principles of acoustics, human hearing, room resonance, diffusion of sound, and absorption properties of acoustical materials. 352 pp.(P) \$14.95

134) THE MASTER HANDBOOK OF ACOUSTICS, F. Alton Everest An all-inclusive sourcebook that fully explores the world of acoustics and sound reproduction, transmission, and reception. Includes much detail on hearing, ear anatomy and sensitivity, and audibility, room testing, and loudness vs. frequency, vs. intensity, vs. bandwidth. 337 pp.(P) \$12.95

140) SOUND SYSTEM ENGINEERING, Don & Carolyn Davis This excellent volume offers a concise and encyclopedic treatment of the decibel notation system, loudspeaker directivity and coverage, the acoustic environment, acoustic gain, interfacing electrical and acoustical systems, installation, equalization, and instrumentation. Includes sample design applications. 295 pp.(P) \$21.95

141) PRACTICAL GUIDE FOR CONCERT SOUND, Bob Heil Covers the fundamentals of pro sound reinforcement, efficient speaker enclosures, mixers and equalizers, digital delays, compressors, limiters, microphones, hardware, and construction tips. 141 pp.(P) \$10.00

142) SOUND SYSTEM HANDBOOK, VOLUME 1, Jim McCandless A valuable tool for understanding, setting up, and operating sound systems and recording gear. Includes sections on types of microphones, miking techniques, mixers, amplifiers, speakers, portable sound systems, and a reference glossary. Three ring binder format allows supplementing the text with equipment information, spec sheets, etc. \$39.95

144) THE DIGITAL DELAY HANDBOOK, Craig Anderton An outstanding book to help unlock the hidden potential in virtually any delay line. In addition to long, short, and multiple delay line techniques, it contains 66 different applications including auto flanging, sound effects, tuning percussive sounds, phase shifter simulation, reverb pre-delay, syncro-sonic echo effects, and much more. 134 pp.(P) \$9.95

145) THE USE OF MICROPHONES, 2ND ED., Alec Nisbett The 1983 edition of this practical book describes the many types of microphones available and shows how to select, position, balance, and control them for a broad range of purposes. Also covers balance between speech and music, simultaneous sound and picture recording, and performance control. 168 pp.(P) \$14.95

146) THE MICROPHONE HANDBOOK, John Eargle This up-to-date volume covers the practical aspects of microphone use and design with concise information for solving specific mike problems. Detailed chapters explain microphone patterns, mike sensitivity, condenser mikes, proximity and distance effects, interference problems, techniques and systems for stereo, and much more. 256 pp.(H) \$31.95

147) MICROPHONES, 2ND ED., Martin Clifford This updated edition covers operational theory and specific applications; how microphones work, how to interpret response, placement and phasing, and characteristics of microphones and accessories on the market today, with emphasis on AKG. 264 pp.(P) \$9.95

148) DIGITAL AUDIO ENGINEERING: AN ANTHOLOGY, Edited by John Strawn The first book to present a unified view of the hardware engineering behind digital audio synthesis and processing. It discusses the fundamentals of the technology including a thorough treatment of noise in the D/A process and gives details about significant existing digital audio synthesizers/processors. 200 pp.(H) \$29.95

149) DIGITAL AUDIO SIGNAL PROCESSING: AN ANTHOLOGY, Edited by John Strawn Written both for the beginner and advanced practitioner of digital signal processing especially as it relates to computer music, this anthology presents a thorough introduction to the subject as well as covering digital filter design for the non-engineer, spiral synthesis, phase vocoder, and more. 283 pp.(H) \$34.95

150) THE COMPLETE HANDBOOK OF MAGNETIC RECORDING, Finn Jorgensen All aspects of modern magnetic recording theory, practice, applications and maintenance, with technical specifications of equipment. Includes a brief history of development, the applied physics of magnetism, a thorough examination of magnetic heads, and more. 448 pp.(P) \$15.50

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151) **DIGITAL AUDIO TECHNOLOGY**, H. Nakajima, T. Doi, J. Fukuda, and A. Iga of Sony Corp. Authoritative handbook covering fundamentals of digital PCM recording, audio and video disk systems. It deals with the nature and causes of code errors, low-pass filters, modulation and demodulation circuits, and analysis of future developments. 304 pp.(P) \$11.95

152) **BASIC DISK MASTERING**, Larry Boden A primary reference source for engineers and producers. The only book to deal comprehensively with the principles, the equipment, the processes, and the techniques of disk mastering. Covers common record defects. Fully illustrated. 52 pp.(P) \$10.95

153) **AUDIO IN MEDIA**, Stanley Alten Provides a broad theoretical and practical foundation in the techniques and aesthetics of sound as it applies to the particular demands of radio, television, film, and music production. This informative, generic, non-technical approach can be read as a whole or selectively with no disruption in continuity. 427 pp.(H) \$29.95

154) **TV SOUND OPERATIONS**, Glyn Alkin This book covers both the practical fundamentals and the creative art of TV sound. Topics include choice and use of microphones, solutions to problems and sound-picture relationship, and production situations for both music and spoken word. 176 pp.(P) \$14.95

155) **AM STEREO AND TV STEREO—NEW SOUND DIMENSIONS**, Stan Prentiss This book provides an in-depth look at the new sound in AM radio and TV broadcasting with much-needed advice on equipment availability and operation. It also provides insight into FCC regulatory and electrical evaluations and new equipment specifications for broadcasters and consumers. 192 pp.(P) \$12.95

160) **DICTIONARY OF CREATIVE AUDIOTERMS**, CAMEO The first comprehensive dictionary of creative audio terminology containing over 1,000 definitions for those without much technical training. Focuses on creative audio/musical equipment, techniques, systems, and practices. Illustrated to give a quick and comprehensive grasp of meanings. 100 pp.(P) \$4.95

161) **1985 PROFESSIONAL AUDIO BUYERS GUIDE**, SIE Publishing This audio product reference yearbook profiles thousands of products from scores of manufacturers. It is indexed both by brand and generic names for instant accessibility, including model numbers, pictures, features, technical specifications, and retail prices for comparison. 178 pp.(P) \$14.95

1985 ORION BLUE BOOKS, Orion Press

Price listings: new, used, mint, and average.

162) **PRO SOUND REFERENCE GUIDE** — Instruments, mixers, amplifiers, microphones, equalizers, signal processing, monitors, etc. Over 15,000 products. 278 pp.(H) \$90.00

163) **AUDIO REFERENCE GUIDE** — Receivers, amps, speakers, equalizers, cassettes, reels, mixers, pre-amps, processors, tuners, components, etc. Over 30,000 products. 454 pp.(H) \$95.00

164) **VIDEO REFERENCE GUIDE** — Home, commercial and industrial video cameras, monitors, recorders, players, lighting equipment, accessories, satellite section, etc. Over 2,000 products. 123 pp. \$40.00

170) **OPERATIONAL AMPLIFIERS FOR TECHNICIANS**, Jefferson Boyce Using a functional approach, the focus is on input and output resistance, gain, frequency/phase response, and the reaction of the op amp to external stimuli and common electrical and electronic component connections. Graphical and algebraic support yields an understandable and highly applicable text. 385 pp.(H) \$35.95

171) **MASTER OP-AMP APPLICATIONS HANDBOOK**, H. Fox Comprehensive coverage of how the perfect op-amp works and how not-so-perfect op-amp functions, including analysis of and solutions to day to day problems: offset, drift, slew rate, frequency instability, latch-ups, overload, recovery time, etc. Practical construction info on specialized and general circuits for audio applications. 476 pp.(P) \$13.95

172) **HOW TO DESIGN & BUILD AUDIO AMPLIFIERS, INCLUDING DIGITAL CIRCUITS**, Manny Horowitz All the data necessary to create practical modern circuits for a preamp, amp, power amp, mixer, tone modification, power supply and special accessories. Step by step solid state circuit design and construction. 350 pp.(P) \$10.95

173) **THE COMPLETE HANDBOOK OF AMPLIFIERS, OSCILLATORS, & MULTIVIBRATORS**, Joseph Carr Theory & design, applications & operations...this data-packed sourcebook has everything about these three most-used electronic circuits. From fundamentals of theory to very detailed studies of specific circuits, this is an excellent reference for students and professionals alike. 364 pp.(P) \$11.50

174A) **KNOW YOUR OSCILLOSCOPE**, Robert Middleton Practical data on the oscilloscope and its use in television and radio alignment, frequency and phase measurements, amplifier testing and signal tracing, digital equipment servicing, and more. Also covers oscilloscope circuits and accessories. 192 pp.(P) \$11.95

177) **DESIGNING, BUILDING AND TESTING YOUR OWN SPEAKER SYSTEM**, David Weems An incisive handbook covering the basics of speaker design, system testing, and practical techniques of construction. Includes a wide variety of projects and information to build customized setups. 190 pp.(P) \$9.95

178) **21 CUSTOM SPEAKER ENCLOSURE PROJECTS YOU CAN BUILD**, David Weems From simple closed-box systems to sophisticated three-way systems, bass reflex or omnidirectional speakers, you will get an excellent overview, complete descriptions, and detailed instruction for design and construction. 252 pp.(P) \$8.95

179) **BASIC ELECTRONICS COURSE**, Norman Crowhurst This book is a modern self-study text for the novice, hobbyist or student, and also a useful reference and brush-up guide for technicians and musicians who want to advance their knowledge of electronics. 368 pp.(P) \$13.95

VIDEO

201) **VIDEO PRODUCTION GUIDE**, Lon McQuillin A broad overview placing emphasis on the human organizational aspects with lively, comprehensive coverage of both studio and location production from the viewpoint of the producer and director. Divided into four parts: pre-production, production, postproduction, and other important topics. 382 pp.(P) \$28.95

202) **SMALL STUDIO VIDEO TAPE PRODUCTION**, 2ND ED., J. Quick & H. Wolff A thorough grounding in professional production standards which goes step by step through the video tape process from program planning to postproduction. Contains advice on purchasing equipment and practical suggestions on staffing and budgeting for the small studio producer. 234 pp.(P) \$10.95

203) **VIDEO USER'S HANDBOOK**, 2ND ED., Peter Utz A complete hands-on manual for all levels of video production for more effective use of equipment, simple problem solving and complex troubleshooting. Includes descriptions and instructions for studio video gear as well as information on audio, lighting, editing, and graphics. 500 pp.(P) \$19.95

204) **TELEVISION OPERATIONS HANDBOOK**, Robert Oringel This concise, non-technical handbook by a respected media consultant includes extensive discussion of light and lenses, the video camera itself, television audio, cables and connectors, the videotape recorder, video editing, and the studio cable TV program. 208 pp.(P) \$16.95

210) **VIDEO CAMERA TECHNIQUES**, Gerald Millerson A clear, compact guide to the principles of video camera operation in studio or on location. It covers the camera and fundamentals of correct usage, including: camera movements, framing the shot, depth of field, lenses and focal lengths, filters and effects. 160 pp.(P) \$14.95

211) **THE PROFESSIONAL LIGHTING HANDBOOK**, Verne & Sylvia Carlson A practical guide to setting up and using pro lighting equipment. Fully illustrated, this handbook provides useful information on every facet of equipment including lenses, housings, light sources, reflector boards, controllers, filters, and applications. 224 pp.(H) \$22.95

213) **SCRIPTING FOR VIDEO AND AUDIOVISUAL MEDIA**, Dwight Swain In a lively, anecdotal style, this handy book takes the reader step by step through the preparatory stage of audiovisual presen-

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tations: deciding on the objective, selecting the best approach, getting your ideas down on paper, preparing the storyboard, and following through to production.

256 pp.(P) \$21.95

214) SPECIAL OPTICAL EFFECTS, Zoran Perisic The author, responsible for effects in "2001: A Space Odyssey," "Superman I" and "Superman II," etc., has written this thorough and practical manual. From the simple, traditional methods; using mirrors and normal film cameras, to the most sophisticated; using specially developed equipment. A superb resource.

185 pp.(H) \$33.95

215) CREATING SPECIAL EFFECTS FOR TV AND FILMS, Bernard Wilkie This is a book of ideas as well as instruction. Using easy to follow text and illustrations, it deals comprehensively with a wide range of techniques and effects including gunshots, explosions, fire, weather, and the use of miniatures and models.

160 pp.(P) \$14.95

216) THE VIDEO TAPE POSTPRODUCTION PRIMER, Steven Browne A professional overview of electronic editing for the producer, director, and client without overly technical language. Starting with the basic principles, it progresses logically and coherently through the details of postproduction. Includes special chapters on editing film on video and mixing audio for video.

200 pp.(P) \$25.00

217) VIDEO EDITING & POSTPRODUCTION: A PROFESSIONAL GUIDE, Gary H. Anderson A new "real world" guide to both technical and non-technical factors of videotape postproduction by a four-time Emmy Award winner. Complete and detailed info on time codes, formats, offline and online editing, digital effects, future trends, and more. Includes glossary and selected directory of equipment manufacturers.

165 pp.(H) \$34.95

220) 5TH ED., THE VIDEO REGISTER, Knowledge Industries This sourcebook has listings of more than 2,100 video users, 500 manufacturers, 350 dealers, 625 production/postproduction houses, 400 producers/publishers/distributors, 700 consultants, and 100 resources. Prepared by an experienced staff through questionnaires and telephone followup. Invaluable.

(P) \$54.50

230) CREATING ORIGINAL PROGRAMMING FOR CABLE TV, Edited by W.D. Shaffer & R. Wheelwright Producers, programmers, cable company reps, and a communications attorney explain the ins and outs of creating programming for this viable market. They provide an overview of copyright and royalty issues, examine the role of access and independent producers, and detail the road from production to distribution.

175 pp. \$29.95

231) THE INDEPENDENT FILM & VIDEOMAKERS GUIDE, Michael Wiese Revised edition by this award-winning independent filmmaker and lecturer concentrates on the practicalities of finding investors, preparing the prospectus, and researching the market, as well as providing a nuts and bolts approach to production and distribution. Extensive appendix.

292 pp.(P) \$14.95

232) FILM & VIDEO BUDGETS, Michael Wiese This basic "how-to" guide explores budgeting for documentaries, commercials, low-budget features and shorts, as well as detailing many money-saving ideas. Like the author's companion volume (above), this book is clearly written and illustrated and will be indispensable in developing a film or video project.

160 pp.(P) \$14.95

233) THE HANDBOOK OF PRIVATE TELEVISION, N. Sambul From selling the concept to general management to installing, staffing, and managing a video facility, this book emphasizes sound management techniques and creative production approaches. Presents concrete guidelines on all aspects of private television production.

400 pp.(H) \$74.95

234) VIDEO IN THE 80'S: EMERGING USES FOR TELEVISION IN BUSINESS, EDUCATION, MEDICINE, AND GOVERNMENT, Paula Dranov, Louise Moore, Adrienne Hickey Analyzes the trends affecting the non-broadcast video market. Each of the major segments of the user market is described with the types of programming produced and distributed in each. Recognition of video as a cost-effective communication tool has made a major impact on these markets.

186 pp. \$29.95

235) USING VIDEOTAPE, 2ND ED., J.F. Robinson & R.J. Beards In this concise and clearly illustrated edition, the authors provide the broadest spectrum of possible applications for videotape recording in broadcasting, advertising, and industry.

172 pp.(P) \$14.95

240) THE VIDEO AGE: TELEVISION TECHNOLOGY AND APPLICATIONS IN THE 1980'S, Knowledge Industries An essential reference for the communications industry, this book provides a comprehensive survey and explanation of the state-of-the-art and the future of television technology. Includes chapters on home video, cable TV, videodisks, videotext, non-broadcast video, corporate television, etc.

264 pp. \$29.95

242) VIDEO ELECTRONICS TECHNOLOGY, Dave Ingram This thorough and well-organized reference examines the entire field of video electronics applications from early TV systems to recent breakthroughs in this expanding, rapidly changing field. For the professional.

256 pp.(P) \$10.95

243) VIDEOTAPE RECORDING, Joseph Robinson, Stephen Lowe The updated edition of an authoritative work on video recording, this thoroughly discusses the principles of tape recording, including the broadcast quadruplex format, the helical B and C formats, and the less expensive cassette helical systems. Has chapters on editing, slow motion, and mobile video recording.

362 pp.(H) \$35.95

244) MAINTAINING & REPAIRING VIDEOCASSETTE RECORDERS, Robert Goodman Practical, time-saving maintenance and repair data with full coverage of the mechanical systems and electronic circuits found in all popular brand models of videocassette recorders. Includes data on test equipment, specialized tools, etc., for amateurs and pro service technicians.

416 pp.(P) \$15.95

MUSIC

301) THIS BUSINESS OF MUSIC (REVISED AND ENLARGED), Shemel & Krasilovsky This highly comprehensive 1985 reference provides detailed explanations of legal, practical, and procedural problems of our industry. Part 1 — Recording companies and artists; Part 2 — Music publishers and writers; Part 3 — General music industry aspects. Includes over 200 pages of contracts, forms, and licenses.

646 pp.(H) \$19.95

302) MORE ABOUT THIS BUSINESS OF MUSIC (3RD ED., REV. & ENL.), Shemel & Krasilovsky A practical guide to areas of the industry not covered in "This Business of Music": Serious music, background music, religious music, this business of jazz, tape and tape cartridges, production and sale of printed music, live performances, etc.

204 pp.(H) \$12.95

303) MUSIC BUSINESS HANDBOOK AND CAREER GUIDE, David Baskerville, Ph.D. This is the required text in over 90 colleges and universities. Exhaustively thorough coverage of all phases of the industry divided into seven parts: Music in the Marketplace; Songwriting, Publishing, Copyright; Business Affairs; The Record Industry; Music in Broadcast and Film; Career Planning and Development, Appendix (sample forms).

553 pp.(H) \$18.95

304) BREAKIN' INTO THE MUSIC BUSINESS, Alan Siegel Written by one of the top entertainment lawyers, this is a concise, complete and well-documented guide filled with straight talk and practical advice on making your break. In addition to detailed explanations of the mechanics of music deals, it also includes pointed interviews with top industry execs, managers, producers, and artists.

288 pp.(H) \$14.95

305) THE MUSIC/RECORD CAREER HANDBOOK, REV. ED., Joseph Csida Provides updated information on the industry, the growth in music career courses offered nationwide, the new areas of video cassettes and video discs, the current personalities dominating the music world, changes within the corporate structure of the industry giants, and more.

360 pp.(H) \$16.95

306) THE PLATINUM RAINBOW, Bob Monaco, James Riordan The best book on approaching the music industry rationally and realistically, it includes sections on self-promotion and finding a manager, producer, agent. Complete analysis of rehearsals, the stage, the song, the demo or master, studio preparation and recording, the deal, record labels, radio, charts, critics, etc. With directories.

240 pp.(P) \$9.95

306A) THE PLATINUM RAINBOW MUSIC BUSINESS CAREER SERIES, Bob Monaco This newly-released cassette series by

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Grammy Award winning producer Bob Monaco picks up where his book (#306) left off. It provides a thorough, in-depth and entertaining view of the music industry from dreams to demos to deals. Filled with the old industry secrets for success and the new techniques of the eighties. Eight 60-minute cassettes. \$69.96

307) MAKING MUSIC; THE GUIDE TO WRITING, PERFORMING, AND RECORDING, Edited by George Martin This is both an authoritative guide for everyone who makes music and a unique source of insight into the genius and work habits of 65 of the world's leading music figures (e.g. contributors on songwriting include McCartney, Sting, Sondheim, Webb, and Simon, among others). There are sections on writing, arranging, performing, recording, and music business all written by experts. 352 pp.(H) \$17.95

310) HOW TO MAKE AND SELL YOUR OWN RECORD, Diane Sward Rapaport This brand new edition offers technical information, practical tips, and business guidance for self-production of record and cassette releases. Every aspect of a recording project is covered, from planning and budgeting through sales and promotion. Includes sample forms and worksheets as well as advice on raising money and negotiating contracts. 167 pp.(P) \$12.95

311) MUSICIAN'S GUIDE TO INDEPENDENT RECORD PRODUCTION, Will Connelly Practical and realistic advice on the whole process of record-making for the aspiring producer. Describes the interplay of creative, technical, and business aspects, and explains the techniques and methods for planning, directing, and budgeting the production. 208 pp.(P) \$8.95

319) SCORING FOR FILMS, Earle Hagen Although published in 1971 this book still provides an excellent orientation to the problems and possibilities of composing for films. It specifically addresses the mechanics and vocabulary of film composition, the psychology of creating music for this medium, and the split responsibilities of the composer and the editor. 254 pp.(P) \$24.00

321) MUSIC SCORING FOR TV AND MOTION PICTURES, Marvin Skiles For composers and arrangers, this volume bridges the gap between the aspirants and the real world of creative music scoring. It covers the mechanics, functional elements, construction, and integration of the music score with examples and analysis. Includes postproduction logistics. 266 pp.(H) \$12.95

323) THE TECHNIQUE OF FILM MUSIC, Roger Manvell & John Huntley This book traces the history from silent film piano accompaniment to present. By analyzing scores from numerous feature films the authors show how different composers have dealt with the restrictions inherent in film music. 310 pp.(H) \$35.95

330) THE SONGWRITER'S DEMO MANUAL AND SUCCESS GUIDE, George Williams This well-organized book is filled with detailed information and practical tips about the demo process: choosing the songs, rehearsing, arranging, casting, choosing studios, preparing the package, submissions, finding and exploiting contacts, how the business operates. An essential tool for writers who want to survive in the business. 193 pp.(P) \$12.95

331) THE CRAFT OF LYRIC WRITING, Sheila Davis Based on the author's highly successful ten-week course at the American Guild of Authors and Composers, this book covers the basic principles of good writing, analysis and song structure and lyric form, choice of point-of-view and tone, effective use of rhyme, meter, and beat, how to edit and rewrite, taking care of business, etc. 252 pp.(H) \$16.95

332) IF THEY ASK YOU, YOU CAN WRITE A SONG, Al Kasha, Joel Hirschhorn Written by one of America's top songwriting teams, this book is comprehensive and realistic, dealing with crafting words and music for the rock market, films, television and theater, and most important, the techniques on how to cast and sell your material. 352 pp.(P) \$8.95

333) 1986 SONGWRITERS MARKET, Edited by Rand Ruggeberg This new edition lists more than 2,000 song buyers; music publishers, record companies and producers, advertising agencies, play producers and publishers, audio-visual firms. Each lists contact name/address, pay rates, submission requirements, types of material wanted, and business tips. Includes helpful feature articles. 432 pp.(H) \$14.95

334) INSIDE THE MUSIC PUBLISHING INDUSTRY, Paula Dranov Examines what music publishing is, how it works, and why it can be so profitable. Thoroughly explains the role and economics of the major licensing organizations and the impact of the Copyright Act of 1976. Includes profiles of leading publishers and shows how and why many are moving increasingly into production and packaging. 185 pp.(H) \$29.95

335) TUNESMITH Established in 1967, this monthly newsletter for songwriters researches and lists 12 or more top music publishers each month who are actively looking for songs to publish. Includes backgrounds, contacts, addresses, types of material requested, plus helpful hints. Subscriptions: \$22/6 months, \$39/year

336) SONGPLUGGER This is a twice-monthly newsletter for music publishers and professional songwriters which researches and lists major record producers, managers, and other contacts who are currently reviewing and selecting material for major recording artists. Includes contacts, addresses, types of material needed, plus helpful hints. Subscriptions: \$72/6 months, \$134/year

340) MAKING MONEY MAKING MUSIC (NO MATTER WHERE YOU LIVE), James Dearing Dearing shows practical ways to make reliable music income by developing a solid professional reputation within your own community, diversifying your talents, and building business savvy; maximizing club performance earnings, casuals, teaching, jingle work, session work, operating a home studio, renting out your equipment, and more useful ideas. 310 pp.(P) \$12.95

341) AN INSIDER'S GUIDE TO ADVERTISING MUSIC, Walt Woodward An excellent reference for advertising music professionals which goes right to the heart of the jingle industry. Detailed, informative, and insightful, it covers how and why music works in advertising, when and how to use it, and all crucial elements of production for quality radio and TV campaigns. 126 pp.(H) \$14.95 Optional cassette \$5.95 extra

342) A MUSICIAN'S GUIDE TO THE ROAD, Gary Burton This handbook covers what every musician should know about taking an act on the road. Written by the world-renowned vibraphonist, this easy-to-read guide is full of practical ideas based on Burton's 20 years of experience performing before jazz audiences. 154 pp.(P) \$7.95

343) THE PERFORMING ARTIST'S HANDBOOK, Janice Papolos Here are the business basics every instrumentalist and vocalist needs for career advancement in symphony orchestras, opera companies, chamber ensembles, and on concert stages, including self-promotion, resumes, business letters, press releases, taxes, and demos. 224 pp.(H) \$15.95

344) PROMOTING ROCK CONCERTS, Howard Stein & Ronald Zalkind The step by step guide to staging major musical events. Topics include getting into the business, putting together capital, securing talent, costs and contracts, selling tickets, advertising and publicity, budgeting and profits. Appendices include letters of agreement and contracts. 188 pp.(P) \$9.95

345) THE PROGRAM DIRECTOR'S HANDBOOK, Bob Paiva The author strips away mystique and misinformation to provide a wealth of practical information and thoughtful examination of the program director's functions, the creative, the administrative, and the profit-making responsibilities, as well as special talents required for success. 162 pp.(P) \$9.95

346) SUCCESSFUL ARTIST MANAGEMENT, Frascogna & Hetherington The only book to deal with all phases of artist management from both the artist's and manager's point of view. In five parts: Establishing the Artist-Manager Relationship, Planning the Artist's Career, Making the Plan Work, Career Maintenance and Control, and Mastering Success. 256 pp.(H) \$17.50

SYNTHARTS VIDEOS Synthesizer instruction on videotape. Each course has two volumes, each volume includes a two-hour videotape recorded in stereo Hi-fi and a comprehensive workbook/manual.

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354) Steve Gadd — Up Close This great all-around drummer talks about his background and demonstrates how he used to practice, how he practices now, applying rudiments to the drum set, chart reading, keeping time, bass drum technique, four-stick drumming, etc. Gadd also plays some solos that are educational in themselves.

355) Adrien Belew — Electronic Guitar One of today's most innovative guitarists currently with King Crimson, Belew has recorded with Bowie, Zappa, and Hancock among others. Topics include alternative tuning, soloing, one and two-handed fingerboard techniques, and fretless guitar. He also discusses the uses of electronic effects to achieve an array of unique sounds.

356) Richard Tee — Contemporary Piano This "most-imitated" keyboardist can be heard on hundreds of great albums by Aretha Franklin, Paul Simon, Billy Joel, Grover Washington, Quincy Jones, Stevie Wonder, etc. In this video he covers a wide range of subjects including the importance of classical training, chord substitutions, backing a singer, left-handed technique, and more. The tape also features several Richard Tee/Steve Gadd collaborations.

358) 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

359) COMPOSERS AND THE COMPUTER, Edited by Curtis Roads This book addresses the major trends in contemporary compositional thinking by examining the aesthetics, philosophy, technology, and computer music compositions of well-known and innovative composers working in the field. It shows the applications of both small and large systems to musical composition.

201 pp.(H) \$24.95

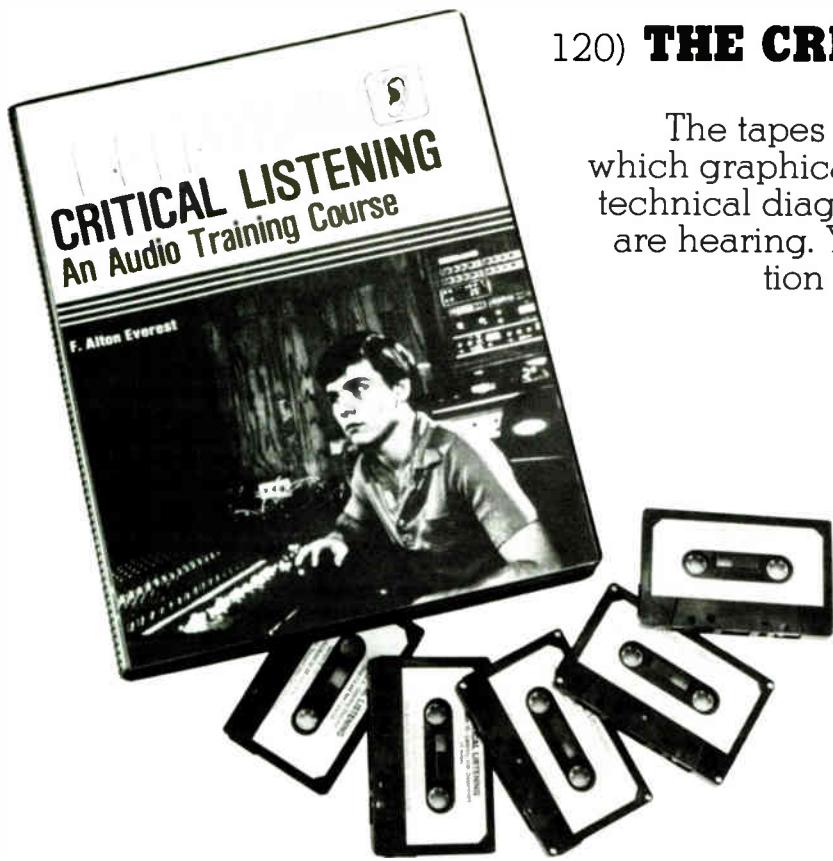
361) THE COMPLETE SYNTHESIZER, David Crombie An invaluable primer on contemporary synthesizer technology, this book covers the elements of sound, performance controls, waveforms, oscillators, filters, amplifiers, and various combinations thereof. Also compares and contrasts types of synths, controllers, and accessories.

103 pp.(P) \$10.95

362) TUNING & REPAIRING YOUR OWN PIANO, Jim Jackson Step by step how-to's for tuning, maintaining, and repairing pianos. Repair techniques for grands, uprights, consoles, and spinets, written for beginners and professionals. Includes a troubleshooting guide and professional tips for unstable pianos.

192 pp.(P) \$12.50

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F. Alton Everest is an internationally known author, lecturer, engineer, and acoustical consultant. He has compiled and designed this unique ten-lesson study course on five two-sided cassettes to guide the student step by step from basic to advanced listening technique. You will explore and discover audio events in an increasing progression, building from one lesson to the next. You will hear what is correct and what is not.

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- Detecting Distortion
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- Reverberation Effects
 - On speech and music*
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 - Their interrelationship*
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MIX BOOKSHELF

charts, the label and record number of every song, various versions of the same song to chart, all the hits of an artist's career, etc.

512 pp.(P) \$14.95

378) THE BILLBOARD BOOK OF NUMBER ONE HITS, Fred Bronson The ultimate encyclopedia for pop music fans focusing on the records that reached the very top. It details the inside stories with many revealing bits of personal information from the artists and other involved industry personnel.

624 pp.(P) \$14.95

380) THE PSYCHOLOGY OF MUSIC, Edited by Diana Deutsch This is an excellent reference on the rapidly expanding field of psycho-acoustics of special interest to synthesists, composers, instrumentalists, and producers. It thoroughly covers the ways music is processed by performer and listener. Contributors are researchers in acoustics, electronics, and perception; musicians, and professors of music and audiology.

559 pp.(P) \$30.00

390) MUSIC DIRECTORY CANADA, 1986, Norris Publications A comprehensive guidebook to the complete range of Canadian music related companies, organizations, services, markets, and events. Everyone involved with or interested in the Canadian music scene and potential markets should own this excellent reference.

432 pp \$19.95

391) THE CONCISE OXFORD HISTORY OF MUSIC, Gerald Abraham Packed with information, written with a profound feeling for the character of music and its changes from one period to another. Focusing on the whole continuum of musical history rather than specific instruments or composers, this history is scholarly, up-to-date, and as complete as possible in a single volume.

968 pp.(H) \$45.00

392) THE CONCISE OXFORD DICTIONARY OF MUSIC, 3RD ED., Michael Kennedy The best reference for thorough yet concise information about music; its structure, instruments, composition, performance, and musicians. Updated to cover the development of music in the 20th century. Every musician should have this book.

724 pp.(H) \$27.50

394) THE RECORD PRODUCERS FILE—A DIRECTORY OF ROCK ALBUM PRODUCERS, 1962-1984, Bert Muirhead This is a timely and unique reference and very usable guide for music and record business professionals, bands, songwriters, and rock fans. Over 65,000 albums were researched and this book contains over 20,000 of them listed by producer with separate cross-referenced indices of album titles, record companies, groups, artists, soundtracks, and producers' cumulative chart success.

288 pp.(P) \$10.95

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NEW FROM MIX PUBLICATIONS

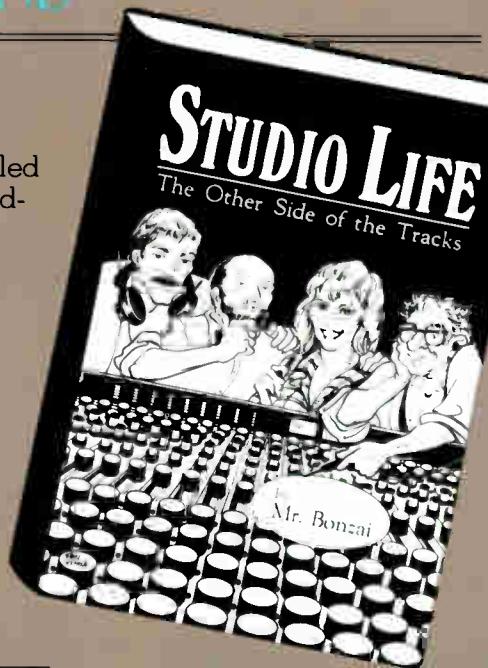
007)

STUDIO LIFE: THE OTHER SIDE OF THE TRACKS, by Mr. Bonzai, is a satiric and whimsical journey through the hidden world of recording, filled with colorful characters and bizarre sessions. Join the crew at Ryan Recording as they struggle for respectability and profits in the music industry: Mr. Bonzai, the optimistic studio manager; Cart Ryan, young engineering virtuoso; Layla, the lovely receptionist/second engineer; and Smilin' Deaf Eddie, the miracle maintenance man.

Once inside the double-insulated studio doors, you'll meet some familiar characters...the lounge singer going for a Grammy, the aging pop star laboring for twelve years on his new album. You'll visit engineering conventions where preposterous new products are unveiled. You'll discover the secret of the phantom snare, thrill to high-tech recording espionage, and venture into music video, all from Mr. Bonzai's affectionately irreverent point of view. It is first-rate entertainment throughout.

160 pp.(P)

\$7.95



"*STUDIO LIFE* should become the new Bible for all studios."

—Michael Sembello, recording artist

"The quintessential handbook for studio dwellers, what really goes on behind closed double doors..."

—Ken Pohlmann, music engineering department head,
University of Miami

"It's all here...the inner workings of Tapeland U.S.A."

—Stephen Bishop, songwriter/recording artist

"Mr. Bonzai has captured the true meaning of *STUDIO LIFE* in this incisive satire. I could not stop laughing."

—Chris Stone, president, Record Plant, LA

Bonzai: Even with all the weirdness, I find your show to have a very good natured quality...

Demento: I think we have a lot of listeners who might be considered, to use a fashionable term, nerds. I certainly might have fit that description in high school. I wore glasses, I wasn't very athletic and instead of doing ordinary teenage boy things, I hunted for old records and listened to them in my room. A lot of people lead that sort of life today.

Bonzai: You've done some live shows with Weird Al recently, haven't you?

Demento: Yes, I did two tours with him last year. We go back to when it used to say "Dr. Demento with Weird Al Yankovic" and I've lived to see the billing order reversed. But it's still a lot of fun and Al has always been very conscientious about giving credit. He's a great guy with a world of talent. He's the Allan Sherman of the '80s.

Bonzai: And he's made the transition to video...

Demento: Al has done it with rock and roll; Allan Sherman never made that transition. Stan Freberg caught the beginning of rock and roll, but didn't stay with what happened after the early '60s. He's threatened many times to make an album lampooning modern day rock but hasn't carried through as yet. Weird Al has inspired a whole new wave of parodists, especially morning deejays.

Bonzai: What are some of the worst records ever made?

Demento: Rhino Records recently released their album of the world's worst records and I wrote the liner notes. But, in a way, I would not have picked any of the records they picked because they're all fun to listen to. The worst records are the ones that are boring. This collection includes things like "I Want My Baby Back" by Jimmy Cross, "Crusher" by the Novas, "Fluffy" by Gloria Balsam. Those are great—they strike some people as being hilariously bad. They are in the same category as movies people love to hate, like *Plan Nine From Outer Space*. The worst records are the boring ones, and they come out every day by the thousands—or by the dozens, anyway. If you listen for half an hour you've wasted your time. That's bad.

Bonzai: If you could hold a dinner party and invite six people, living or from the past, who would they be?

Demento: Hmm...well, Spike Jones, for sure. Bix Beiderbecke, a jazz musician whose work has always

delighted me...a mid-westerner also and a crazy mixed-up kid like myself; Louis Armstrong, whose musical brilliance and ebullient personality is well remembered. The same goes for another jazz great, Thomas "Fats" Waller, who as another pianist could join in on some memorable after dinner jam sessions with the others. He also had a knowledge of classical music. I'd like to invite Uncle Dave Macon, a great musician from another field of American music. He lived from 1870 to 1952, recorded hundreds of songs and knew thousands more. He was also known as a great storyteller and could certainly enliven the evening with true and tall tales of

turn-of-the-century musical America. And last, although I don't know how he would get along with the others—he had an enigmatic personality—Robert Johnson, the Mississippi blues singer who was murdered in 1938. If nothing else, his music has moved and influenced so many people, including myself, and I'd like him there because so little is known about his life. * * * *

We leave Dr. Demento musing on one helluva party. I can imagine him at the head of the table like a Mad Hatter, entertaining his guests with loving and eccentric care—just like he conducts his radio show. ■



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AUDIX makes mics only, so all our attention is on microphone performance. Our high output, low-impedance dynamic mics have a tight cardioid pick-up pattern, super-smooth response, and provide higher gain before feedback. Their performance is

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Circle #063 on Reader Service Card

PREVIEW



SoundDroid™

The Droid Works (North Hollywood, CA), a newly-formed affiliate of Lucasfilm and Convergence Corporation, have introduced an advanced prototype of SoundDroid, an innovative all-digital processing system which provides fingertip control of all basic audio manipulations for film and television postproduction. The system is capable of: multitrack recording, sound synthesis, editing, mixing, equalization, panning, dynamics control, reverberation, delay, and more, including pitch shifting, looping, and doppler fly-by effects.

The standard SoundDroid includes two control computers—one with a touch-sensitive, high resolution graphics screen for user/console interaction, a second to control the audio signal processor; eight motorized faders; user definable soft keys; AES/EBU digital interfaces for connecting digital recorders; a high-speed audio controller; one digital sound processor (DSP) capable of handling eight to 16 channels of sound in real time—each DSP can be configured with up to 16 magnetic disks for increased on-line storage; one magnetic disk which can hold about two hours of mono sound or 15 minutes of eight track audio; two channels of A/D input and four channels of D/A output. One system can be expanded to accommodate up to 16 DSPs for 256 audio channels.

SoundDroid's audio quality is determined by the converters, with the ability to process either 16- or 24-bit samples; a 48kHz sampling rate is standard, and other rates, ranging from 32 to 60 kHz are available. Commercial shipments of the system will begin early next year.

Circle #064 on Reader Service Card

steps. Features include balanced and unbalanced inputs/outputs, phase switching, peak LED indicators, and a battery backup to retain crossover points in memory during transit or power loss. The DX-4000 retails for \$695.

Circle #065 on Reader Service Card



Uher 6000 Recorder

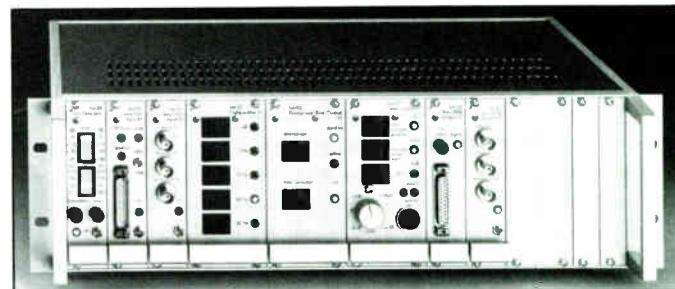
Uher of America (North Hollywood, CA) has introduced the Uher 6000 Report Universal open reel tape recorder, which features 3-3/4, 1-7/8, 15/16 and 15/32 ips speeds. Especially useful for long-term monitoring applications, such as court reporting and surveillance work due to the machine's slow tape speeds, the recorder also includes: a voice activated recording system with variable triggering sensitivity; automatic or manual record level; built-in DNR noise reduction; fast forward and rewind cueing; and a four motor design for stable operation at all speeds. The 6000 is priced at \$1,749, and can be powered by 120 VAC current, 12V car batteries, dry cells or rechargeable Ni-Cad packs. Optional equipment is available for using the deck with time code.

Circle #066 on Reader Service Card

Ampex 467 Digital Tape

Last month, Ampex began deliveries of 467, a high energy digital mastering tape said to be designed for optimum performance on all multitrack digital recording systems without requiring individual tape-to-machine realignments. The new tape is available in 1/2-inch and one-inch configurations, in 4,600 to 9,200 foot lengths.

Circle #067 on Reader Service Card



DX-4000 Electronic Crossover

High Fidelity Concepts, Inc., of Salem, Oregon, have introduced the DX-4000, a single-channel 2/3/4-way electronic crossover network. Crossover points are indicated via three front panel numerical displays, and are variable in five-Hertz steps for the first two points, while the third crossover point (HF) is adjusted in 50 Hz

Harmonia Mundi Acustica Digital Audio Interface

Recently introduced in the United States, and now available from Audio Intervisual Design (Los Angeles) and Audiotechniques (Stamford, CT), Harmonia Mundi

Acustica's bw102 allows direct digital transfer between various digital formats: PCM-F1, PCM-501/701, PCM-1610 (1600 is optional), AES/DASH, etc. Based on an internal 24-bit format, the unit's digital processing modules also offer the improvement of certain weaknesses of consumer digital gear by removing DC offset and pre-emphasis and correcting the 11 microsecond delay. Other features include an all-digital high-pass filter, digital level control for each channel, phase and channel reverse, a 16-bit digital sine wave generator, and a modular design for the "customization" of the unit to fit any particular needs. Additional modules, such as a compressor/limiter and response equalization capability will be made available at a future date. The Harmonia Mundi Acustica bw102 is priced from approximately \$3,000 to \$9,500, depending on the number of modules selected.

Circle #068 on Reader Service Card



Simmons SDS9

Unveiled at last month's NAMM show in New Orleans, the SDS9 from Simmons Group Centre (Calabasas, California) is a mid-priced electronic drum kit which offers improved playability, programmability, and a versatile sound generation system combining both acoustic and synthesized sounds. Features include: newly-developed injection molded drum pads with a natural feel; snarepad rimshot capability; three interchangeable snares EPROMs; 20 factory presets; 20 user-programmable presets; dump-to-cassette program storage; auto triggering; a built-in digital delay; headphone output jack; and an assignable MIDI interface. The SDS9 kit is priced at \$1,850, which includes the brain/controller, five pads, cables and a footswitch.

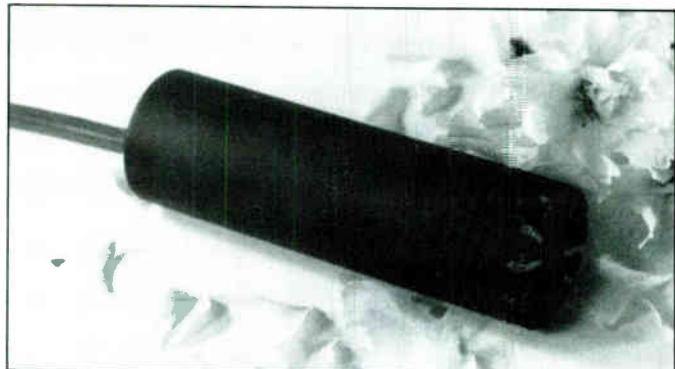
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KABA Real Time Duplication System

The KABA real time cassette duplication system from Kenneth A. Bacon Associates (Novato, CA) is a flexible, easily expandable system based on a four track master reproducer, and any number of dual cassette slave units. The system's four track capability allows the simultaneous duplication of both sides of a cassette, or either side only, simply by changing the track selector switch on the master, which also includes controls for tape speed (3 3/4 or 1 7/8 ips), tape type, bias and equalization. All control commands are carried via 11-pin connectors that interlink in a daisy chain array, simplifying system expansion and servicing. All electronics are on plug-in

cards; head alignment and replacement can be performed from the front of the unit without removing the transport. System prices begin at \$1,775.

Circle #070 on Reader Service Card



ACO Pacific Studio Microphone

The ACM48UP from ACO Pacific (Belmont, CA) is a cardioid studio microphone whose flat frequency response (to beyond 20kHz) and wide dynamic range (116dB) are well suited for stage and studio recording applications, including high performance analog and digital recordings. The microphone's black chrome finish and relatively small size (2 1/2-inches long) are especially useful when an unobtrusive profile is required. The ACM48UP is priced at \$259.95 and a matching black chrome gooseneck is also available.

Circle #071 on Reader Service Card



Expandable Phantom Supply System

Stewart Electronics of Sacramento, California, have unveiled their new system of phantom power supply modules, which can be configured to provide up to 12 channels of 48 volt power for microphones and accessories. Due to individual channel regulation, each channel features very low crosstalk, hum, and noise. The system also includes short circuit protection, allowing adjacent channels to be unaffected in the event of a short.

Circle #072 on Reader Service Card

Sony APR-2003 Location Recorder

Sony Professional Audio Division has designed the new APR-2003 portable two track, five-inch, 7 1/2/3 3/4 ips reel recorder for use by film and video units. Mike and line level inputs are balanced, transformerless XLR connectors; 7-pin Tuchel jacks simplify the use of external noise reduction (such as the Dolby Model 372 Dolby A module) and external powering (from Sony's AC adapter). A low current draw of 700 ma permits the removable, rechargeable battery pack (NP-1) to operate the recorder for over two hours.

The APR-2003's most significant feature is the ability to put time code onto a 0.38mm center track between the two stereo audio tracks, via an XLR input from a



portable time code generator. Added flexibility and the elimination of an outboard microphone power supply result from a three-position selector for internal microphone phantom powering (48v/off/12v A-B). Additional control features include switchable limiter, 20dB mike input pad, a mike mono record switch, NRS on/off and (tape/source) monitor switch, and illuminated VU meters. The Sony APR-2003 is priced at \$2,950.

Circle #073 on Reader Service Card

3M 275 Digital Tape

Scotch 275 Digital Audio Mastering Tape from 3M is a direct replacement for Scotch 265 and is designed as a high density recording medium suitable for use with equipment from a number of manufacturers. The tape is available in 1/4-inch, 1/2-inch and one-inch widths, in lengths ranging from 4610 to 7200 feet.



with the improved performance that modern circuitry allows. Features include switchable attack and release characteristics, side chain access, stereo coupling capability, balanced input and 990 balanced output stage. The Summit Audio Tube Limiter is priced at \$1,000.

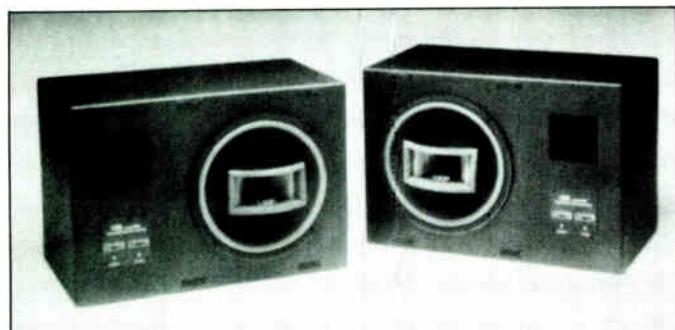
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NEOTEK Elite Consoles

The NEOTEK Elites are a new range of in-line consoles which feature completely separate inputs, input selections, and output assignments for both the main (fader channel) and secondary (monitor channel) signal paths. Primary functions including high-pass filter, patch point, auxiliary sends and parametric equalization can be assigned to either path, and the main signal path can be split at five different points so the main and monitor faders can simultaneously control different mixes on stereo or multitrack busses. The console's design offers an extraordinary amount of signal routing flexibility via front panel controls, without resorting to elaborate patching.

As with all other NEOTEK boards, the Elite is built to individual order with up to 56 input channels. Consoles are available with any popular automation interface, and automation can easily be retrofitted in the field. For more information, contact NEOTEK, 1154 West Belmont Avenue, Chicago, Illinois, 60657, (312) 929-6699.



UREI 809 Monitors

Designed for small control rooms and near-field listening applications, the UREI 809 Time Align® monitors feature 12-inch coaxial loudspeakers. Manufacturer specifications state: a 100 watt power rating (50 to 20k Hz with pink noise); frequency response (\pm 3dB) of 50 to 17.5 kHz; sensitivity of 93dB SPL at one watt/one meter; and a nominal impedance of eight ohms. The speakers are made in mirror imaged pairs, weigh 60 pounds each, and dimensions are 23 by 16.5 by 13.5 inches. The drivers and crossovers can be rotated 90 degrees for vertical mounting applications, and a front grille is optional. The UREI 809 monitors are priced at \$699 each.

Circle #074 on Reader Service Card

Summit Tube Limiter

Summit Audio, Inc., of Los Gatos, California, have introduced a new tube compressor/limiter which combines the desirable qualities of vacuum tube devices

Tweek™ Contact Enhancer

Tweek from Sumiko, Inc., of Berkeley, California, is a fluid designed to reduce contact resistance in micro-power circuits. Connections treated with this nonconductive substance act as if either the contact surface of the area has been multiplied or the conductivity has been increased. Suggested applications include audio and video connectors, battery terminals, circuit board edge connectors, phono cartridge headshell pins, switches, pots, tube and IC sockets, patchbays and other interlinks. Tweek is sold in 0.5cc applicator tubes which retail for \$15, and bulk quantities are also available.

Circle #076 on Reader Service Card

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Circle #077 on Reader Service Card



FIELD TEST

Crown Micro-Tech 1000

by Wayne Murray

Crown has just introduced the first in a new line of micro-technology amplifiers. In the Micro-Tech 1000, the engineers at Crown have sandwiched an impressive amount of power into a small package. Standing only 3½ inches tall, the amp claims to deliver 1,000 watts RMS in mono mode at less than 1% THD into one or four ohms. Crown also says that the micro-technology designed for this amp gives it all the features generic to bulkier amps of the same power capacity, plus added features unique to the design of the Micro-Tech 1000.

One of these new features is the amp's protection mechanism, employing what Crown describes as real-time computer simulation. This creates a model of the temperature of the output device and limits current only when the model shows the device temperature to be excessive. The current is limited only by the minimum amount necessary for safety,



maximizing the available output power while eliminating overheating. In order to employ this method of protection an ODEP (output device emulator protection) circuit was designed. The ODEP also receives a continuous flow of operating data which produces an analog output proportional to the changing Safe Operating Area (SOA) of the transistor. The analog output then controls a current limiter ahead of the output section of the amp. The resulting output of the limiter affects the change of the SOA along with the actual operating con-

ditions, allowing output transistors to be used to their maximum advantage. Along with a thermal sensor, which provides the ODEP circuit with vital information on the operating temperature of the output device heat sink, this provides the amp with "real time computer simulation." All of this helps eliminate the problems which usually plague high powered amps such as excessive temperature, instantaneous current (over-draw), and the operation of the output outside of what is considered "safe" SOA conditions.

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Lexicon Model 200 Digital Reverberator

by Linda Rio

The Lexicon 200 Digital Reverberator has been around for a while, but Lexicon is not finished yet—they have a few more tricks up their sleeves. A new software update for the Model 200 has been released by Lexicon. In keeping with Lexicon's commitment to making a versatile, expandable product, Software Version 1.3 offers two new programs and improves on two of the old ones.

With the Lexicon 200 and its new software, versatility is the key word. The 200 now has six programs. Halls, Plates, Chambers and Rich Plates are the original programs; the new software update offers Rich Split, Inverse Room, and significantly improves the Chamber and Rich Plate programs. Each of the six programs has up to 10 variations preset by Lexicon, for a total of 60 preset programs. With the numerous front-panel controls, each program can be further

altered to derive new parameters and sounds to be stored in the 10 memory registers.

PROGRAMS:

The 200's six programs cover all the bases, offering just about any type of reverb one could ask for. The Hall program simulates the acoustics of actual rooms, adjustable to re-

semble any room from a closet to a concert hall. The Plate program emphasizes the high-frequency spectrum and, thus, yields a bright sound with coloration (although this varies with the settings of the front panel controls). The Plate program, unlike the Hall program, creates dense early reflections which have a thickening effect on the initial sounds, not just

—PAGE 106



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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—FROM PAGE 104, LEXICON

the decay as in the Hall program. The Hall and Plate programs are essentially unchanged in the software update.

Lexicon combined characteristics of the Hall and Plate programs to come up with the third program, called Chambers. The software update introduces a major improvement in this program: the size setting now affects diffusion. The result at large size settings is a more smooth and spacious sound, with low coloration, beneficial for classical music, for example. At small sizes the sound is tighter, an effect which may be desirable for voice or percussion.

The Rich Plate program is also significantly improved in the

new software. This program simulates a gold-foil plate and produces a smoother, less metallic decay than the Plate program. The new software allows larger sizes and creates a tighter sound than before on smaller sizes. The sound is also brighter than in the previous software version.

The new Rich Split program allows the left and right channels to be used independently. Most of the parameters may be varied independently, enabling the 200 to function as two mono reverb units.

The other addition to the new software is the Inverse Room. To give a down-to-earth description of this unusual program, Lexicon states that it "produces a reverb that sounds

like a room for a fraction of a second, and then drops off abruptly." One use for this program is to achieve a gated reverb effect.

The Chamber, Rich Plate, Rich Split programs now have a feature called Infinite Reverb. This allows a sound to be stored in the 200's memory and repeated continuously. Layering of sounds may be accomplished with this feature to produce rich chords. To achieve this effect in a performance situation, a footswitch can be attached to the Reverb Time input on the rear panel.

ADJUSTABLE PARAMETERS

The front plate of the 200 is, for the most part, self-explanatory, making the unit simple to use. A numeric keypad and function buttons call up a program variation or user register, or can store or clear a register. A display window shows the program presently running. Three knobs vary predelay, reverb time, and size, with a window display for each. The extreme values that each of these parameters may take on is determined by the program variation. For example, the predelay, or time before the onset of reverberation, for the Hall program is set at a minimum of 23 milliseconds, but may be as low as zero for all other programs. In all programs with the exception of the Inverse Room, reverb time varies with size.

Users also have the option of selecting or eliminating pre-echoes, which simulate stage reflections. The number, level, and timing of the pre-echoes is not adjustable, but is a function of the program variation. The pre-delay setting has no effect on this, so the pre-echoes may arrive before the pre-delayed sound. Diffusion may be set at high, medium, or low.

RT contour allows the low-frequency reverb (in the 100 Hz range) to be half of, equal to, or 1.5 times the reverb time setting. High-frequency reverb (10 kHz) is adjustable to equal, one-half, or one-quarter the reverb time. This allows the timbre of the reverb itself to be altered to simulate the frequency-absorption characteristics of different acoustical materials. Similarly, the rolloff control simulates the effect of air-absorption on high frequencies. In the high position, the reverb is limited only by the sharp anti-aliasing filter at 10 kHz. At medium or low, the 3dB-down frequencies are 7k and 3k, respectively, with a 6dB/octave slope.

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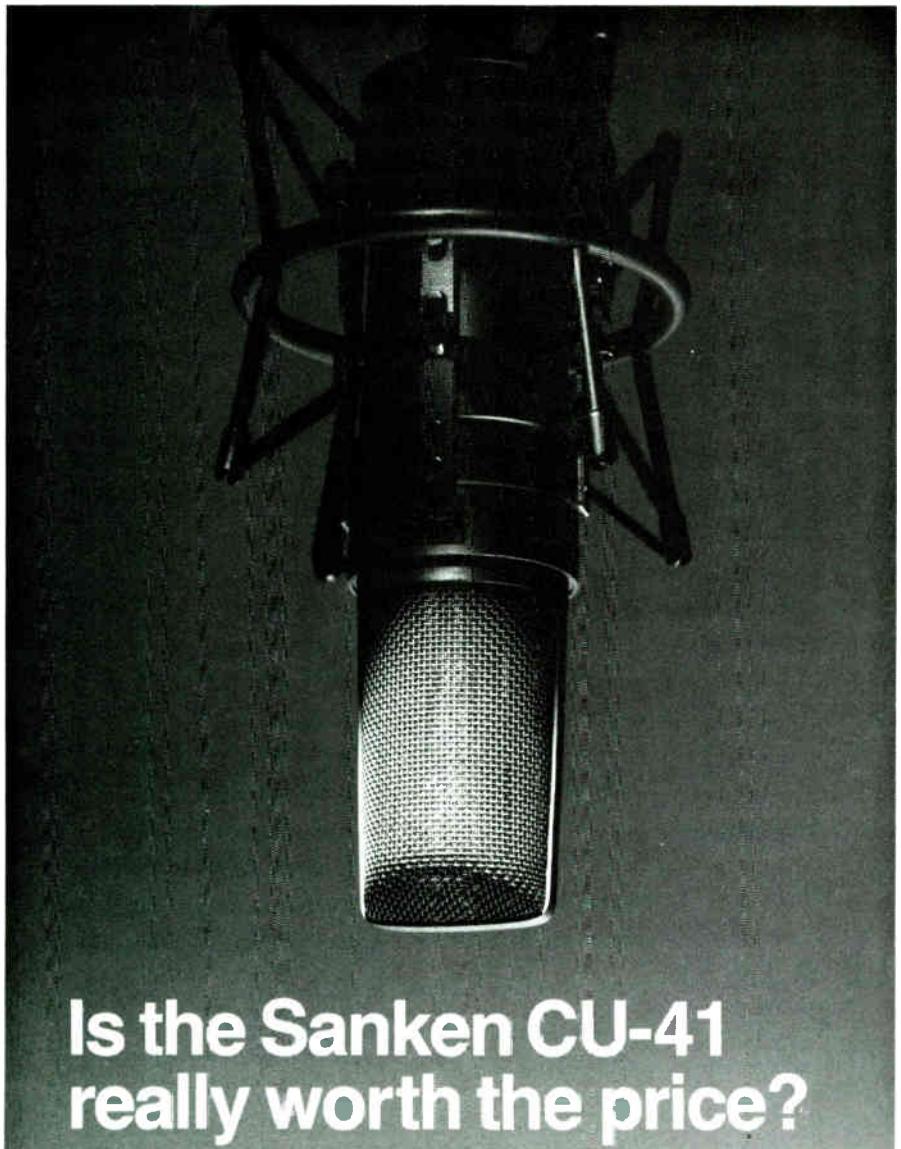


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reverb, the possibilities are endless. The user could probably imitate the sound of any acoustical environment imaginable or create dozens of "unreal" sounds.

OTHER FEATURES:

The front panel includes input mix switches to provide normal stereo or to send either the left or right input, or the combination of both, through both reverb channels. A 12-segment LED meter shows peak/hold and overload for each channel. The reverb stop button halts the reverb and allows the dry signal to pass. The input mute button mutes the input signal but allows the reverb to decay naturally.

Finally there are the standard input level and output mix faders, to vary the level of reverberation from wet to dry. Output adjustment screws give a maximum output of +24dBm.

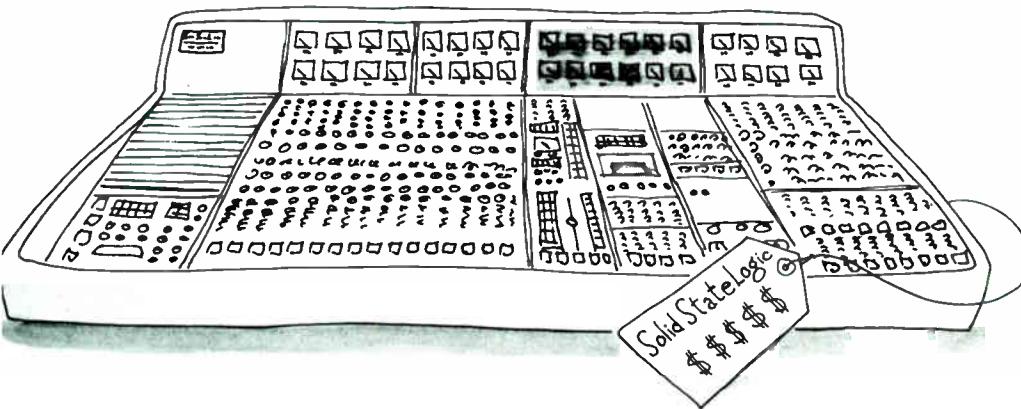
The rear panel left/right inputs are balanced XLRs, as are the balanced and transformer-isolated left/right outputs. A gain switch selects either 0dB or +20dB input gain, allowing the unit to accept input levels from -18 to +24dBm.

Three 1/4-inch inputs on the rear panel accommodate footswitches for the three remote control functions. The reverb time is adjustable via a footswitch. Likewise, the programs, variations and registers may be accessed. The input mute can be used to bypass the unit, allowing only the dry signal to pass. These remote control functions simplify operation in performance situations.

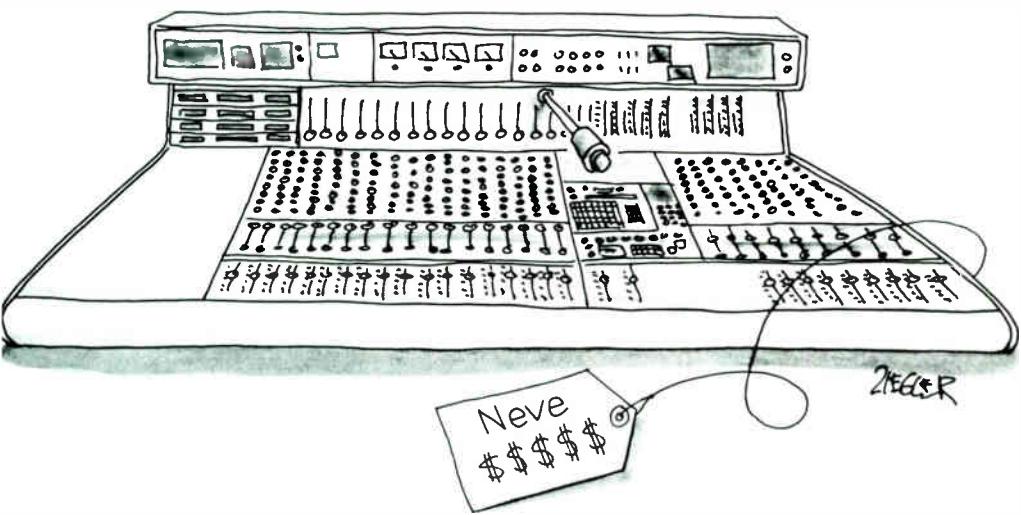
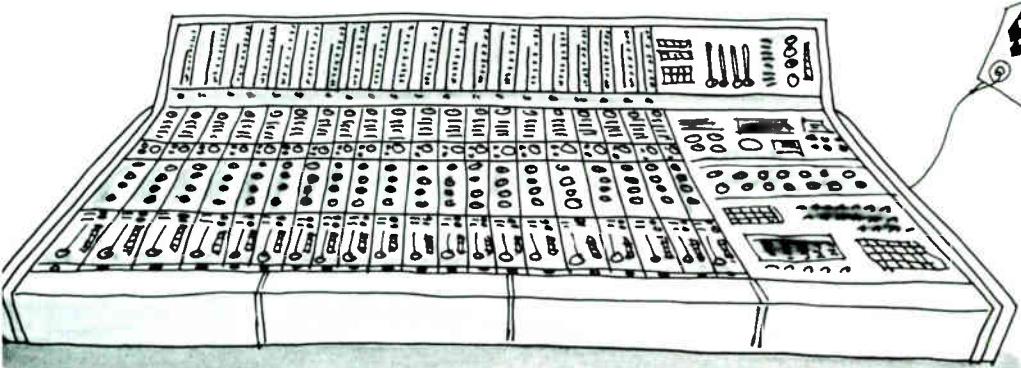
The extremely well-organized owner's manual for the unit provides all necessary specs, installation and user instruction, and many helpful hints. The unit itself is easy to understand and operate, and the manual can clear up any questions which may arise. The manual is, like the unit, upgradeable: new pages are provided with the new software to replace old pages.

No schematics are provided with the 200, although the manual includes a block diagram and a section on trouble-shooting. The 200 has self-diagnostic tests which run when the unit is powered up and also has 10 more comprehensive diagnostic programs, which are accessible by the user. When an error is detected, an error message appears in the display, identifying the particular problem with a number. This number is presumably only understandable to Lexicon personnel, as no list of the error message numbers and their corresponding meanings appears in the manual.

These three consoles have a lot in common.



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years ago to design their con-

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EVALUATION:

The Hall program creates a spacious, warm sound. It is easy to work with to "create" a room or hall of any size. At large settings (long reverb time, large size), the program is suitable for classical music. It adds a nice touch to piano to lend a "concert hall" sound. With the smaller settings (short reverb time, small size), the program can add fullness with the pre-echoes on while leaving the original sound basically unchanged. This program, which is unchanged from the last software version, is a real beauty.

The Plate program is another winner. Designed to simulate the sound of plate reverb, this program yields a bright, smooth sound. On this program the reverb is heard as part of the original sound, changing the original sound. The Rich Plate program is brighter than the Plate program and is also brighter than the previous software version. Simulating the sound of gold-foil plate reverb, the Rich Plate program has a smoother sound and a less metallic decay than the Plate program. This is particularly noticeable on percussive sounds.

The Chamber program is perhaps the most universally useable. It does not give a sense of specific acoustic space, as does the Hall program, although the sound is quite spacious at large settings, which makes it useful for classical music. Small settings yield a tight sound. This was great with percussion and vocals. The program is significantly improved from the last software version. The sound of the new Rich Split program is similar to the Chamber program. Presumably this was chosen by Lexicon to make the Rich Split program useful for as many varied applications as possible. RT contour, reverb time, and pre-delay may be set independently for each channel. With these controls, it was easy to accommodate demands for two very different reverb sounds simultaneously.

The Inverse Room is very unusual and can be used to achieve an unnatural, synthesized effect. The Infinite Reverb feature is great once you learn to work with it, and yields an airy sound. Both of these unusual effects offer infinite possibilities in their use. They take a bit of experimenting but they are worth it.

Clearly, the Lexicon Model 200 is a gem, with plenty of versatility and great sounding programs. The unit is worth its \$4,800 price tag, and considering that Lexicon is continually working on improvements and updates, one needn't worry about obsolescence. ■

—FROM PAGE 104, CROWN

Overheating is a common problem with high powered amps and the usual methods used to prevent it are heat sinks and fans. The Micro-Tech has both, but to keep the size of the amp down, Crown has made some changes worth discussing. Most power amps use off-the-shelf aluminum extrusions for heat sinks, which perform reasonably well and are mass produced. However, these are too bulky for a compact system, so the Micro-Tech uses a custom designed convoluted finstock providing a high ratio of area to volume or area to weight. All power devices are mounted directly to heat spreaders that are electrically hot, for improved thermal coupling by eliminating the insulating interface underneath the power devices. Crown maximizes the thermal stability of this amp by also including the chassis itself as part of the thermal circuit. The Micro-Tech also utilizes a self-contained forced air cooling system with the option of a high or low velocity fan. The high velocity fan is installed at the factory, but a low velocity fan for quieter operation is provided with the unit, and Crown includes easy instructions for its installation. Another feature included in the Micro-Tech's cooling system is a reversible airflow option which comes in handy in a rack mount system. If a rack fan blows air into the rack (rather than out) this option would be ideal. There is also a dust filter located on the front of the unit which is easily removed for cleaning and replacement.

All this power and technology is set inside a sturdy metal frame 3.5 inches tall weighing in at 38 lbs. This is not an amp one can carry with one hand like a lunch tray, but it is conveniently smaller than most amps of equal power. The inputs are balanced 1/4-inch phone jacks which will also accept unbalanced input signals. Outputs are the common five-way banana jacks. Also located on the back panel are channel input level controls, and a parallel-mono push button switch.

The Micro-Tech 1000 has three different modes of operation: stereo, bridged mono, and parallel mono. Crown provides the specs for all these modes in the manual, but for the benefit of those who like to get straight to the point, I will only list those specs which relate to the more common audio applications.

In stereo mode into a load of 4 ohms the output power is 350 watts +/- 1dB per channel, at 20Hz-20kHz with no more than 1.0% THD. For an 8 ohm load the output power is 265

watts +/- 1dB per channel at 20Hz-20kHz with no more than 1.0% THD. The frequency response is +/- 0.1dB 20Hz-20kHz at 1 watt into 8 ohms. IM distortion is less than 0.05% from 25 milliwatts to 250 watts into 8 ohms, per channel. Input sensitivity is factory set for .775 volt unbalanced in for rated power out, but Crown has an option which if desired, would change the sensitivity to 2.2 volts unbalanced in for rated power out. This input sensitivity is the same for all modes of operation.

Parallel monophonic mode into a load of 4 ohms produces 500 watts continuous average power +/- 1dB, 20Hz-20kHz, with no more than 1.0% THD. Output power into 8 ohms is 300 watts continuous average power +/- 1dB, 20Hz-20kHz, with no more than 1.0% THD. Frequency response is +/- 0.1dB, 20Hz-20kHz, at 1 watt into 16 ohms. IM distortion is less than 0.03% from 0.6 watt to 600 watts into 4 ohms.

Bridged mono mode into a load of 8 ohms delivers 800 watts continuous average power +/- 1dB, 20Hz-20kHz, with no more than 1.0% THD. Output power into 16 ohms is 540 watts continuous average power +/- 1dB, 20Hz-20kHz, with no more than 1.0% THD. Frequency response is +/- 0.1dB, 20Hz-20kHz, at 1 watt into 16 ohms. IM distortion is less than 0.02% from 0.6 watt to 600 watts into 16 ohms and less than 0.05% from 0.06 watt to .6 watt into 8 ohms. The manual provides detailed information on all modes of operation and their relative specifications.

Testing one channel at a time, I put a 1kHz sine wave into the input and measured the output into an 8 ohm resistive load. I determined that the amp was delivering 340 watts RMS before clipping. The specs Crown provides for similar conditions are 280 watts continuous average power per channel at 1kHz into 8 ohms. Observing the difference, I repeated my bench test and reached the same results, but this was to be expected. Intermodulation distortion was tested next into the same 8 ohm load with reasonable accuracy. From 25 milliwatts to 250 watts IM distortion went from .048% to .0045%. Crown's specs read a little differently, but the results are the same. Crown states that the IM distortion is less than .05% from 25 milliwatts to 250 watts. Comparing these specs leads me to believe that not only are Crown's specs accurate, but fairly conservative as well.

While testing the output power capability, the protection mechanisms were "accidentally" tested. One

of the scope probes slipped causing a short at the output. Sparks flew, lights blinked, and curse words were uttered (not by the amp). I have to admit I was a little worried but as I continued testing, the Micro-Tech ran smoothly and proved to be undamaged.

The next step was to take the amp out into the real world and give it a listen to observe how it runs. Its first gig was to power the PA system for a Top 40 band at a small club, but before the Crown was hooked up, I listened to the band playing a set using their own amp. To my ears the PA sound was fine. I assumed the only thing the Crown would provide would be more output, but I was wrong. In fact, the sound was a great deal cleaner than it had previously been. The hi-hat was crisp, the kick drum was fuller, and the vocals were brighter. It was hard to believe that I had been quite content with the PA sound before the Crown was used. When the gig was over, I shut down the amp and noticed it wasn't even warm after a steady hour of use. I then continually used the amp in different environments such as a studio control room and more live gigs. The results were just as pleasing as the first.

The Crown Micro-Tech 1000 is a new product, and like most new products there are problems at the start. The first amp given to me had to be sent back due to a problem in one of the channels. It seems the output protection circuit was overly zealous, causing it to spec on the bench OK, but limit in real use. Crown promptly sent me another amp which was indeed flawless, so the bug in the first amp was not a flaw in the design of the Micro-Tech, but only a flaw in the individual amp. Crown provides a full three-year warranty with every unit which protects the consumer from any similar problems.

The only criticisms I have for the amp are minor ones but they should be noted. The input level controls on the back have no setting markings and, in fact, you can't even tell if they are at full gain or at zero unless you try turning them. My other criticism would be that there are a few rough spots in the manual which may be difficult for some consumers to fully understand; fortunately, though, the most important parts are clearly stated.

Overall the Crown Micro-Tech 1000 proved to be a dependable high powered compact amplifier that lends itself very well for professional sound reinforcement and recording at an affordable cost of \$995.

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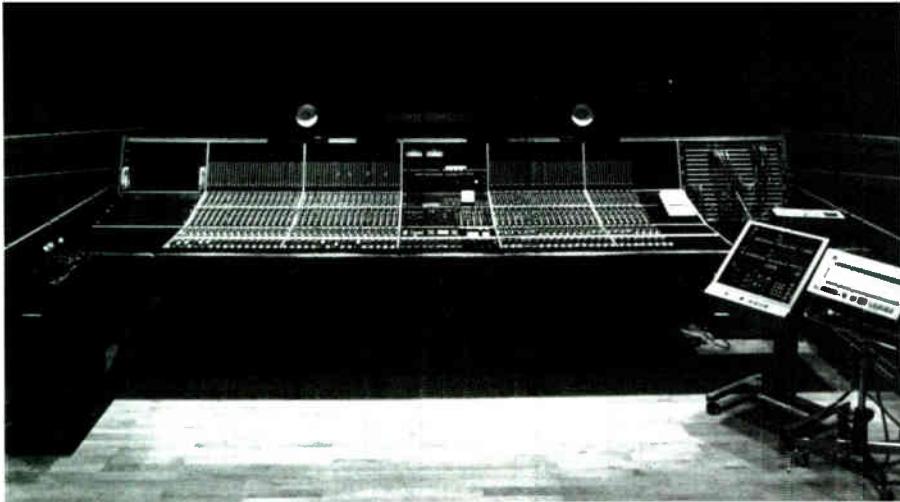
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Denmark's Puk Studios features a 56 input Calrec UA8000 console.

INTERNATIONAL UPDATE

PUK STUDIOS

"World Class" is a term that is frequently misused in the recording studio industry, but the country of Denmark now boasts yet another facility (which went on line earlier this year) that truly lives up to that lofty description. Dubbed Puk Studios by owner John Puk Quist, and located in the small town of Gjerlev, about 30 miles northwest of Copenhagen, the new two-room studio features Mitsubishi X-800/X80 digital recorders, Otari MTR-90 24-track and Otari MTR-10 two tracks, an extensive synthesizer collection (including Synclavier and Fairlight systems), and a Calrec "Ultimate Alternative" UA-8000 automated console.

The UA8000 is the second mixer in that series to be delivered so far—the first, a 48 input model installed in pop group ABBA's Polar Studios in Stockholm, Sweden, was recently used to mix the soundtrack for *Chess* ("One Night in Bangkok"). Puk's board is a 56 input version and features a versatile automation system with newly designed VCAs and an integral MasterMix memory system; 32 groups; a complete dynamics section (compression/limiting/expansion/gating) on each module; four band parametric equalization; switchable VU/PPM bar graph metering; and an intricate internal routing architecture which allows full side chain control of equalization, dynamics, and effects sends, as well as an exceptional degree of signal path control. The completeness of the console's design is almost overwhelming—each module has over 75 LEDs (and two bar graph displays) which

indicate the status of signal routing at every step of the way. With this in mind, the board incorporates an auto-diagnostic "LED Test" button which simultaneously lights every LED on the console when pressed.

While features are an important aspect of any console, a board's sound becomes the final determinant of quality, especially with digital recording and its unrelenting exposition of any signal imperfections. "When used with digital multitrack,"

comments studio owner Quist, "the much lower noise and distortion of the UA8000 allows the full power of Calrec's unique equalizer and double-acting dynamics to be realized. Add to this total flexibility and simplicity of main and auxiliary signal routing—which gives us the option of 126 mixable line inputs—and you get the 'Ultimate Alternative.' "

Another noteworthy point about the studio is its attention to details, ranging from the massive custom-built, five-way monitoring system designed by Andy Munro of Turnkey Two, to a large assortment of outboard gear: Lexicon 224X, EMT 251, EMT 140 stereo plate, Quantec QRS, AMS and Lexicon delays, Eventide Harmonizers, a full Scamp rack and much more. The synthesizer complement, available on a rental basis, includes: a Synclavier II 60kb with terminal and 30 MB Winchester disks, Fairlight CMI, Oberheim OB-8, PPG Wave, E-mu Emulator, Sequential Circuits Prophet-5, and a Yamaha DX7. Accommodations for ten are included in the studio's block rates.

—George Petersen

KOLNER HALL INSTALLS NEVE DIGITAL CONSOLE

Rupert Neve's all digital mixing console, the DSP, has been specified for the new 2200 seat Kolner Philharmonic Hall in Cologne, Germany by the leading German radio network, WDR (Westdeutscher Rund-

—PAGE 174

Members of Great Britain's Institute of Broadcast Sound look on as Solid State Logic's Antony David explains the mainframe construction techniques in use at SSL's new production facility in Witney, near Oxford, England.



Digital recording gets its own microphone.

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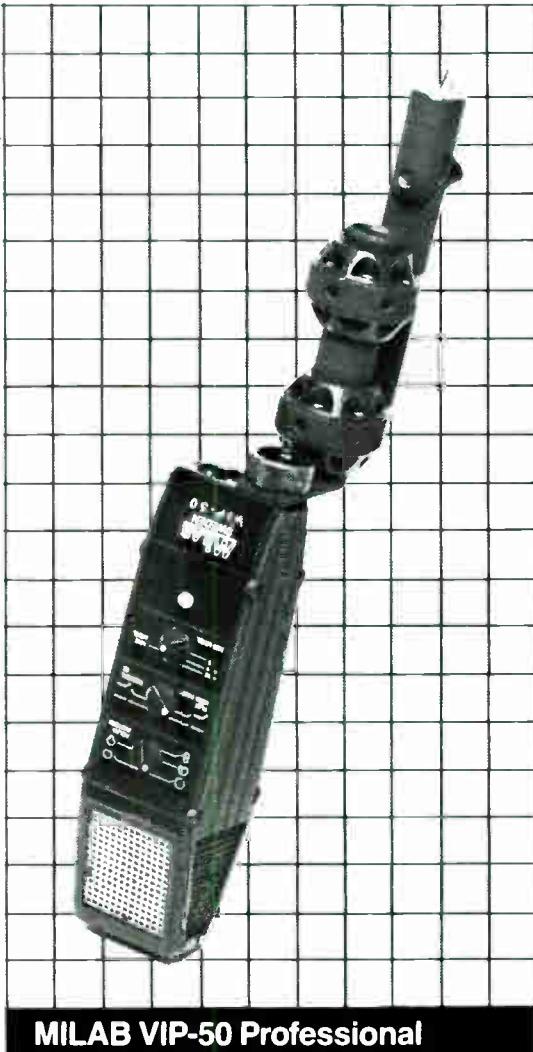
The VIP-50 by Milab, the prestigious Swedish manufacturer of professional microphones, is the first microphone fully able to cope with the stringent demands of digital recording.

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SOUND ON STAGE

CHINESE THEATER INSTALLS JBL

Hollywood's Manns Chinese Theater recently replaced its stage sound system with JBL speakers and used JBL's new computer program to determine the ideal number and direction of the components.

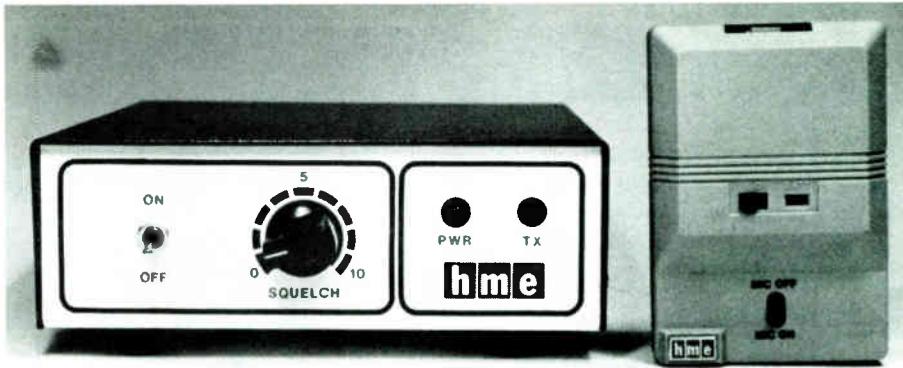
As part of Lucasfilm Ltd's THX Sound System installation, employing the theater's Dolby Stereo®, 70mm, 6-track processor, the new five-channel, bi-amped stage system is comprised of one high-frequency transducer per channel stacked on top of two low-frequency cabinets per channel. A JBL 2360 Bi-Radial constant coverage horn with a JBL 2445J compression driver makes up each high-frequency section. The low-frequency sections consist of two JBL 4508 low frequency enclosures each with two JBL 2225J 15-inch diameter transducers.

Each low-frequency cabinet system is 8 ohms and is powered by a 250-watt power amplifier as well as a 250-watt power amplifier for each high-frequency unit per channel.

JBL's new computer program, Central Array Design Program (CADP), was utilized by Clyde McKinney, director of technical services for the THX Sound System Program. McKinney used CADP to confirm the locations of the stage speakers and investigate a beaming problem that occurred when two high-frequency horn systems were used for power-handling.

CADP indicated that with the acoustics and architecture of the Chinese Theatre, two horns and two drivers per channel would cause beaming, but reducing to one of each would give us enough power to fill the 1,492-seat auditorium without beaming in the vertical plane," said McKinney.

Another problem tackled by McKinney was sound image quality. In 1927, the Chinese Theatre was



HME System 420

built with a shallow 40-foot-tall cavity behind the screen designed for use as a flyloft for live theater if the need arose. Standing waves and reflective signals, however, were given off when sound entered the cavity.

"We installed a baffle structure behind the screen frame following the curve of the screen. Openings at the appropriate spots allowed the speaker systems to penetrate the structure. The baffle extended from screen-right to screen-left and just over two-thirds of the screen height. Heavy acoustical material was used to further baffle the proscenium opening," said McKinney.

"The cavity behind the screen allowed installation while the screen was in place and the theater remained in operation. The project took approximately six days to complete," McKinney added.

The baffle places the bass cabinets in half space for improved low-frequency response. An inch of material on the face of the baffle absorbs reflections above 1,000 cycles whenever they bounce off the screen from the high-frequency horns.

Each stage system has a nominal horizontal coverage angle of 90 degrees and the high-frequency pattern is nominally 40 degrees vertical. The stage speakers are aimed two-thirds of the way back in the seating area and the horns are tipped down so they cover from the first row, back to the last.

Each of the five stage speaker system's amplifiers is driven by a THX crossover. The minimal equalization needed to bring the systems to the correct house curve was accomplished by using the one-third octave equalizers located in the Dolby Laboratories® CP-200 Cinema Processor. The system was designed to achieve 110dBc throughout the auditorium from each channel.

The other two theaters in the Manns complex were also outfitted

with similar JBL stage sound systems. The THX Sound System concept was designed by Tomlinson Holman, Technical Director of Lucasfilm, Ltd.

HME System 420

HM Electronics, Inc. of San Diego, California has recently introduced a new, cost-effective wireless microphone system designed for church, theater and conference room applications. The System 420 Body Pac offers high-band VHF operation. Virtually any professional microphone can be used with the new miniaturized transmitter. Improved RF performance permits up to 15 systems to be used compatibly in a single location. The compact receiver can be powered from AC or external DC, allowing use of the system for budget-minded ENG and EFP crews. Circle #091 on Reader Service Card

NOVA SOUND AT THE QUEEN MARY

The 1st Annual Queen Mary Jazz Festival was decked out with a 35,000-watt sound system and an extensive monitor system, supplied by West Los Angeles' Nova Sound Research. The three-day event took place April 19th through April 21st at the historic Long Beach site.

The parking lot of the Queen Mary was transformed into a theater environment for 11,000 fans who were entertained by artists including Herbie Hancock, Chick Corea, Steps Ahead, Miles Davis, Kenny G & the G Force, Bob James and Stanley Clarke. Clarke also appeared in the Queen Mary All Stars band which featured Freddie Hubbard, George Duke, Michael Brecker, Lenny White and Allan Holdsworth.

Sound for the event was designed by Nova Chief Engineer Ed Maloney. House engineer for Nova was Ron Pendragon. Ken Fowler and Mitch Turner handled monitor engi-

neering with Peter Callahan and Dave LeDude assisting.

The festival was broadcast live on radio via KKGO, and was also videotaped, with facilities provided by Continental Color Recorders. Additionally, the concert was recorded for broadcast at a later date, and a multitrack was also recorded for use with the video. Tim Pinch handled audio recording on the project.

THEATER OPENING AT THE TROPICANA

The Audio Systems Division of Peirce-Phelps, Inc., Philadelphia, PA, has furnished the equipment for the new 2,000 seat theater nearing completion at the Tropicana Hotel & Casino in Atlantic City, New Jersey. It is the largest and most complex sound system in Atlantic City, and includes speakers by Community Light and Sound, Chester, PA. The system features the M4, Community's new highly regarded midrange device. The contract to supply the sound system was signed in October, 1984, and the room is scheduled to open in May, 1985, with Wayne Newton as the featured entertainment. The Audio Systems Division of Peirce-Phelps worked in conjunction with George Thomas Howard Associates (Special Systems Consultant) and Chadwick & Simon (Electrical Contractor).

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R-Columbia's Model CC-700 is a one ounce replacement for heavier types of headphones normally



R-Columbia Headphone/Mike

used with popular intercom systems such as Clear-Com, RTS, Telex, etc. Because the R-Columbia Model CC-700/C comes with an ultra-lightweight noise cancelling dynamic microphone, no power or battery supply is required to interface the mike with popular intercom systems, as is the case when small electret mikes are used on lightweight headphones.

The Model CC-700/C Headphone/Mike, by R-Columbia, comes equipped with either a male or female 4-pin XLR plug, depending on which manufacturer of intercom system it is to be used with. A wind screen is furnished for the mike and a sliding clothing clip cord strain relief negates the cord weight to the user. Manufactured in either a single or double ear style. Single ear style sells for \$159.95. Circle #092 on Reader Service Card

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The Industrial Research Products, Inc. DI-4019 Level-Matic™ provides automatic level control in sound reinforcement systems. Sound system gain is automatically adjusted to maintain uniform output signals by sensing changes in average input signal level. Thus, level variations between loud and soft talkers or level



Automatic Gain Control

fluctuations caused by a variation in talker to microphone distance are compensated. In background music systems the DI-4019 will reduce music level by 10dB during voice announcements.

The DI-4019 is said to not cause audible gain pumping, noise modulation, or loudness error often associated with conventional compressor/limiters. System Gain is controlled by either the feedforward or the feedback control voltage. This enables the DI-4019 to respond with feedback control for temporary increases in level and to return to the gain established by the feedforward control voltage. Gain corrections are made at a constant dB/sec slew rate to minimize gain "hunting." An internal over-range limiter prevents hard clipping of abnormally loud (e.g. shouting) input. The limiter operates at 30 dB above normal inputs and uses low distortion FET technology. Circle #093 on Reader Service Card

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ARTIST STUDIOS

AT HOME WITH KASHIF

by Brooke Comer

Like many artists, Kashif had his studio, the New Music Group Studio, installed in his Stamford, CT, home primarily for economic reasons. "When I'm creating in outside studios, I always have that little accountant sitting on my shoulder saying 'OK, you just wasted 15 minutes, that cost you X amount of dollars.' Last year I spent over one million dollars in studio time." With unlimited access to his own major

(Below) Kashif's studio



PHOTO: BROOKE COMER

operation, Kashif can recoup some of last year's studio expenditures, and exercise maximum creative energy without letting "the little accountant" cramp his style. Not only that, but as a performer, producer and engineer, Kashif has more control over his sound in his own work space. His home also serves as headquarters for The New Music Group, Kashif's umbrella company which includes three publishing operations, the studio, a

live tour company and a laser company.

"I wanted a creative resort," Kashif explains from the deck of his split level estate in the Connecticut woods. The former home of baseball great Jackie Robinson is secluded, complete with a private lakefront. "I chose the house with the studio in mind. I wanted a place where I could work and also relax. I'm not a workaholic." Rooms in the multi-level, wood and glass house



double as work and recreation areas, and Kashif went to extensive pains to soundproof walls and floors so that the two could occur simultaneously. The piano room doubles as a living room; the drum room next to the control room also serves as a lounge. Kashif's bedroom is located directly over the control room, however his soundproofing system proved so effective that Kashif can sleep undisturbed during sessions downstairs.

Major construction was the first step in setting up his studio, and selecting equipment came next. Neither were performed quickly. Kashif did extensive research in his choice of a console. "I checked out other studios, and talked to

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Kashif on Producing and Performing

Kashif's musical roots go back to age seven. "I didn't grow up playing music in church per se, and I don't have any real strong gospel influence," he says. "But I was forced to go to church when I was young, and I'd go in early and play boogie-woogie. That was the part I liked; I was wearin' that piano out every Sunday."

Kashif toyed with flute and trumpet, but he became so adept on the keyboard that he was offered a spot with the B.T. Express while he was still in high school. He played on *Energy to Burn* and toured the world with that group before joining Stephanie Mills as keyboardist.

Evelyn "Champagne" King hit number one with "I'm In Love," written by Kashif, Morrie Brown and Paul Lawrence Jones III, and Kashif has been popping up all over the place ever since. He programmed and played the synthesizer on Hall & Oates' "Say It Isn't So," appeared on Nona Hendryx's *Nona*, and arranged and played keyboards on Fonzi Thornton's "(Uh-Oh) There Goes My Heart Again." Other credits include writing and producing Evelyn King's "Love Come Down," writing and performing on George Benson's #1 R&B single "Inside Love (So Personal)," and producing Kenny G's G-Force and Melba Moore's "Take My Love," all adding up to a reputation for high-quality, almost glossy sounds.

But Kashif says there's nothing premeditated when he goes into the studio, no set formula or sound he's looking for. "I just try to get what's natural for whoever I'm working with," he says. He recently produced (among other projects) the Arista debut of The Wootens, five brothers from Newport News, Virginia, two of whom play in Kashif's touring band. "The Wootens' album has a more ambient, rowdy, young sound than my album, which has a very slick, adult, musician's kind of thing going.

"What happens now is that a record company gives me money and says, 'Go make a hit record.' In a lot of instances the thing I have to offer is just being quiet, sitting back and letting them go for it." On saxman Kenny G's second album, says Kashif, "being

executive producer meant being there when he needed me, telling him which songs I thought were best to record, in what key and at what tempo, having Kenny switch from tenor to alto sax. I'm an overseer. They'll come to me and say, 'We want to do such and such,' and I'll say, 'Yeah, you can do that, but if you take this shortcut you can save yourselves about \$4,000!'

engineers," he says. "Phil Wagner, formerly of Soundworks in New York, was extremely helpful, and I bounced off a lot of other people, too." Kashif took his time before choosing a Soundcraft TS24 in-line console with Audio Kinetics MasterMix disk based automation. "It has one great feature over any other console. I can sit in and do a session by myself since it's an in-line board, and I don't have to do a lot of moves to make a sound come



PHOTO BROOKE COMER

Kashif's piano room/living room

Kashif looks for originality and focus in the artists he produces. "I've had to take some artists by the hand and tell them everything to do," he comments. On the other hand, "The Wootens are so in tune with what they want to do—in the musical realm and in life—that it comes across in the music. There is a sense of confidence as well as humbleness; it's a balance."

Any act that Kashif produces can also have use of his Synclavier—for a substantial rental fee; that's one way to get your money back on such an investment. Kashif loves the Synclavier because he feels its capabilities are limitless. "You can sample any sound on it, and make up any sound on the synthesizer. You can re-sample sounds, re-synthesize sounds," he beams.

"I could take the sound of the attack of the snare drum, the first milliseconds of the snare drum, and superimpose a saxophone note onto the beginning of it. Or someone clearing his throat. On the new Whitney Houston album,

—PAGE 120

up. I just plug it in, press a button and the sound is there. When my engineer gets tired, I can send him home, or keep going by myself, or start a new tune in the middle of the night. The EQ on this board is so musical and so flexible that we tend not to use a lot of outboard EQ on mixing or recording. When we need it, the board's EQ is more than capable of doing what we need. It's a good, clean sounding board and the routing is simple and easy to understand. It was the obvious choice."

New Music Group is an all digital studio, a feature that Kashif believes lends to his particular sound. "Digital sound is more accurate, and you can recall things very easily with digital memory storage. For the kinds of records I produce, very high end, it's perfect. That clear, high-tech sound is my trademark, an unusually high fidelity. You can hear that especially on the radio, my songs sound sharper than the preceding songs. I also like digital's technical proficiency. You can

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do punches on digital that you can't do on analog. It's quiet, but bigger, fatter sounding."

To complement his 40-input Soundcraft board, Kashif chose a Sony 3324 digital 24-track with an RM-3310 remote unit, capable of synchronizing two 3324s. "I have tie lines running around the whole house, so when I do a mix downstairs, I can listen to the sound on a real stereo in my bedroom. I'm having transmitters put into my car, which is a perfect listening environment." Instead of going out to mix, Kashif prefers to stay at home. "I won't say I'll never go out to mix, but I love mixing here. This way, I can leave the mix up for three or four days if I want to." He also has a wide choice of speakers to mix on. "I buy one of everything," says Kashif, whose collection includes JBL 4435s, Yamaha NS10Ms, and Visonik David 9000s,



PHOTO: BROOKE COMER

to name a few.

Kashif's speakers are not the only thing he buys in quantity. Tape machines include a Sony PCM-F1 processor/SL2700 VTR digital two-track system, an Otari MX-5050, and an Aiwa F990. "I picked a variety of amplifiers too," Kashif notes, "and I'm very happy with my Perreaux 8000 for the JBL monitors, Yamahas and Davids; and UREI 6250 for the studio amps." His wide range of outboard gear features Eventide SP 2016 signal processors, an AMS RMX16 digital reverb, AKG BX20 spring reverb, Korg SDD-3000 digital delays, Dyno-My-Piano Tri-Stereo Chorus, Valley People Kepex II noise gates, DynaMite noise gates, Drawmer DS201 gates, UREI 1176 LN limit-

—FROM PAGE 118, PRODUCING

the snare drum sound I used was her clearing her throat when she was getting ready to sing. I just took that and sampled it, and used that for the snare drum. So the Synclavier affords you total flexibility over your musical environment."

Chances are that most people who see Kashif perform have no idea that the background vocals are being in large part belted out by the Synclavier—with Kashif's voice sampled inside. "We were the first people in the world to actually have the Synclavier sing for us live. Our background vocalists are supported by the Synclavier singing certain harmonies, which affords us the sound that I have on the records," Kashif says. "On records it's me singing 24 tracks of vocals by myself a lot of times."

vast. It's a software-based instrument, and its capabilities are kind of infinite. Every four months they send me new software that enables it to do new things. I have to keep reading new manuals."

Kashif lists Quincy Jones, Stevie Wonder, Maurice White, Trevor Horn and Arif Mardin among his favorite producers. And as far as songwriters go, he puts Rod Temperton, Lionel Richie, Cole Porter and Stevie Wonder at the top. "A lot of people say I sound like a mix between Marvin Gaye and Stevie Wonder," he says. "When Stevie and I met the first time he was saying how much he liked my music. And I said, 'Well, I grew up listening to you.' He said, 'I thought so.'

"I bring my producer's mentality to the live show when we're rehearsing and putting together songs," says Kashif. "We may not have the echo parameters or the stereo imagery and the panning back and forth of things, and the depth of field that we have control over in the studio, so I change things to make them work live. In general, I might speed up the tempo by about one percent on every song. Then I'll take certain notes out of a chord to make it less thick or add notes to make it thicker. I'll put in accents that weren't on the record to add that live fire and feel."

"We just try to remember that if you played everything exactly like the record that would be pretty boring. You can make it sound enough like the record, have the whole essence and aura of the song, but bring that excitement and electricity to it live."

Kashif's live show is about as professional as they come, precalculated to some extent with drum and keyboard computers, but the bandleader is loose and natural fronting the band. He's funny too—kind of smooth like Richard Pryor. He attributes his ease onstage to working with friends in dance and theater in New York. "I enjoy being silly," he says. "I think the audience feels when you talk to them that you're opening up to them. My whole philosophy is that when I'm out performing I want everybody in the venue to feel like they're in my living room and they've come to be entertained at my house. I like that intimacy, and I think the audience appreciates that human element."

—Robin Tolleson

When he bought the Synclavier, Kashif says he was told by the company that it couldn't do vocals live. Kashif felt that it could, and soon showed the people who built it that it could. "I started expanding my instrument, and started coming up with these ideas that they thought were great," he says, "and started implementing them. We just started writing them and trading ideas and suggestions. They are a very customer oriented company. I could have them on the phone at 11 o'clock on a Sunday night, and I really like that."

"Of all the 300 Synclaviers that are out, probably every one of us has thought of something that the other hasn't, because it's that

ers, dbx 160X compressors, parametric EQ from George Massenburg, API graphic EQs (550A and 560A), vintage tube Pultec equalizers and White 4400 control room equalization.

Kashif's Synclavier plays an important part in his art. "It's got a mainframe keyboard, Kennedy hard disk drive, Winchester hard disk drives and 5½-inch floppy disk drives," says Kashif proudly. "I do a lot of my parts on the Synclavier." He's also pleased with the performances of his Oberheim DMX and DX drum machines, DSX sequencers, OB-Xa and OB-8 synthesizers. His Yamaha C7 seven-foot grand piano is upstairs in the living room/piano room while equipment downstairs includes a Fender Rhodes, and a Kawai upright, four Yamaha DX7 synthesizers and a Minimoog model D.

An assortment of drums and drum machines (Simmons, Tama, Yamaha) fill the drum room located on the lower level adjacent to the control room. With marble floors, a granite hearth taking up most of one wall and a wide glass window along the other, Kashif's drum room is very live. "It's large enough to have drums set up all the time, in

case I want to use one on the spur of the moment," Kashif explains. "And it can also serve as a lounge because of its proximity to the control room."

Kashif chose Jerry Garszva to do his electronic design. "He's responsible for the tie lines all around the house, and the Synclavier room with the multi-channel outputs. Jim Taylor actually built the studio, and Al Fierstein did the acoustic design. I definitely think you'll see more and more people like me, producer/musicians starting their own home studios."

Most studios have a large assortment of microphones, but Kashif assistant John Harris explains why New Music Group doesn't need them. "We only use the overhead cymbals, Kashif's mike, and the female background vocal and the rest is drums, keyboards and Synclavier. When we record live we only use mikes for vocals and for things that are ambient or percussive. Most of the recording is done right here in the control room.

"On tours, Kashif can duplicate that direct sound by not using open drum or guitar mikes. He can get a cleaner level in the monitors that way. Without as many live

mikes, there's more control over the entire mix, and the sound on the monitors and in the house are improved." Because Kashif takes his Synclavier on the road, and his computer based device takes tracks from the studio and records them directly onto the Synclavier, anyone who recorded in the studio can be "on the tour."

The New Music Group also has a training program, which finds young talent, and helps them find vehicles to write for and produce. "Then when they're launched on their own, they have to produce a certain amount of projects for us," Kashif explains. With such a potential growth factor in his company, it would seem likely that Kashif might expand his studio facilities. He says no. "With my remote controller, I can roll up another 24-track and lock it up to work 48-track. I might get a Sony DASH two-track, or a Sony editor. But I have no plans to expand. The sound I'm going for on my new album is fresh. I have enough space and equipment to continue to get the sounds I want for quite a long time. I won't expand because I won't need to. I'm already years ahead of technology."

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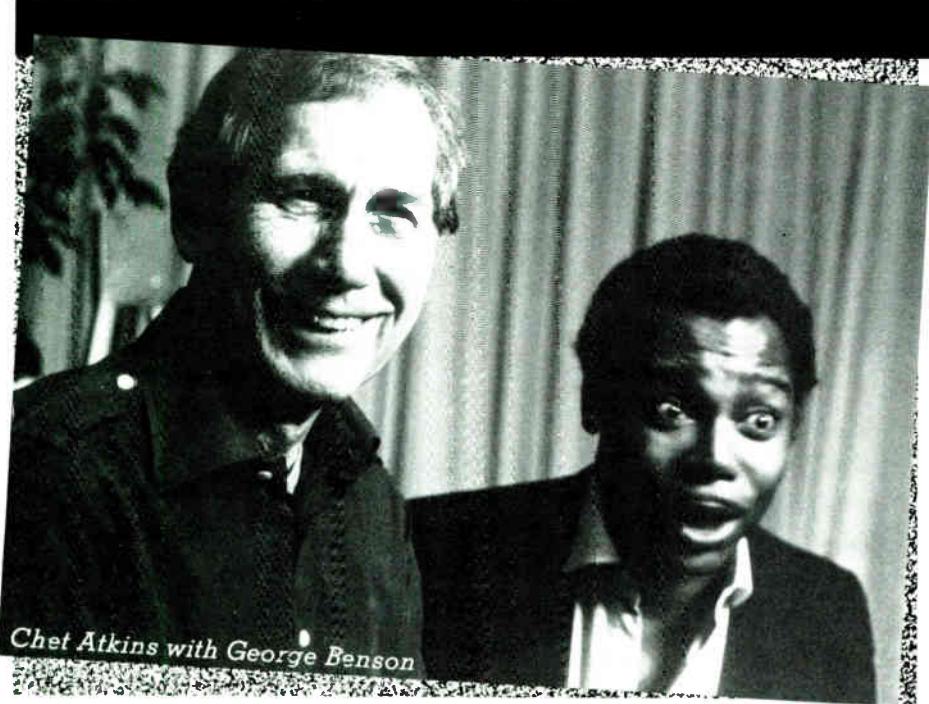
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Chet Atkins with George Benson

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Stalwarts soloing with At-

kins include George Benson, Earl Klugh, Larry Carlton, Steve Lukather, Mark Knopfler and David Hungate, along with Randy Goodrum, Larrie London, Clayton Ivey, Jeff Porcaro, Shane Keister, Paul Yandell, Boots Randolph and others. Hungate is listed as producer on eight of the sides; Atkins and Benson are on the remaining two cuts.

According to Atkins, the album was originally conceived as a duet project with Benson, but Warner Brothers and CBS could not work it out; so Rick Blackburn, senior vice-president of CBS, Nashville, suggested that he invite other guests to participate.

"That's when I thought of

David Hungate," says Atkins in describing why he tapped the former Toto bassist for his first solo producer role. "I thought—who could give me the up-to-date contemporary rhythm tracks I need? David is one of the great musicians in the world. That's why I wanted him. I worked with him on a couple of sessions, and he was a terrific musical influence on me. He can think of a dozen different ways to do something. He can hear something and say, 'This is the way we'll do it 'cause it's tastier.' That's the attribute of a great producer—that and knowing a good song from a bad one."

Atkins was responsible for selecting the songs and identifying some of the musicians he wanted; Hungate recruited other musicians and had the task of determining who could best play what where.

"The tunes were tunes that I'd collected over the past three years. They were the best I could find," says Atkins. "Leon Russell wrote one of my favorites, 'Quiet Eyes.' Randy Goodrum, who's my favorite keyboard player and who wrote 'You Needed Me,' and George Benson wrote another favorite 'Sunrise.'

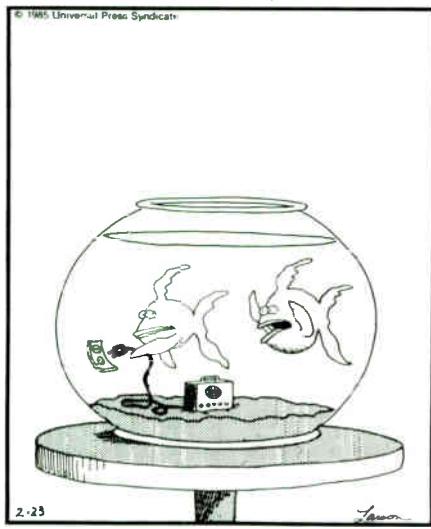
"George just played a little rhythm lick that we all liked and Randy put a melody on top of it. Then George played some jazz in the middle and we all went back to the beginning and that was it." A little oversimplistic, perhaps.

"It was the same way with Mark Knopfler," Atkins explains. "He wrote a little tune, and I did my thing, and he did his separately. We play together but we don't play harmony

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THE FAR SIDE

By GARY LARSON



"Bob! You fool! Don't plug that thing in!"

Warsaw Rocks! Just Ask Lady Pank

To hear the guys in Lady Pank tell it, Poland is just like Brooklyn, only without the accents. Warsaw's premier rock band—now available on domestic vinyl through the auspices of MCA—will go on and on about how there is no particular state censorship of music, how there is no particular lack of access to current Western rock, how things are basically the same all over. And then you get a couple of vodkas in them (not so much ice, please) and the story begins to change.

"We get the same stuff on our radio as you get here," says guitarist Edmund Stasiak. "Sometimes

even sooner." Why, Foreigner's "I Want To Know What Love Is" was topping the Polish charts even before it hit here...though that's hardly a recommendation of national taste. And there have been videoclip shows in Poland for two years now.

"And each year in August," adds songwriter Andrej Mogielnicki, "there's a big rock festival in the town of Jarocin. About 50,000 or 40,000 people arrive for five days of rock concerts, like a Polish Woodstock. Tickets are cheap, and people set up tents on the soccer field by the stage. About 40 or 50 bands perform, and there's no censorship."

"I think you've got a worse kind of censorship over here," says Stasiak, "which is commercial cen-

—PAGE 125

MUSIC NOTES

MI UPDATE

Mac Goes MIDI

The Apple Macintosh, despite its general popularity, has not made much of an impact as a music computer. That should change soon, though; Digidesign (makers of replacement drum sound chip sets for the DrumTraks, Simmons drums, Drumulator, DX, etc.) has completed a MIDI cable for the Mac and is currently negotiating with Apple for distribution. This device translates the Mac's RS-422 port signals into a form usable by MIDI gear, and sends the output to a "MIDI OUT" DIN connector. The complete unit is encapsulated and requires no external source of power. According to Digidesign, Apple is committed to getting the Mac accepted as music-oriented computer (if nothing else, their laser printer looks like the perfect device for making high-quality music notation printouts). Once the MIDI cable gets into the hands of software developers, we can expect to see the introduction of some Mac MIDI software shortly thereafter.

Ensoniq has been introducing a lot of accessories for the Mirage sampling keyboard. Disk #3 in their series of sound disks features trumpets, violins, cellos, sax, and upright bass; #4 has acoustic, electric, and orchestral percussion; #5 has various popular keyboard sounds. Each disk costs \$39.95. They also have a cartridge that expands the sequencer from 330 to 1300 notes, a "filter cartridge" that increases the sampling rate from 33k to 50k, and an Apple IIe based "Mirage Visual Editing System." The latter lets you draw, merge, and insert waveforms, in addition to reproducing sampled waveforms and showing all instrument parameters at once. The software package and manual are available for \$349.95 list.

The Kawasaki Rhythm Rocker, in my opinion one of the most "fun" music programs for the Commodore-64, has now been upgraded to include a new notation system, 750 note sequencer, and score printer. List price is still \$34.95; upgrades are available to owners of the original disk for \$15 from Sight & Sound Music Software Inc., P.O. Box 27, New Berlin, WI 53151.

Looking for a neat MIDI expander box that won't bust your budget? Check out the Casio CZ-101 (list price \$500). Sure, it's got one of



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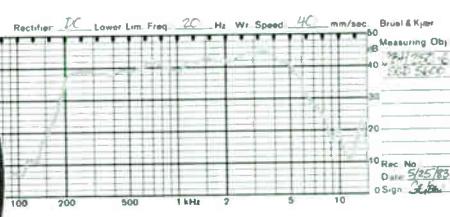
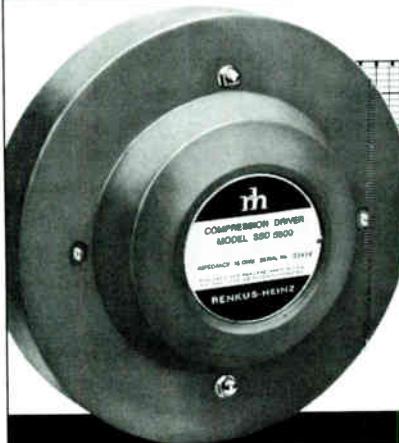
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those keyboards with tiny keys, but who cares about key size if you're using the box as a MIDI expander? (Besides, a version with full-sized keys is available for another \$200.) It sounds pretty good, and can be easily assigned to the MIDI channel of your choice in Poly mode. It also has a multi-timbral (Mono) mode where four different voices can be assigned to four different MIDI channels. Although this mode compromises the richness of each voice, if you want to have four independent lines playing at once this is a pretty cost-effective answer.

In closing, here's some information on the SP-12, E-mu's new drum machine. The list price has been semi-officially set at \$2745, and unlike the original prototypes shown at the Winter NAMM, the SP-12 will now have touch-sensitive buttons. Standard models come with a 5000 note sequencer and 1.2 seconds of user sampling; however, the sequencer will be expandable to 12,000 to 14,000 notes, and sampling time to 5 seconds with an optional expansion package.

That's the news for this month. Manufacturers are invited to send comments, rumors, updates, news of products under development, and (last but not least) press releases to Craig Anderton, c/o Mix magazine.

—Craig Anderton

PRODUCTION NOTES **Chicago, One Track at a Time**

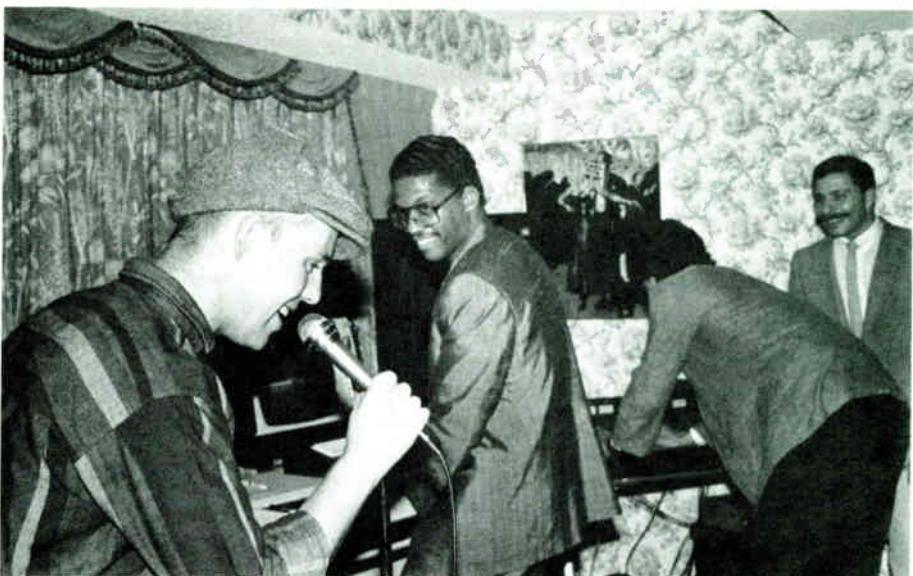
Ask a recording engineer what a rhythm track is and you'll generally get this answer: It's the basic framework of a song—drums, bass, guitar and/or piano, usually recorded all at the same time—to which the vocals, solos and sweetening are added one by one until the record is complete.

Contrary to this textbook system, the songs on *Chicago 17* were built literally one track at a time, according to engineer Humberto Gatica. "None of the tracks were done live," he asserts.

The first sound recorded was the bass, while a LinnDrum machine was keeping time. "Most of the bass is synthesizer," Gatica notes. Chicago bassist Peter Cetera played on a few tunes, but he liked the sound Gatica and producer David Foster created by doubling a Minimoog with a Yamaha DX7 (both played by Foster). As a result, Gatica explains, "we got the snap of the DX7 and the sustain and resonance of the Minimoog, which can't be compared with any other instrument for bass."

At the time *Chicago 17* was recorded (work began in May of 1983), "we could not MIDI the DX7 and the Moog, because there wasn't

—PAGE 129



Thomas Dolby and Herbie Hancock give an impromptu performance at Fairlight Instrument's party at the NAB Convention in Las Vegas in May.

PHOTO: MICHELLE LIVICK

MUSIC NOTES



PHOTO: RICHARD E AARON

—FROM PAGE 122, LADY PANK

sorship—when a producer tells you that you can't do this or that, or else you won't be able to reach a certain kind of audience. That seems to me to be even worse a censorship than state censorship.

"The lyrics we sing in English," he insists, "are exact translations from Polish—with the exception of two songs."

Yes, Lady Pank are just a bunch of wild and crazy rock and rollers, hitting the highway to Hungary and partying hardy in Cracow. Thinking of moving?

Of course, things haven't always been sweetness and light for Lady Pank, which formed two and a half years ago with Stasiak, Jan Borysewicz (guitar/vocals), Janusz Panasewicz (vocals), Jaroslaw Szla-

gowski (drums), and Paweł Msciclawski (bass). All this freedom of the airwaves, for instance, only began in the past four years. To grow up as rockers, these guys spent their time listening to contraband albums smuggled in by travelers to the West. Aside from Borysewicz' father, who once played drums in a college jazz band, the bandmates' families were all vehemently opposed to rock and roll.

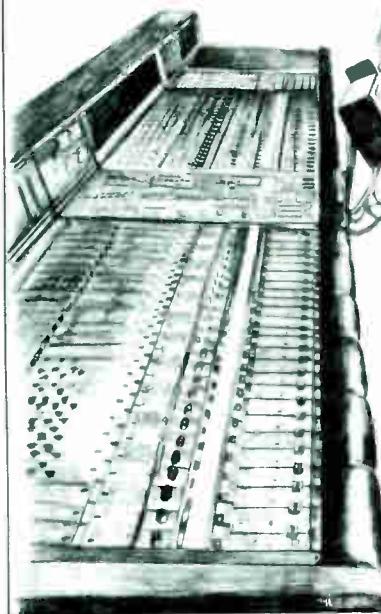
"I moved out at 17 because my old man didn't want me to play guitar," says Stasiak—and, yes, that's a direct colloquial translation; this interview was conducted in Polish. "He wanted me to become an electrical technician. I went to technical school for four years, quit, and worked as a roadie to get enough money to buy equipment."

So Lady Pank would gig regularly in Warsaw's three clubs, earning just about enough to keep themselves in strings and skins. But they were long on confidence, if short on amplifiers, and decided that they should record an album. Minor stumbling block: all recording studios in Poland are state-owned, and rock and roll (Lady Pank, if you haven't

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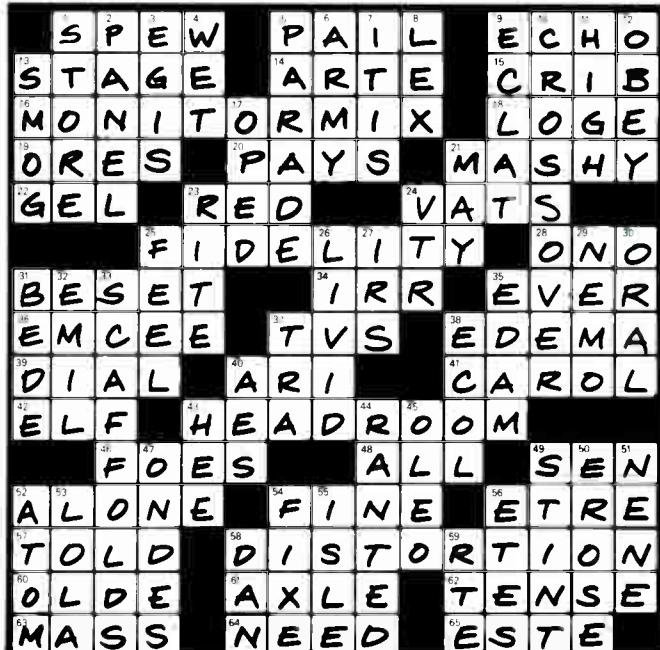
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Solution to June Mix Words



heard them, sound like the Police crossed with the Who, only not as good) is hardly at the top of the priority list.

The band went to Cracow and approached the management of a 24-track studio affiliated with a theater. The manager agreed, but asked 500,000 zlotys for the studio time. Although that works out to less than \$2,000 (we think), it was beyond the band. So they went first to the Polish Jazz Federation, then to one state organization after another, and raised the funds. Then they, metaphorically speaking, moved back to U.S. territory.

"After we made the recordings," laughs Mogielnicki, "I bought a lot of vodka and invited a few of my DJ friends over. We drank all night, and the next morning Lady Pank was number one. Well, not exactly. But the bottom line is that to get something done in Poland, like anywhere else, you must have connections."

All the connections in the world still won't make it possible to earn a living making records in Eastern Europe: there are no royalties, and no copyright laws. But you can earn a certain amount of fame. In its first year as a real band, Lady Pank was releasing a single almost every month, and getting hits with all of

them. There are two albums in Poland now; the band is working on its third. Last year seemed like the time to start looking beyond the border.

Obviously, there's not a lot of musical exchange between Poland and the West. But, since 1980, there has been some: Polish bands have toured as far as England, and bands as big as Iron Maiden have toured in Poland. Lady Pank's Western contact /producer-cum-manager, Greg Kuczynski, from his London vantage point, thought he could break these guys outside Warsaw. He shopped them to the Mega Organization in York, England who, with Kee Management in New Jersey, managed to land a deal with MCA.

And Lady Pank suddenly became the first Polish band you've ever heard of. Maybe the only one you will hear of, because, as Mogielnicki tells it, most local groups simply don't have the motivation to fight the system hard enough.

"We have underground music back home," he says. "There are many bands from smaller towns: they don't get on the radio or TV, and they don't record albums. But they do tour throughout Poland, play for a year and a half or so, then go in the Army and disband (Note: Conscription in Poland is 99½% effective).

MUSIC NOTES

They don't particularly care if they become big stars or not." His implied addition: We do.

Stars, yes—complete with fan clubs and groupies. But they still live in small rented apartments, have no personal cars and no private telephones. They played 380 dates in 1980, they claim, just to earn enough money to buy equipment: Stasiak's Stratocaster cost him 100,000 zlotys (about \$350). The only way to get electric guitars or synthesizers is to buy them from bands who have toured in the West.

So rock and roll is not a get-rich-quick scheme in Poland. Rather than royalties, musicians get paid per minute of studio time that ends up on a record. A guitarist can earn maybe 20,000 zlotys per album—an album that sells to the public for 650 zlotys. Clubs don't pay that well, either; they're supported by the government or through state-funded student organizations. The only profit-making, private clubs are discos.

Gee, the rosy glow of the glorious rock and roll fatherland is starting to wane as the level of the Stoly does likewise. "You see," frowns Mogielnicki, "in Poland there are problems not only with the government. For example, the Catholic Church is very powerful, and it is very conservative. This is not a political problem, but a problem of customs. If I want to write a song about fucking, the government may not care much, but the Church will forbid it."

"We live between the devil and the deep sea," he continues, "between the Communist government and the Church. If you're a rocker, and don't believe in either God or Communism, there's no place for you. To be a rocker in Poland is to be a misfit."

Lady Pank may, however, get to appreciate Poland once more after this summer: they're due to tour Russia. They will also get a chance to come back to America in May or June, and will become mini-movie stars when they tape a video with Oscar-winner Zbigniew Rybczynski. It really isn't a bad step for the crew, even if we Yanks do put too much ice in the vodka.

"Sometimes," smiles Stasiak from his Universal City point of view, "I go to bed not believing that this is for real."

—Ethlie Ann Vare,
with Greg Ptacek and Ed Batt



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—FROM PAGE 122, CHET ATKINS

together. It all works out great. I say something to them musically, and they say something back. It's interesting.

"Mark doesn't like to rehearse too much," Atkins continues. "He likes to play fresh off the top of his head. It comes off very exciting. That's why I love his playing. If he sat at home and thought of something to play, it might come off mechanical or something. He puts down three tracks and says, 'Let's use this here, and the next eight bars, we'll use this.' That's

the way they do it now.

"Earl Klugh I'd been listening to ever since he came to me a few years ago and said he was a fan of mine and wanted me to play on his album," Atkins continues. "He's just about my favorite guitar player right now."

Hungate, too, was influenced by Atkins, and admits he was slightly intimidated when asked to produce the album project of his boyhood hero.

"The most difficult thing to

overcome in producing for the first time was assuming the responsibility of telling people like Larry Carlton what I wanted him to do and giving Chet directions," Hungate says. "But I thought Chet has to have faith in me to ask me to do this. It was a challenge.

"I was faced with trying to establish credibility in the jazz market with Chet. I assumed that the average listener, jazz purist, thinks of Chet as a country guitar player. I assumed that they were not aware of what he was capable of doing.

"Chet had played with George Benson, Earl Klugh, and Larry Carlton before. I got Steve Lukather of Toto, Dean Parks and Larry Carlton, two of LA's top sessionmen.

"The second challenge was finding the material to make musical sounds with Chet's style, which is fairly concise and subtle. Steve Lukather was the hardest one musically. Chet has to play the way he plays and Steve has to play the way he plays so we had to find a tune it worked in.

"It's kind of reinforced a notion that I have had for a long time—that the foremost practitioners of any style of music can communicate whether you find the greatest bluegrass musician, the greatest jazz musician, the greatest classical musician; if you put them together all in the same studio and say make some music, they'll make good music, assuming their personalities don't totally clash. But on this sort of musical level, it involves taste, and the best players of any style have to have that by definition."

Hungate's major regret is that more of the tracks were not cut live. "I would like to have gotten everybody together at least once," he says, "so we wouldn't have to do so much overdubbing. You have that extra input for the basic tracks—more people to play off of."

The basic rhythm tracks which have Benson and Atkins together were laid in Atkin's Nashville studio. Atkins and Hungate took those to LA where Carlton, Parks, and Lukather overdubbed their parts. Knopfler overdubbed in Nashville with Klugh adding his part in Detroit.

According to Mike Poston, who engineered the LP, his greatest concern was making certain all the tapes that left the city had a full set of accurate tones for calibration.

"I made sure the track layouts were the same so we would have the same open tracks for guest

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MUSIC NOTES

artists," Poston adds. "The project was just real time consuming with everybody having to go all over the place. We had to make safeties of everything and send tapes and transfer them back.

"We mixed it digitally and used less compression knowing that the product was going to CD to allow more dynamic range than vinyl. The only thing I'm sorry about is that it was not recorded digitally. It took so long—the tape ran across the heads so many times—the product would have benefited if it had been originally recorded digitally. But, it wouldn't have changed the feel."

And it is the feel of *Stay Tuned* that makes Atkins the happiest.

"Actually I think piecing it together was what kept it from losing its excitement," states Atkins. "With Benson, we wound up using his original courses on everything. He played best right when the musicians were there. He tried overdubbing some better courses, but we always went back to his original. They were much more exciting because he was bouncing off other musicians. He could never top what he did live.

"I'm intimidated by some people," Atkins confesses. "But I just play what I play and let them play what they play and then I don't feel too much out of place. That's what this album is. I'm just surrounded by a more contemporary rhythm track—real heavyweights. I'm still trying to learn to get it right."

—Rose Clayton

—FROM PAGE 124, CHICAGO 17

software to do it," says Gatica. Foster doubled his lines exactly, and the two parts were sort of compressed together to create the effect of one instrument.

Although Cetera loved the bass sound Gatica and Foster built by combining precisely doubled tracks, he wasn't too thrilled with what he had to go through when the same method was applied to his lead vocals. According to Gatica, most of the lead vocals on *Chicago 17* were doubled—none electronically. They were all done by Cetera, singing along with a full mix in the headphones while Gatica and Foster soloed the two vocal tracks in the control room and scrutinized each syllable.

—Quint Randle

—MUSIC NOTES CONT. ON PAGE 178

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ARETHA FRANKLIN

Who's Zoomin' Who?

Arista

Produced by Narada Michael Walden; engineered by Dave Frazer; recorded at The Automatt, San Francisco, and The Plant, Sausalito, CA; additional tracks produced by Aretha Franklin, recorded at United Sound, Detroit.

by Robin Tolleson

Narada Michael Walden reaches across engineer Dave Frazer and excitedly pulls Lady Soul up in the mix. Guitarist Ray Gomez tears at the strings of his Strat, sending high notes echoing off Aretha's stinging vocal. A cassette of Franklin's *Jump To It* sits on the Trident console (with Melquist automation) at The Plant as Walden supervises the finishing touches of "Another Night," one of the tracks he's producing for her new album, *Who's Zoomin' Who?*

Aretha's last recordings were with Luther Vandross producing, *Jump To It* in 1982, and *Get It Right* the next year. "I love those albums," says Walden, "especially *Jump To It*. 'Jump To It' still sounds great today. The guitar part is so tight. 'Skitsk skit boom boom boom.' Real tight, no echo or anything, just straight ahead." Franklin has worked with some of the great producers in the business, among them John Hammond, Jerry Wexler, Tom Dowd, Arif Mardin, Lamont Dozier, Curtis Mayfield and Van McCoy, but Walden insists there was no pressure on him to duplicate any previous sound or success. "The only pressure is just to do my best," he says.

This wasn't the easiest record to make; in fact, logically it was sort of a producer's nightmare. Aretha no longer flies, and wanted to record her vocals at her home studio, United Sound, in Detroit. Walden began working with his "homegrown" rhythm



At The Plant, producer Narada Michael Walden and Aretha Franklin work on a vocal track.

section (guitarist Corrado Rustici, bassist Randy Jackson, keyboardists Walter Afanasieff and Preston Glass) at the Automatt in San Francisco, and recorded half the tracks there before Franklin got into a contract dispute with Arista that put the entire project on hold for six months. When they came back, the Automatt was no longer in business, and Walden moved the project across the Golden Gate Bridge to The Plant. "She wasn't happy with her contract," the producer/drummer says. "They had to renegotiate, and she refused to sing until that was cleared up. So there was a layoff. It was like going back to old friends in a way, the music being an old friend."

Walden didn't find it difficult skipping across country with engineer Frazer to do the album, nor did he find it difficult to write songs (along with lyricist Jeffrey Cohen) that Aretha liked. "She would call Luther Vandross just to say, 'Baby, Narada's throwin' down!'" The producer feels nothing was lost in bouncing from studio to studio to record. "She sounds real comfortable. I think it worked out well to go back to Detroit where she's at home. Everywhere she goes she has her security guard. She pulls up in her limousine and gets out with a fur coat on. She takes

her fur coat off and she's got jeans and a sweatshirt on underneath. Hip class, you know what I mean?"

Walden says Aretha was hungry to make a good record, despite a recording layoff of a couple years, and sadness over the shooting death of her father, Reverend C.L. Franklin, in Detroit last year. And her manner in the studio showed how much she had prepared. "She'd come in and do a rough take of a song just to get an idea how she wanted to sing it, and about three or four takes later we'd have it. And each time she got better and better. The good thing about her is that she knows when it's a record and when it's not. She'll sing it down once or twice, and me, I'm excited. She says, 'No, now I'm ready to go for it.' And sure enough, just when you think you've heard it all, here it comes, boom. Because her style of singing is not just flat-out singing, she plays with it. She can be very gritty and then also very lady-like at the same time. She has a way of singing and talking, singing to you and talking to you. She's very subtle."

"She has great ideas about herself and what she wants to say," Walden continues. "Like on 'Jump To It' she goes, 'Kelly, give me the 411, who drop kicked who this week?'

PLAYBACK

And that's the way she talks, man. On 'Freeway Of Love' on the new album, she has this little rap that goes, 'With the wind and your fingers in my hair, makes me feel like we're going for an extended throwdown. So drop the top baby, and let's cruise on into It's-Better-Than-Ever Street.' She's a real slickster. It's the Queen. It's the Queen's lingo in the high court," Walden laughs.

The producer acknowledges the gospel influence in Aretha's singing, but says because she's been a star for much of her life there's a lot of worldliness there too. "She's like a walking cloud," he says. "She looks down and sees things how she wants to see them, and says it how she wants to say it. It's not like it's all church to me. In the voice you feel a lot of gospel roots, it's true. But her expression of the church is very streetwise."

Engineer Dave Frazer, who accompanied Walden to Detroit and set up the Shure SM-7 mike that Franklin was singing into, was impressed with the singer's attitude. "She knew when she came in what she wanted to do," he says. "She knew the song, she knew the licks, she knew everything ahead of time, which is somewhat unusual. She did her homework. She memorized the lyrics, which is unusual to a certain extent. She came in like she had already sung the song over and over, which I guess she did. She doesn't give you the impression she would do that, but she comes in and knows it."

"If I would want her to do like one line over in a verse," Walden continues, "I had to have a real good excuse to make her want to sing it again. She'd say, 'Just the way I sang it to you is the way I hear it. That's the way I like it.' And I say that's great but there's one line that could have been a little better or had a little more expression or something. Nope. That's it buddy. I would have to tell her the tape machine blew up to get it again."

Narada feels that he's taking Lady Soul in some different directions on the new album. There's a strong rock feel to "Another Night," aided by the squealing guitar work of Ray Gomez. He goes reggae on "Ain't Nobody Ever Loved You," and does an island rap, mon. On "Freeway Of Love," Walden makes use of his trademark bell sounds to give the tune more a classical Motown sound—with up-to-date lyrics. Aretha sings a duet with Peter Wolf on "Push," and a ballad, "If You Need My Love Tonight,"

with deep-throated Larry Graham. Walden describes "Until You Say You Love Me" as "a combination of Prince, The Pretenders, and classic Aretha."

Walden and Frazer recorded the drum machine at a faster tempo, then slowed the tape to the correct speed for the song, giving the drums a thick and gummy sound. Walden programmed an interesting textural part on the Linn, making use of the machine's percussion sounds and cymbals as well as drums. "You'll hear people do what we did on that song (slow down the drum tracks), but usually you don't use quite as many components as we did on the song," Frazer says. "Basically we decided to use the whole machine. It sounds nice and chunky."

On the title track, "Who's Zoomin' Who?" Walden uses a Roland 808 drum machine to get a Phil Collins-type sound on the intro and middle interlude. He is very happy with his drum tracks, achieved with a combination of drum machines, Simmons electronic drums, and natural acoustic drums (Pearl). "It's a nice combination," he says. "Each tune is

different. One tune might be like a Roland 808 and Simmons, another might be me playing drums and Simmons—could be all kinds of stuff. I love integration. And I'm also back to really playing the drums. It's a big part of who I am, and I don't want to deny that."

The skilled producer, who just finished doing four tracks for Clarence Clemons' new album at Tres Virgos studios in San Rafael, California, and is scheduled to do work soon with Sheena Easton and Scritti Politti, still finds a conflict sometimes between the drummer in him wanting to play out, and the producer in him wanting to make a widely appealing product. "So much of the time it's like a dual personality. You're the artist, which is the child, and you're the producer, which is the grown-up. The grown-up can strangle the child if the grown-up isn't careful. The child is playing with a toy on the rug and the grown-up says, 'Stop that.' But what if it's good that the child plays with the toy on the rug? 'Stop making that noise.' Maybe it's good noise."

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VIDEO NEWS

by Mia Amato

Stereo TV and higher-definition Television (HDTV) starred at this year's NAB equipment show, but the most exciting new products to bow in Las Vegas were low-cost, high performance versions of special effects processors and graphic/paint systems.

Now the small and medium-size studio can afford the very latest in digital image video processing. At the top of the list, though, is *Fairlight's* Computer Video Instrument (see "Video News," April 1985). This versatile image processor combines two-dimensional effects (frame grabbing, mosaic, colorization, multi-plane and mirroring) with a painting and drawing computer for the unbelievably low price of \$6,500. By the way, Fairlight did not show this very competitive product on the exhibition floor, but in a hotel suite—with *Thomas Dolby*, *Herbie Hancock*, and *Stewart Copeland* of *The Police* lending a hand and helping to demonstrate the company's musical and visual products.

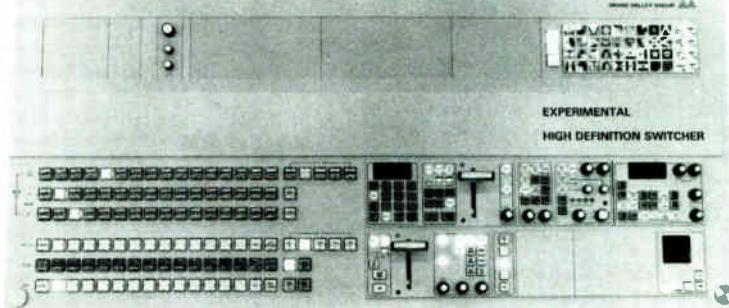
Chyron introduced its "Chameleon," a compact video paint package with zoom and pan capability, assorted "brushes" and a \$12,000 price tag despite its software similarities to the more expensive Chyron IV. *Inovion* showed a \$5,000 paint computer with over two million colors and some effects capability—it's meant to be used with an Apple or IBM personal computer. *Chroma Digital's* Chromafex 766 combines a high-performance time-base-corrector, frame store, frame synchronizer and digital special effects for less than \$15,000. And *Ampex* introduced the ADO 2000, a third-generation ADO especially adapted for live-switching effects and priced at \$4,500.

Nineteen eighty-five is also the year for lower-priced, one-inch edit systems. For about \$30,000, you can get the new *CMX* 330XL, fully upgradable to the 3400A as your facility grows. Or, for the same price, there's *Ampex's* latest, the ACEu (called "Ace Micro"), a very smart A-B-C roll editor whose features include a push-button rewind of all

transports from the last event. Other impressive new editors in this price range are the new "Esprit" from *Pal-tex*, with its user-definable soft keys and disk storage memory for edit decisions, and *Grass Valley's* Model 100 editing package. This last combines an ISC editor, switcher with effects memory and stereo sound mixing system for under \$30,000. Key fea-

ster transmission. In the console category, we admired *Wheatstone's* TV-80 32-input stereo TV console with a special buss for SAP (second audio program) for the production of multi-lingual TV shows. *Neve's* 8128-TV offered film-style mixing to "four-stripe" dedicated tracks for music, dialogue, effects and laughtrack, and may be automated with the Necam 96. *Solid State Logic* showed its fully programmable 5000 series TV production console which can store up to 48 complete control switch set ups. Different mike arrangements for different regularly scheduled productions or portions of a live show with different musical numbers can be programmed ahead of time and punched up as needed.

On the HDTV front, *RCA* was chatting up its plans for a 750-line NTSC system. *Sony*, *Hitachi* and *Ikegami* all showed production



Grass Valley Group's experimental HD switcher.

tures here are true breakaway audio capability (so you can smoothly mix, fade, or cut audio independently of the video) and the Key-Mem effects memory, which will store 16 complicated image transitions at the touch of a button. Model 100 is also available in a component video version.

In the camera category, the only surprise was *Nisus*, a company which supplies shutter mechanisms for RCA's high-speed CCD cameras. Their NAB debut was a line of three high-speed rotary shutter cameras built on *Sony* and *Ikegami* bodies. Like high-speed film cameras, these new shooters can create the effect of video slow motion without the need for traditional slo-mo disk storage, and offer a film-like video image recorded at 60 fields per second. Figure in a continuously adjustable shutter speed to as fast as 1/10,000th of a second and you've got some idea of the special effects applications for this type of camera.

Stereo TV was, of course, the talk of the show but the biggest sellers were transmission equipment and stereo synthesizers from *Orban* and *Modulation Sciences* to split mundane mono programming for

models of HDTV cameras, recorders, and monitors in the 1125-line format favored by *CBS* and the Japanese. *Grass Valley* exhibited an experimental 1125-line switcher, based on its 300 series switcher line.

Phillips was selling a component video digital effects processor (very expensive!) and *Hitachi* proudly displayed an HDTV digital video recorder. In a hotel suite, *Sony* also demonstrated a prototype digital recorder which used tape cassettes instead of a reel-to-reel format. And *Panasonic* showed its continued commitment to its half-inch "M" in a rather strange way: it introduced a new high-band half-inch format, dubbed "MII," which is a component video recording system but incompatible with the earlier "M"—and anything else, for that matter.

HOME VIDEO NEWS

Return To Waterloo, *Ray Davies'* recent project for *RCA Video*, has been picked up for theatrical release by *New Line Cinema*. According to *RCA* exec *Arnie Holland*, the success of recent musical films like *Stop Making Sense* prompted the company to turn what

had been originally a home video product to what has become Davies' first cinematic feature. *Ricky Skaggs'* promo clip, "Country Boy," is also making the movie circuit, distributed by **Music Motions**, which is providing movie posters and local radio tie-ins to hundreds of participating theaters. The clip has been re-transferred to 35mm film and mixed to four-channel Dolby stereo for theater use.

Dutch rockers **Golden Earring** have released their first video single through **Sony**, which has also launched "Jazz At The Smithsonian," a series of eight hour-long concert videos at \$29.95. *Alberta Hunter, Art Blakely, the Mel Lewis Jazz Ensemble* and *Joe Williams* perform. **Pacific Arts** recently released VHS and Beta versions of *Chick Corea* and *Gary Burton*, "Live In Tokyo," while **Polygram Musicvideo** has introduced an original concept video album, *Now, Voyager*, from *Barry Gibb*. Both titles are being distributed by **MCA Home Video**. Two Christian music video cassettes are due from **The Word Record & Music Group**. "Take Five" is a sampler of five artists featuring *Amy Grant*; the second title is *Randy Stonehill's* "Love Beyond Reason." Also expected are late-summer releases from the newly formed **CBS Music Video Enterprises**, which will be concentrating on long-form music programs for the home video market.

IN THE STUDIOS...

Software innovations and new hardware applications are news at video facilities around the country. In Dallas, **Sundance** has unveiled a computerized video processing system that gives tapes a "film look." Dubbed Emulsifilter, the system analyzes and reconstructs each frame of video and alters the contrast ratio and frame rate of the footage so the finished product closely resembles

35mm film transferred to tape.

Doyle Williams of the company said the process has been used for McDonald's and Pizza Hut TV commercials as well as promo clips for local bands such as *Yaz Doni* and *Phirework*. "People who are shooting on tape are welcome to send us some footage, and we'll do a test for them for free," he added, "and if they call first we can give them some tips on how to shoot the video which will make the most of the process." Amazingly, the controller for the process has been programmed to work on a modified Macintosh computer.

In New York, **National Video** has revamped its film sound mixing department with a new mag pick-up system providing four pairs of stereo tracks for TV and film sound recording. Senior mixer **Dick Mack** said the installation teams an eight-track mag recorder with a Trident 18-input, eight-output stereo console and custom switching board to introduce perfectly synched insert material, mixing and monitoring simultaneously.

Editel/Chicago has linked up its Bosch FDL film-to-tape transfer with a Mitsubishi X-80-A digital audio recorder to master soundtracks to completed video music productions. In Miami, **Criteria Studios** used its Mitsubishi X-800 32-track digital recorder to create a multi-layered, sophisticated stereo soundtrack for a "music video postcard" produced by **Nicholas Communications** of Washington, D.C. **Atlantic Video**, known in the Capitol for its experience with political clients, has added two new interformat editing suites with Ampex ADO special effects and Dubner graphics.

The **Palace Production Center** (Norwalk, CT) recently hosted a seminar on interactive video to promote its Sony BVH-2500 single-frame Type C video recorder. For

music video producers on a budget, **Golden Apple Media** (Mamaroneck, NY) is offering a special package deal of \$2,000 for a four-camera production live-switched to one-inch videotape. The price includes rental of a New York area soundstage with rehearsal time.

New York's **Global Village** is in the middle of its first professional music video workshop; guest instructors include producer/artist **John Sanborn** and **Betty Hisiger**, talent coordinator for "Friday Night Videos." **Campus Network** recently moved its entire production services department to **Panavideo** on 35th Street. The facility currently handles post-production for "Friday Night Videos" and will be involved in posting and transmitting the concert satellite service.

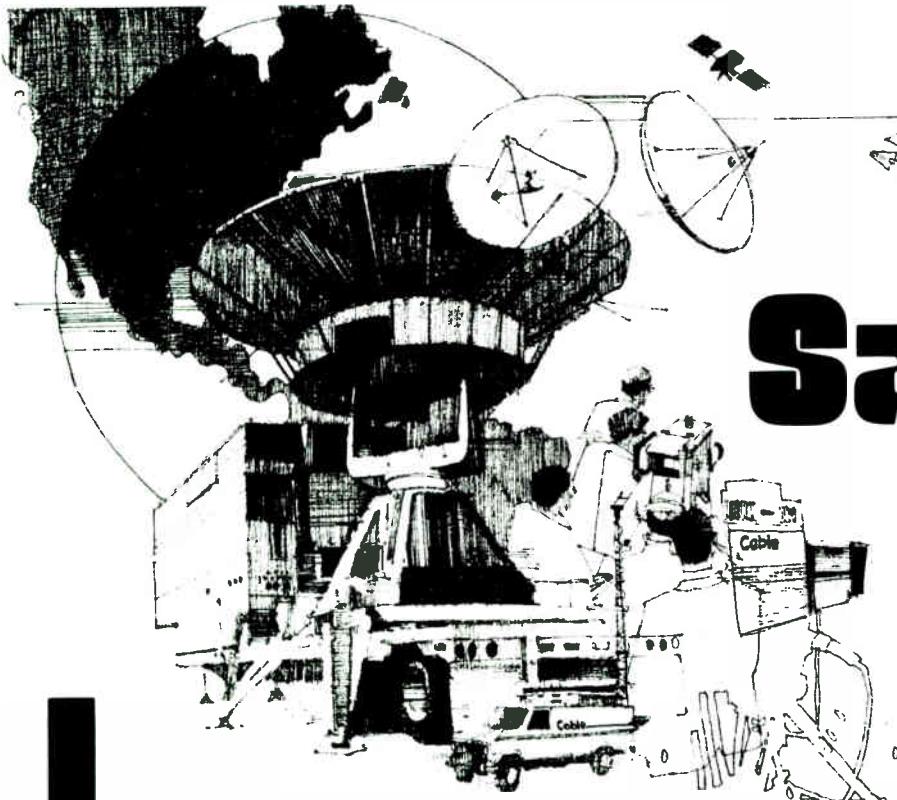
Television Matrix (Hollywood) supplied stereo field recording and Betacam production of the gala premiere of Berry Gordy's film, "The Last Dragon." Boston's **Century III**, working under contract for the U.S. Information Agency, produced the audio and visuals for the interactive video display featured in the U.S. Pavilion at the World's Fair in Tsukuba, Japan. **Channel 3 Video** (Providence, RI) recently produced its first video promo for *Otis Blackwell's* *Elvis* tribute, "The King's Not Dead." **John Palumbo's** clip, "Blowing Up Detroit," produced by **John Norwood** and directed by **Michael O'Neil**, for H.M.E. records, was edited by **Bruce Tillman** at **Beach Street Videocenter** in lower Manhattan.

Correction: March Video News inadvertently omitted the name of producer/director **Jeff Lee** in its rundown of the promo clip production based on the Broadway musical, "Cats." Lee recently formed the production company **Creative Concepts** and is production stage manager for "Cats" on Broadway.

NAMM (National Association of Music Merchants) is putting some of its funds into matching-grant financing for a series of test commercials on **MTV**. The ads will be generic, according to NAMM president **James Kleeman**, and promote the use and purchase of musical instruments and recording equipment...The **Videotape Production Association** (VPA) has set up an Engineering Hotline, essentially a computer-accessed electronic mail and billboard, to provide data on jobs, stolen equipment, spare parts sources and emergency advice for equipment problems. For more information contact **Janet Luhrs** at the VPA: (212) 986-1414.

Dick Mack in National Video's newly refurbished film sound mixing room.





It's a Satellite World

by Lou CasaBianca

It is truly ironic that one of the most important and pervasive scientific developments of the Twentieth Century was first pondered and documented in modern literature, not by a scientist, but by a science fiction writer...Arthur C. Clarke.

In 1945, in a letter to the *Wireless World* magazine, Clarke proposed that three satellites, arranged triangularly around the Earth, could relay radio signals around the world. In recent years the satellite communications industry has begun referring to the belt of geostationary satellites around the world as the "Clarke Belt" in recognition of Clarke as the inventor of the geosynchronous satellite.

A native of Somerset, England, Arthur Clarke has lived for the last 30 years in Sri Lanka (formerly Ceylon) off the coast of India. He has kept in touch with the outside world by satellite. He was the first private individual to operate his own earth station and has participated in conference and workshop panels as a digitally encoded voice from half-way around the world. Clarke has been one of the most visionary if not prophetic writers in the field of science fiction. His writing has earned him the respect of scientist and governments around the world.

Clarke speculates on the fu-

ture and the application of technology in three recently published books: *1984: Spring; Ascent to Orbit; and Profiles of the Future*. The books, particularly *Ascent to Orbit*, make excellent supplementary reading for science fiction fans and space enthusiasts by providing the kind of scientific overview, diagrams and technical data that demonstrate the real possibilities for technological evolution in the future.

Satellite Historical Synopsis

Of course the first satellite in space was Sputnik I, launched into low earth orbit in October, 1957, by the Soviet Union. Most of the other important "firsts" were established by the United States in the subsequent years; First U.S. satellite and broadcast taped message, SCORE, December, 1958; First satellite communications, Echo I, August, 1960; First live pictures from space, Telstar, July, 1962; First geosynchronous communication satellite, July, 1963, Syncom II; First commercial satellite, Intelsat I, April, 1965. There are now literally dozens of satellites in orbit serving the world community for better or worse as technological tools of discovery or possibly as instruments of war. Today there are more than one million home earth stations. The cost of these systems continues to de-

crease as the technology advances. More powerful satellites can beam programming to smaller and less expensive dishes. Currently there are at least 10 major operators servicing commercial users of satellite technology.

Communications Satellites Corporation (Comsat) was founded as a result of the Communications Satellite Act of 1962. Comsat is in the business of providing services in four categories: rate regulated satellite services, satellite systems, telecommunications equipment and information systems. This year AT&T Communications will be launching the Telstar 300 series of C-Band satellites equipped with 24 transponders and capable of transmitting up to 3,000 simultaneous telephone conversations and one television program or millions of bits of high speed data. Ford Aerospace and Communications Corporation, GTE Spacenet Corporation, Hughes Aircraft Company, RCA Astro-Electronics, Satellite Business Systems (an IBM, Comsat and Aetna Life joint venture) and Western Union are the other major players in the satellite field.

Long distance phone calls, video conferencing, oil exploration and computer data feeds are now everyday realities made possible by these mini-space stations in orbit. For

Satellite Glossary:

Apogee: The point in an elliptical orbit that is farthest from the surface of the earth.

BSS: Broadcasting Satellite Systems for transmission to homes or community receivers.

C-Band: The 6/4 GHz frequency band used by domestic and international communications satellites.

Clarke Orbit: The circular orbit in space 22,300 miles from earth at which geosynchronous satellites are placed to appear stationary when viewed from earth.

DBS (Direct Broadcasting Satellite): A Ku-band (14/12GHz) satellite used to broadcast directly to the home. (For more information see Ken Pohlmann's article "DBS: Don't Look Up, Yet" in April, 1985, *Mix*.)

Demodulator: A satellite receiver circuit that extracts or demodulates the video and audio signals from the received microwave carrier.

Downconverter: That portion of the satellite television receiver that converts the signal from the 4 GHz microwave range to the more readily used 70 MHz range.

Downlink: The 4GHz frequency range utilized by the satellite to retransmit the television signal down to earth for reception by ground stations.

Earth Station: The assembly of an antenna, an LNA (low noise amplifier), a downconverter and receiver electronics used to receive a satellite signal.

Footprint: A geographic area covered by a transponder's direct signal.

Headend: The master distribution center for a cable system in which the incoming television signals are received, amplified, and remodulated onto TV channels for transmission down the CATV coaxial cable.

MDS: Multipoint Distribution System, a common carrier that operates an over-the-air omnidirectional microwave transmission facility within a given city.

MSO: Multiple System Operator, a cable operator providing services through multiple systems.

Perigee: The point in an elliptical orbit that is the closest to the surface of the earth.

Polarization: A technique used to

enhance the capacity of the satellite transmission channels by reusing the satellite transponder frequencies. In linear polarization half of the transponders beam signals to earth in a vertically polarized mode; the other half horizontally polarize the downlinks.

Program Control Tones: Special audio tones transmitted by a programmer's network control center before and after each program to trigger automated programming gear.

Single Channel-per-Carrier (SCPC): A special voice or audio service used to transmit several dozen audio signals over a single satellite transponder.

Transponders: A combination receiver, transmitter and antenna package that is physically part of a communications satellite.

TT&C: Tracking, telemetry and control.

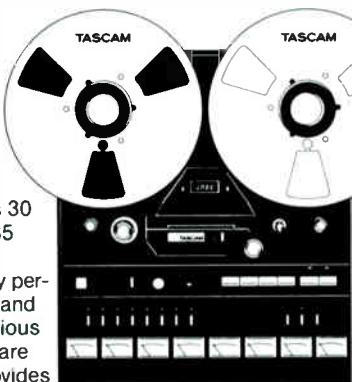
Ultra High Frequency (UHF): The band of frequencies ranging from 300 to 3000 MHz.

Very High Frequency (VHF): The band of frequencies ranging from 30 to 300 MHz.

BRYCE and TASCAM

A Sound Partnership

The inside story? At TASCAM the business is providing tools for audio production that deliver high quality performance at an affordable price. At BRYCE the business is providing accurate and timely product information by an experienced technically expert sales force that is focused on your individual needs. Tascam Series 30 recorder/reproducers bring you 1985 technology at 1975 prices. Series 30 heads are made of new, higher density permalloy material which is 30% harder and has at least 20% longer life than previous permalloy compounds. Erase heads are made with a high beta material that provides 25% higher magnetic flux density at saturation than previous heads. You get more



complete erasure for quieter tapes overall and less leakage on overdubs. On the Tascam 38 heads are mounted on a precision diecast and machine blocked which keeps them aligned. Tapes won't swish, nor will high frequencies disappear due to inter-track phase cancellation. The mount is so rigid that after heads are aligned you can plug in a replacement assembly in the field without extensive mechanical realignment. The 38 operates at nominal 15 ips and uses an 8 track $\frac{1}{2}$ " format. It comes with IEC record/play equalization. To find out more about Tascam Series 30, call Bryce at 212-575-8600 or out of state—1-800-223-1346. BRYCE—34 years of experience making the complex familiar.

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Yamaha RM1608

—FROM PAGE 29, ALTERNATIVES
LED bar graphs which display all group signals, master L/R, auxiliary sends, and stereo solo metering. A more comprehensive meter bridge package, consisting of 16 LED graphs and ten VU meters, is also available. The Ramsa WR-T820 is base priced at \$4,995.

First introduced about a year ago, the M-520 is a 20 input, 16 monitor, eight buss console which is the top board in Tascam's 500 Series of mixers. Besides the usual mike/line/tape inputs, the first two channels also have "instrument" inputs, and the next two provide RIAA phono inputs. Other input channel features are: electronically balanced XLRs



for mike/line inputs with switchable phantom power, -30 dB mike attenuator, phase reverse, separate mike and tape trim controls, four aux sends, three-band sweepable frequency equalization with bypass switch, eight separate buss assignment switches

with odd/even panning, solo and PFL (pre-fader listen), channel on, and a 100mm fader which is field replaceable with a P&G fader.

The console's comprehensive monitoring/buss output section allows the user to use the board to suit many applications: the monitor section permits the creation of a stereo mix from the eight program busses, the output of an eight (or 16) track tape machine, or any combination required; the two stereo outputs

Tascam M-520



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can be configured to act as a control room master, studio monitor, broadcast feed, or master stereo tape output. Oscillator test tones of 40, 1000, and 10k Hz are included, as is a built-in talkback mike, and headphone jack with level control. Output buss faders are similar to the input faders. Large illuminated VU meters (with peak LED indicators) display the levels of the eight program busses, four aux outputs, and two master stereo outputs. Meter switching (in groups of four) provides for the monitoring of externally patched signals. The eight electronically balanced XLR outputs are switchable for +4 or +8 dBm nominal levels.

The Tascam M-520 is priced at \$5,495, including external, rack-mount power supply, and a pedestal for the console is optional.

Yamaha's RM1608 and RM2408 are two eight-buss, 16 and 24 input recording consoles which include many convenience features usually found on more expensive recording mixers: in "Multitrack" mode, individual inputs may be switched to either mike or tape inputs; a "Mix-down" button selects tape return on all channels and simultaneously assigns these channel outputs to the stereo mixing buss.

Other standard features include: electronically balanced XLR mike inputs; unbalanced pin jack (RCA-type) tape inputs; 48 volt phantom power; phase invert; three-band, sweep type parametric EQ; high pass filter (-12 dB/octave @ 80 Hz); two echo sends; solo switch; channel on muting; control room monitor level; built-in talkback mike; 100, 1k, 10k Hz oscillator; and talkback/oscillator buss assignment. The front panel patch bay has insert in/out points for each input channel, and 16 auxiliary patch in/out points that are fed from rear panel jacks for more convenient linking of channel insert points to outboard signal processors. Program buss and stereo buss outputs appear at both +4 dB and -10 dB RCA jacks, and 12 illuminated VU meters are provided for the monitoring of the eight output busses, stereo outs, and the two effects send busses.

The Yamaha RM1608 is priced at \$6,600; the RM2408 is \$9,900; both include the outboard PW1600 power supply. Console stands are optional. ■



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The Professional Designation in Recording Engineering provides participants with the perspective, knowledge, and training required of a professional in the field and leads to a certificated award of completion.

THE CURRICULUM

The curriculum consists of seven required and two elective courses covering the theory and practice of recording engineering technology, music, equipment, and interrelationships between engineers and their colleagues—in the production of records, commercials, film, and television. Students must complete each course applied to the program with a grade of "C" or better.

PROGRAM DESIGN

The program has been designed in consultation with industry leaders and professional associations and is in line with the criteria being established by the Society of Professional Audio Recording Studios (SPARS) for a national examination to be administered by the Educational Testing Service.

The coordinator of the Professional Designation is Van Webster, recording engineer and owner of Digital Sound Recording, who is part of the team devising the national examination.

CANDIDACY

Prerequisites are Math XL 1A, Math XL 1B, and Basic Physics XL 10, or the equivalent. To become a candidate for the Professional Designation, students must submit a nonrefundable fee of \$50, paid once only which entitles them to counseling and a certificated award. If candidates do not complete the program within two years, an additional fee of \$10 will be assessed yearly.

SUMMER SCHEDULE

Required Courses

- **Techniques of Multi-Track Mixing for Studio Recording X 448.14B**

Elective Courses

- ★ **Audio Equipment Maintenance X 448.16**

- **Introduction to Audio Engineering X 448.23**

- **Ear Training and Sight Singing X 400A**

Recommended Courses

- ★ **Professional Practices for the Recording Engineer 849.2**

- **Making Music: Careers in the Music Industry 854.7**

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Prerequisite: Students should have a working knowledge of basic electronics, including schematic diagrams, and a knowledge of analog circuitry.

For more information please phone Ms. Reynolds (213) 825-9064 (8:30 am to 5 pm weekdays). Or fill out the coupon and mail to UCLA Extension, Dept. of The Arts, P.O. Box 24901, Los Angeles, CA 90024.

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ACES ML24

October. Owner Dave Artis, who says the facility does a mix of 70 percent music and 30 percent jingle work, added that G.D.M. has also ordered an ACES 1/2-inch two-track, which should be on-line this month.

"I'm not a rich person, so one of the biggest factors was cost. We were looking for the best we could get for the lowest price, yet still get a professional product. Some of the features I was looking for were

G.D.M. PRODUCTIONS

Lutz, Florida

Dave Artis, Owner

ACES ML24

G.D.M. Productions, a three year old studio in the Tampa, Florida

Soundtracs CM4400



area, chose an ACES ML24 32x28x24 console and 24-track recorder from Professional Audio Services and Supply (Burbank, CA) when they decided to upgrade from eight track last

the number of auxiliary sends—this board has five—the type of EQ available, and the ease of routing the signal to any point in the signal path.

"The board is extremely flex-

Amek M-2500 at Music Annex



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ible: the console comes with a patch bay, but I ordered two extra strips of patch bay modules and now we can do whatever we want with that board. We're very pleased with it; everything's been very reliable. The board is quiet and there's no coloration. The EQ is not parametric, but it's more than adequate for anything we've done: albums, video, jingles...anything. The board is actually a lot like an MCI board in the way it's laid out, its flexibility, and its operation. For the price, it can't be beat."

MUSICAL MOON
Tallahassee, Florida
Chuck Allen, Designer
Soundtracs CM4400

Musical Moon is a combination nightclub/studio which opened in mid-April, and has since hosted dozens of top performers. Designer/production coordinator Chuck Allen, who has previously designed and engineered for Eddie Offord, notes that the theater was done in the "Eddie Offord school of thought," whereby there is no physical barrier separating the engineer from the performers when recording. Musical Moon was preparing to order a 24-track recorder at press time, and it was slated to be on-line by mid-June. With this dual purpose facility in mind (daytime sessions are also scheduled) Allen chose a Soundtracs CM4400 to fit the bill.

"I was looking for a console that I could do live recording and live reinforcement with, as well as session work. I didn't go for a heavy duty automated, whistles and buzzers console. A straight-ahead desk with some subs was all I needed and the specs—slew rate, noise, distortion and all that—on the Soundtracs looked real good. I really liked the construction and the digital routing system—makes my job a lot easier, knowing I can move things around in a heartbeat. It's been the answer to my dreams.

"I do a lot of freelance consulting and basically selecting a console boils down to one thing: money. We're really happy with this board."

MUSIC ANNEX
Menlo Park, California
David Porter, Owner
Amek M-2500

With a mix of rock, jazz, and acoustic projects with a healthy dose of high-tech industrial work from the nearby Silicon Valley area, the four-room complex at the Music Annex is continually upgrading to keep up with the sophisticated needs of their clientele. Studio owner David Porter recently put in an Amek M-2500 as

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1-Soundcraftsman RA SS02 Amp
1-Yamaha P2100 Amp
1-Panasonic Video Monitor
1-Sony B & W Video Camera with Case and Tripod
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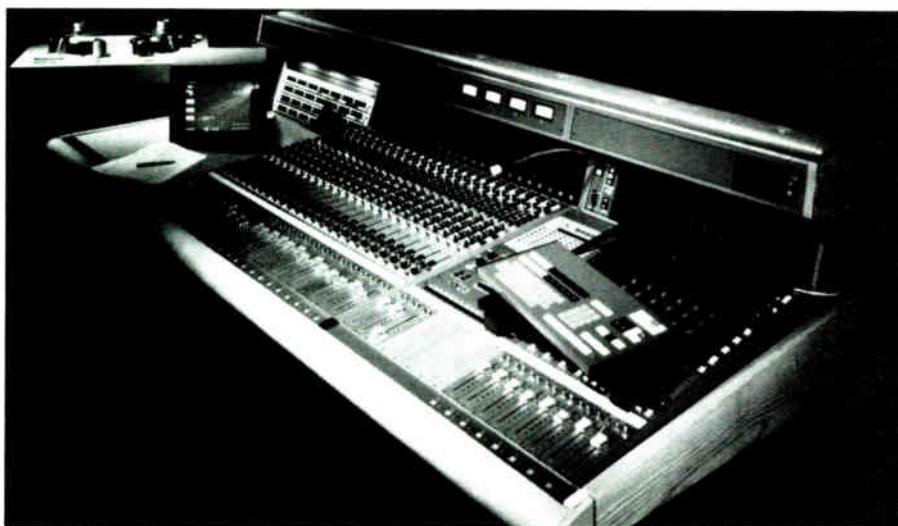
For Information Call (213) 653-0240

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part of the renovation of Studio C.

"We've owned a total of five Amek consoles over the years. We bought the M-2500 because of the mike preamplifiers, which are kind

Neve 8128 with Necam 96



of a hybrid—they use matched pairs of transistors, discrete components, and in the end, a 5532 or 5534 driver; the last 10 dB of gain is the integrated circuit—for all intents and purposes it's a discrete front end and it sounds very good. We also think the equalizer in the Amek is among the most comprehensive anywhere—it's variable-Q, four-band—pretty much a full parametric equalizer; very musical and easy to use.

"Before we decided on a board, we brought in modules and power supplies from almost every manufacturer and listened to them in the studio. I had to have four knob EQ that was at least quasi-parametric, six auxiliaries, at least ten subgroups, and I wanted to spend no more than \$65,000. The market would not allow me to put in a \$100,000 to \$125,000 console in a room that rents for \$90 to \$105 per hour. We are competing in the \$100 per hour zone and we think the Amek is really well suited for that."

SOUND EMPORIUM

Nashville, Tennessee

Rick Horton, Studio Manager

Neve 8128

With a Mitsubishi 32-track digital recorder (home-based at the facility), a new Neve 8128 48x32 console with Necam 96 automation, and a completely reconstructed control room, Sound Emporium's Studio A presents itself as a tough act to follow. Studio manager/designer Rick Horton (who is also a partner with Digital Associates) says Studio A, which

went on-line last month, is the first Necam 96 system in Nashville.

"We were mainly looking to upgrade our quality of sound—we had a six-year-old console and technology had sort of passed it by sonically. Of course, we were also looking for the most sophisticated automa-

tion that someone who has never seen a Necam system before could sit down at the new 96 and work it very effectively with only a few instructions. This is very important in a town like Nashville, where independent engineers are very prevalent."

SOUND TREK RECORDING

Pensacola, Florida

Glen Fowler, Owner

Sound Workshop Series 30

Last year, Soundtrek upgraded to 24 tracks with the addition of a Studer A80 recorder and a Sound Workshop Series 30 console in a 28 input configuration with ARMS Super Group automation. Owner Glen Fowler says the studio is the only automated 24-track facility within a 200 mile radius of Pensacola, and Soundtrek has been kept busy with a variety of projects ranging from voiceovers to albums.

"I started researching about a year before I bought the console, trying to find a good sounding console in a price range I could afford. Eventually I settled on a Sound Workshop because it was a good product for the money. Also, the console is really transparent—there's no coloration unless you want to add it yourself. Another reason is Valley Audio, the Sound Workshop dealer in Nashville, has always given me straightforward advice on equipment, and it's nice having somebody close for service in case of any major problems.

"It's a good sounding console with parametric EQ with an eight-to-one ratio, and you can get a wide range of overlapping. I hardly ever have to go to outboard EQ. Another thing I liked was that it came automation ready—mine is already automated, but the price of a lot of consoles with automation can be pretty expensive. The Series 30 offered me both: keeping up with technology and keeping within the budget. Overall I've been real happy with the quality of what we got for the amount of money we spent." ■



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"Our new Carver amp racks pack twice the number of channels in about the same truck volume as the conventional racks they replace. In addition the average power per channel has increased while the average weight per channel has decreased. In the low end, for example, we now have 1,200 watts per cabinet where 650 watts were previously available. They take less room on the truck, they weigh less and our systems have more headroom than before. The Carver amplifier has allowed us to take a significant step in improving our sound systems." *CLAIR BROTHERS*

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"We have toured Carvers with the following artists: Softcell, Paul Young, Johnny Mathis, Donna Summers, Howard Jones, Pointer Sisters, Psychedelic Furs, Lee Greenwood, General Public, George Thorogood. This is exclusive of our numerous one-nighters. The consensus of the performers is that the equipment sounds great. They have been amazed by the sound of the amps as well as their size and weight. As for reliability, out of 50 amps we had only one fail in the past year of touring. This is by far the best record we've had with any manufacturer of amplifiers. Sonically, the extra headroom is readily apparent. We, at Manticore unanimously agree that the PM-1.5 is incredible and is the only amp we intend to buy."

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."

"The amplifier delivered a clean 480 watts per channel into 8-ohm loads with both channels driven for its rated harmonic distortion level of 0.5%. Even at the frequency extreme of 20 Hz, power output for rated THD was 470 watts as against 450 claimed by Carver. Furthermore, at rated power output, distortion decreased to an insignificant 0.015% at mid-frequencies and 0.007% at 20 Hz. When connected to 4-ohm loads, the PM-1.5 delivered 750 watts per channel for rated THD of 0.05%—far more than the 600 watts claimed by Carver. Clearly, when it comes to specs for a professional amplifier, Carver has taken a very conservative approach... All (manufacturer's claims) equaled or exceeded published specifications—usually by a wide margin."

"Carver has managed to deliver a tremendous amount of power in a small lightweight package at a very reasonable cost..."

"For the professional audio engineer or technician who has to move a lot of gear around much of the time and who expects total reliability and circuit protection, come what may, the Carver PM-1.5 represents, in our view, a real winning product. We will probably see it used increasingly by professionals in every area of sound reinforcement."

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***Power:** 8 ohms, 450 watts/chan. 20 Hz-20 kHz both channels driven with less than 0.5% THD, 4 ohms, 600 watts/chan. rms 20 Hz-20 kHz both channels driven with less than 0.5% THD. 16 ohms, 300 watts/chan. 20 Hz-20 kHz both channels driven with less than 0.5% THD. 2 ohms, 525 watts/chan. at clipping, 1 kHz, with less than 0.5% THD. Note: 2-ohm specification for information purposes only. Operation at 2 ohms is permissible but not recommended. **IM Distortion:** Less than 0.1% SMPTE. **Frequency Response:** -3 dB at 3 Hz, -3 dB at 80 kHz. **Damping:** 200 at 1 kHz. **Gain:** 26 dB. **Noise:** Better than 115 dB below 450W A-weighted. **Input:** Balanced to ground, XLR or phone. **Impedance:** 15k-ohm each leg, balanced to ground. **Bridging:** 1200W into 8 ohms, 1000W into 16 ohms, accessed through rear-panel recessed switch. **Dimensions:** 19 in. wide, 3 1/2 in. high, 10 15/16 in. deep. **Weight:** 21 lbs.



A black and white photograph of a young boy standing next to a large, rectangular Carver PM-1.5 power amplifier. The boy is wearing a dark t-shirt with the word "CARVER" printed on it, dark shorts, and a baseball cap. He is holding a coiled speaker cable in his left hand. The amplifier is a heavy-duty metal chassis with multiple heat sinks and ventilation grilles. It sits on four casters. The background is a plain, light-colored wall.

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Right: Studio Southwest in Sunnyvale, Texas, designed by co-owner Matt Tapp.

Below: Video Post & Transfer President, Neil Feldman, left, and chief engineer Dan Sokol are shown with the Montage Picture Processor. The facility is the first in the Southwest to have the Montage.

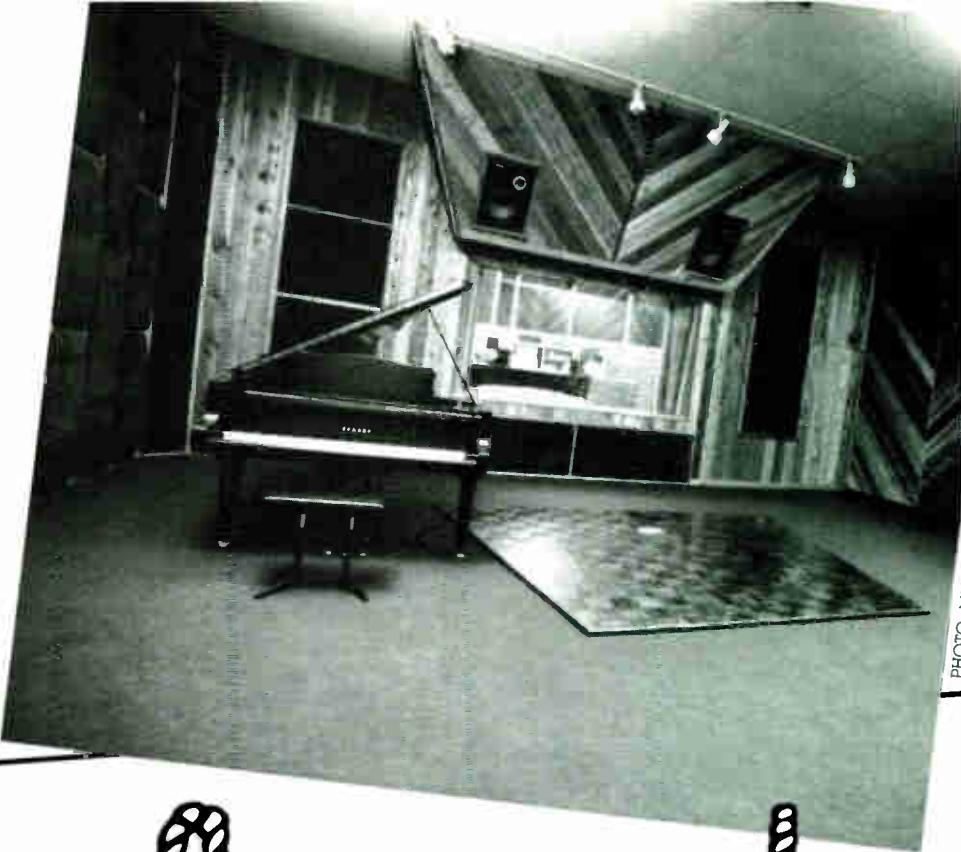


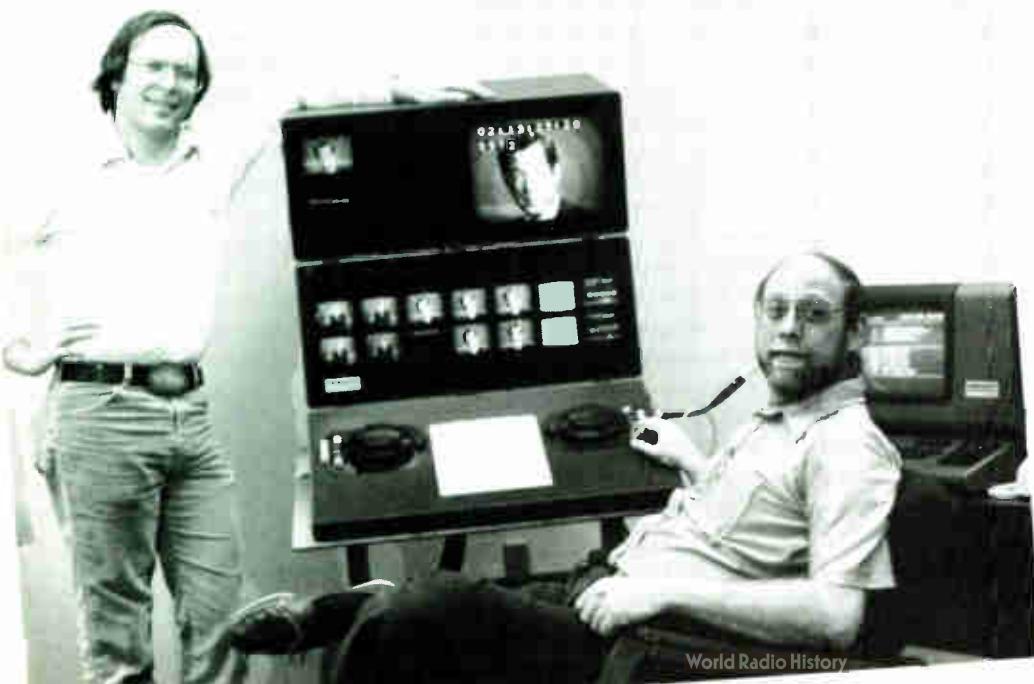
PHOTO BY JEFFREY L. HARRIS

Southwest STUDIO ROUNDUP

by Linda Johnson

Round-up seems a particularly fitting title for this month's studio update, as it sparks images of cowboys—lassos and all—out gathering their herd together. And though most Southwest studios have remained en masse and set their hoofs into the Dallas/Ft. Worth area, there are a few that have strayed and found the grass just as green in the outlying areas of Nevada, Arizona, Oklahoma and Arkansas. Admittedly not a part of the "next Hollywood" trend of Dallas where the video and film industry is exploding, the less visible studios scattered throughout the Southwest are surviving on their own terms, with plenty of album, jingle, and yes, even some video/film work keeping them busy. All in all, the entire herd is alive and kicking on every front.

Arizona's recording industry is doing well, as studios in the region report a healthy number of



recording projects with both local and national musicians. In Phoenix, Billy Moss of Vintage Recorders says he's very busy after a somewhat slow year last year. "We've had a tremendous influx of album projects," he says. Stevie Nicks, producer Dick Wagner (of Alice Cooper fame), and local band Ocean were all in Vintage recently doing demo and album work. Huey Lewis was in as well to shoot a video for Entertainment Tonight and MTV. Incidentally, Moss says that Lewis fell in love with one of the amps lying amongst his classic collection of tube equipment, and Moss eventually gave Huey the amp.

Marie Ravenscroft, owner of Chaton Recordings in Phoenix, exudes unpretentious enthusiasm about her recent studio sessions with both local and national acts. "The boys feel comfy here," she says of heavy metallers Judas Priest, who were in organizing tracks for their next LP. Local groups, Meat Puppets and Surgical Steel, also visited the facility recently, and Ravenscroft reports that her new Lexicon 224 digital reverb is getting plenty of use these days. A BTX Shadow synchronizer has been acquired as well, and Chaton's 24-track remote truck has been kept busy with various projects, including live concert work done for Hall and Oates, The Phoenix Symphony, and Arizona State's Music Programs.

A few miles east in Scottsdale, Pantheon Recording Studio has been busy with album work and is looking to break nationally into the jingle market with its own production branch entitled Network 30. With Volkswagen and Foster's Freeze as clients, Pantheon owner Dennis Alexander sees this as only the beginning. "Our goal is to have Phoenix become a top production house," he says, adding that he'd like to develop talent in the area and sign local acts as much as possible. A recent highlight for Pantheon was FAAN (Feeding Arizonians and Africans Now), for which they donated studio time to Glen Campbell, Jack Blades (Night Ranger), and Roger Steen (The Tubes), and over 80 other singers to record a single produced by Cliff Sarde. A new Trident TSM console was used in that session, and also on the upgrading horizon for Pantheon is a fourth 24-track fully automated digital room which will be finished by the end of the year.

"Lots of people are upgrading their facilities," says John Gibson of E.A.R. Pro Audio in Phoenix, a studio supply store which, in fact, just relocated itself, now boasting a 4,000

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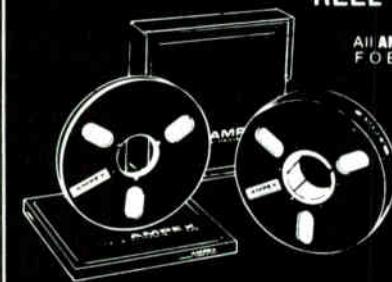
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Star Track Recording Studios, Tulsa, Oklahoma

sq. ft. facility with an expanded service department. Gibson says the bulk of his sales is in Soundcraft boards and Otari tape machines, which are going out to studios as well as recently breaking into the industrial and broadcast markets. "The way technology is going," says Gibson, "facilities that upgrade are going to be the most successful."

And so agrees Lee Watters of Luxury Audio over in Las Vegas, Nevada. "We were losing business because we didn't have interlock," he says. "We'd been cutting sessions short so artists could go to L.A. to interlock." Since purchasing an Otari MTR-90 with interlock, Watters claims his studio can do it all, from mixdown on records to soundtracks for motion pictures. For now though, Watters' primary work lies in album projects for such artists as Gladys Knight and the Pips and Robert Guillaume. "We're doing the better projects in town," says Watters, "for people who are serious about what they're doing."

Due east in New Mexico, Randy Rand of Kludgit Sound reveals a different sort of business climate. "The market here is so slim that you have to look at every business angle possible," he says. "We don't have the luxury of focusing on a segment and optimizing it." Kludgit therefore balances its work between independent album projects, jingle work and audio sweetening, all of which Rand says is keeping their business steady.

Studio manager Ric Duncum over in Oklahoma City's Cornerstone Recording reports that the recording market in Oklahoma is in an overall healthy condition, noting that his studio has seen a steady influx of religious album projects of contemporary Christian music, as well as

jingle, A/V, and broadcast production work. Some recent sessions include commercial work for Frontier City Amusement Park, and an album project with techno-pop contemporary Christian artist Jeff Rindt. Duncum says he'd like to expand into soundtrack recording through stronger marketing strategies. "We're taking our resources and expertise to people in the market and letting them know we're here as a very nice, mature facility; that we can handle just about anything on a local, regional, and national basis."

Neighboring in Tulsa, Star Track Recording notes that the commercial business is especially strong. Recently, however, owner Rod Slane is playing the video/film field. Their latest and most exciting project, says Slane, is scoring two low-budget horror movies, *Bloodcult* and *The Ripper*. Having just added an MCI JH-110 3LB video layback deck to his facility, Slane says scoring the movies gives him the chance to show off his creative sense. "It's been fantastic because we're the only ones that I know of in Oklahoma that have one," he says. "And we're able to do it all at a much more reasonable rate than Hollywood."

Ah, Hollywood. This seems the ideal time to move into the business world of the ever rumbling Texas, but there remains one last studio in Arkansas whose business state, though perhaps less visible, is just as healthy as that of Texas. "We're cranking out the commercials," enthuses ARCA co-owner Clyde Snider. His 16-track studio prides itself on its 24-hour turnaround on commercials, a feature which Snider says they've built their business on. Working on over 46 audio tracks for TV and radio

spots so far this year, ARCA is keeping its new Soundcraft console and Ampex recorders very busy. Snider adds that he's looking to add two new studios and of possibly relocating to a larger space as business is doing so well.

And on that note, we move into the most prominent market in the Southwest recording industry: Texas. Indeed, things are "happening" in video and film production there, but some differences of opinions have surfaced as to what the outcome of that "third coast" hype will be. While some facilities are working to improve the stagnant state of their local music scenes, others are immersing themselves in the video/film/jingle market.

Down in Houston, Digital Services' owner John Moran has no doubts about where he stands. "Tell everyone to hang onto their hats," he says, "'cause they ain't seen nothing yet." Offering synchronization and layback for music and video soundtracks, Digital Services is kept busy in both the studio and in supplying digital equipment for various projects. Moran claims to have "the only system in Texas that can do either dual 24-track or synchronous 48-track digital." Culture Club and Neil Young seem to agree with Moran, having come in and requested the facility's services and expertise. "I relish it when people in Los Angeles or New York call Texas to get technical assistance and equipment," Moran says. "I will tout Digital Services as the premiere digital company in the U.S." As if all this weren't enough, Digital Services is currently under a major expansion plan, but Moran refused to divulge any further details.

"Good things are happening on all levels," says Tim Stanton of the 16-track Tim Stanton Studios in Austin.

Stanton, who keeps himself busy with 60% advertising and 40% music-related work, did all the radio/TV audio for Mondale's campaign last year, and more currently is involved with several local and national accounts in the commercial/jingle business. With billings having improved 20% during the last year, Stanton just purchased a Sony/MCI 16-track, but he adds that he'd like to soon upgrade to 24-track. Stanton is also considering opening another room to dedicate to jingles and music. "I'm trying hard to segue into record work," he says, noting the strong music scene in Austin.

In nearby Manchaca, Malcolm Harper Jr. of Reelsound Recording is also interested in Austin's hot music scene and would like to do more album projects. Lately, though, Reelsound has been very busy with remote and audio/video broadcast work, such as the Willie Nelson-Ray Charles Showtime special and several Austin City Limits TV shows. With the increase in projects, Harper has been able to invest in new equipment: some Westlake BM6s ("We've been doing so much video I wanted to go down to something smaller than our JBLs," he says), and eight channels of the Drawmer 201 noise gates. And by the end of the year, Harper hopes to have installed a multitrack digital machine.

Up north in Ft. Worth, Randy Adams of Sierra Recording and Equipment Sales says he'd like to purchase a digital recorder for his 24-track facility, but for now, he says, business is fine. "We're doing a lot of album work for gospel groups, as well as some jingle work for Spanish radio," says Adams. Some recent gospel projects include work for John Hall and Jeannie Rogers.

In Midland, Michael Fitzger-

Top mixer Gary French recently joined the crew at the vastly expanded and upgraded Tele-Image in Dallas, Texas.



46 TRACK...

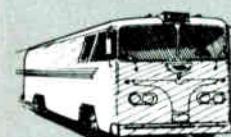
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Engineer Ron Lagerlof mixes a General Dynamics filmscore (produced by Bob Farrar) on Dallas Sound Labs' new Solid State Logic SL 6000E console.



include Otis Conner's studio in Dallas, a Coca-cola production facility in Houston, and they're just starting on the rough drafts for two new sound stages to be added at the Communications Complex.

Another resident of the Complex, Midcom, Inc., reports excellent health for their full-line studio dealership. "We've seen a tremendous upsurge in activity on all three levels of our business," says owner Mike Simpson, "as suppliers, with our 48-track remote truck, and in our rental of TV/motion picture production equipment as it relates to audio." With so much video and film production going on in Texas right now, Simpson says there's a real need for what Midcom supplies, such as wireless mikes and walkie-talkies. In sales, Simpson reports that "people are buying new technology." Otari, Soundcraft, Auditronics, and Sound Workshop consoles are all hot items at Midcom. "We are exclusive dealers of Neumann and Dolby in this area since Westbrook went out of business," adds Simpson. He also notes that Otari MTR-90s are selling very well, whereas MCIs used to have a stronghold in Dallas. One of Midcom's more notable sales this year was a Neve 8128 console with Necam 96 which they sold to Goodnight Audio, making it the first Neve in the area. As far as projects of their own, Midcom's remote truck has been busy with syndicated television work, including the Van Cliburn piano competition on PBS, and the "Face of the 80s" inter-

ald says business has improved for his sales/rental store, Fitz Sound Company. "I've no complaints," he says. Tascam, Otari, Audioarts, and Technics are all big sellers for Fitz Co., and Fitzgerald notes that "people are really beginning to be quality conscious, especially out here where you don't have people to work on equipment when it breaks down." When asked if he's selling much digital equipment, Fitzgerald replies: "If they want to record digital, they'll go to the City."

Finally we come to where a great portion of the Southwest studio herd congregates: Dallas. The talk of the town seems to be Tele-Image, which moved into the Dallas Communications Complex in May. It has been completely expanded and upgraded as a non-competitive production facility "which should suit all who want to edit video and audio. We do it all," says Tele-Image's Dianne Bernard. The six million dollar, 32,000 square foot facility (designed by Joiner, Pelton and Rose) includes three edit bays, an audio production stage, a video production stage, a multi-camera truck, four conference rooms, a screening room, and a 24-hour fully catered kitchen. Shooting capability includes one-inch, 3/4-inch and high-speed Beta single-camera packages. Each of the editing bays contain Grass Valley switchers, IC editors, Studer audio machines, and Chyron character generators. As she lists all the machines and capabilities, Bernard stresses the versatility of Tele-Image: "All the machines may be brought into any one room," she says. "The rooms will be used however our clients need to use them. Our goal is to be a well-executed facility for Dallas. We're working right now for people in the Dallas area, but if others are attracted—Great!"

Also located at the Complex, Dallas Sound Lab is seeing a marked improvement in the steadiness of business since they installed a new Solid State Logic console in January. "We're

doing lots of commercials and film/TV postproduction, and also a lot more album projects," says studio manager Johnny Marshall. Though Marshall says music groups usually come second because the number of artists is limited in Dallas, Dallas Sound Lab just finished work on Stevie Ray Vaughn's latest LP, as well as the audio assembling on Leon Russell's two latest videos, and all the audio for the Texas World Reunion (a "Feed the World" equivalent), which was shot at one of the sound stages in the Complex. In the world of film, DSL recently did the audio dialogue replacement for Henry Thomas (the kid in *E.T.*) for an Australian movie called *Frog Dreaming*. With the influx of film and video work, DSL is redesigning its theater into another large control room for postproduction, an expansion which should be completed in August.

The new theater is being designed by Joiner, Pelton and Rose, this being only one of a hundred in-house projects for the busy acoustical consulting firm. "We're doing real well," says consultant Russ Berger. Some recent projects for Joiner, Pelton and Rose

Studio manager Drew Townson of Castle Audio in Carrollton, Texas: "We're bringing Dallas underground pop to the top."



national talent competition. Simpson concludes: "As far as all this 'third coast' hype goes, the hype is over and the work has begun."

Down at what's said to be the biggest jingle facility in Dallas, Otis Conner reports that business at Otis Conner Productions has picked up. "Our own national sales are up," he says. "We've done a lot of work in Europe and Australia lately, and we've come out with a bunch of new products." Though in business eight years, it was only last year that Conner finally built his own \$2½-million full-service production studio, having tired of renting studios for his production work. "I was the largest single user of studio time in Dallas last year," he says. Conner's new 10,000 square foot facility boasts a 24-track LEDE design room with a 48-channel automated Harrison board, recently busied with both pre- and postproduction work on Sears, Cup of Soup, CBS, and Diet Coke commercials.

Studio Southwest (featured on this month's cover of *Mix*), now just a little over a year old, recently added an automated MCI console to their 24-track facility, and reports that business is steady. Working on album productions of contemporary Christian, gospel, rock and blues music, along with jingle and commercial recording, Studio Southwest notes as a recent highlight the production of a blues compilation album, featuring such artists as Willie Nelson, Johnny Winter, Jimmy Vaughn, Van Wilks and several other major artists.

Ron Lagerlof, vice-president of Studio Services Inc. (a subsidiary of Studio Supply in Nashville) says that business has really cranked up since March for the one-year-old facility. "Newer people in the industry— younger people—are upgrading quite a bit," he says, "like Dallas Sound Lab and January Sound." Lagerlof also sees a trend in the upgrading of video equipment and capacities. Video-lock equipment such as Audio Kinetics Q.Lock, BTX Shadows and Sotouch are all big sellers at Studio Services, and Lagerlof adds that they do a lot of rentals through Audio Rents and AMS (digital equipment), for whom they are agents.

Another supplier in Dallas, The Victor Duncan Company, also notes considerable growth in the video market. Inquiries for BTX synchronizers are constant, says Eddie Templeman. With over 300 lines of equipment across the board in the entertainment, film, video, audio and lighting areas, Victor Duncan has Nagra as one of their major lines. Some clients sold or rented to recently include several studios at the Communications Complex, in addition to supplying equipment for

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recent films, *Peyton Place Revisited* and *Return to Bountiful*.

On the other end of the Dallas *a la* Hollywood spectrum, Kraig Pride (son of Charley Pride) at Cecca Sound, reports that "business is very slow for the record industry but very lucrative for the commercial industry. And to a certain extent," he continues, "people want it that way. But there's some of us who are geared toward the record industry, and we're either going broke or getting headaches—but we're still working hard to get the record business here." In the meantime, Pride says that Cecca is kept busy with jingle work for Pepsi, Coke, McDonald's and several other national accounts. New

equipment at Cecca includes a Studer two-track analog and a two-track digital recorder which Pride was still pricing upon publication.

"We've had an excellent first quarter," says Crystal Clear Sound studio manager Keith Rust. So good has it been that they were able to install a nine-foot Baldwin grand piano. Work at Crystal is divided 50/50 between bands and production work through studio rental, reports Rust, which has left them booked nearly 60 hours a week. Some recent album projects include artists About Nine Times, Sweet Savage, and Lisa Skiba.

"I've been shoveling clients in and out of here like cattle," says

engineer Hassell Teekell of Omega Audio, adding that the audio sweetening and remote recording business has really picked up. Some recent projects include album work with Molly Hatchet, postproduction work for Prince's last video, as well as for the Ray Charles/Willie Nelson television special. With the increase in video sweetening projects, Omega recently acquired a Mitsubishi X-80 digital two-track. In addition, their remote truck has been refurbished with the addition of new JBL monitors, two Otari MTR-90 24-tracks and an Otari MTR-10 two-track recorder. Recent remote work includes live audio mix for a Glen Campbell & Pat Boone television special, as well as live recording for The Fabulous Thunderbirds.

Just across the hall from Omega, Video Post and Transfer reports that business is strong. "But," adds president Neil Feldman, "it's at junction because a lot of new competitors are about to open and I don't see the industry base growing as fast as the facilities seem to come on line to handle them." But business with his corporate, industrial and commercial clients is keeping Feldman's studio strong—strong enough that he's been able to purchase a Montage Picture Processor for random access editing. Feldman reports that one of the biggest highlights for him this year was doing the post-production work for Prince's last video. "The best thing about the industry down here," says Feldman, "is that it's so diverse." Indeed, his clients range from LTD Dynamics to bands working on videos for MTV. "This is a very big market," he concludes, "and it's a big mistake to think everything is happening out in Los Colinas."

Over in Carrollton, TX, Drew Townson says that Castle Audio has had a very good year so far. Strictly an audio 24-track studio, Castle's work has been exclusively on album projects for bands. "We're the studio going for the bands, trying to bring the music scene back to life," says Townson. In their efforts, one of Castle's summer projects includes an album being done under their own production company called Channel One Productions. Eight to ten promising songs by local musicians—from neo-psychadelia to synthesizer dance music—will be released on an album entitled *Town Without Basements*. "There are literally no basements here, but there's a very strong underground music movement, yet the bands have no place to play because the club scene is so dry," explains Townson. "Dallas is a heck of a place to work. You can make a lot of money in the recording industry, but it's really hard to be an artist."

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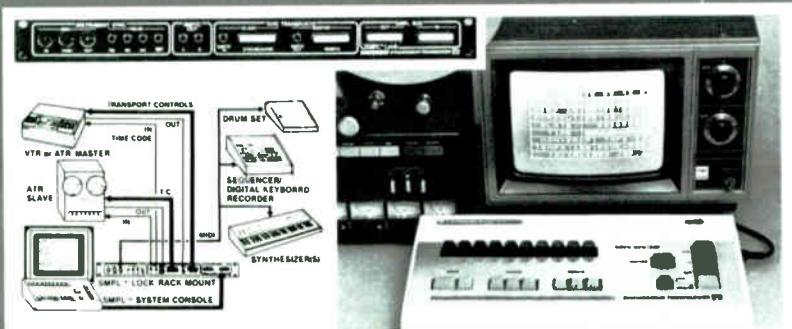
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SOUTHWEST STUDIO LOCATION INDEX

All studio information listed has been supplied to *Mix* by studios responding to questionnaires mailed in February, 1985. People, equipment and locations change, so please verify critical information with the studios directly. *Mix* does not take responsibility for the accuracy of the information supplied by the studios.

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• ACCUTRAK
2614 Aspen N.W., Albuquerque, NM 87104
(505) 247-1001
Owner: Douglas Clifton
Studio Manager: Douglas Clifton

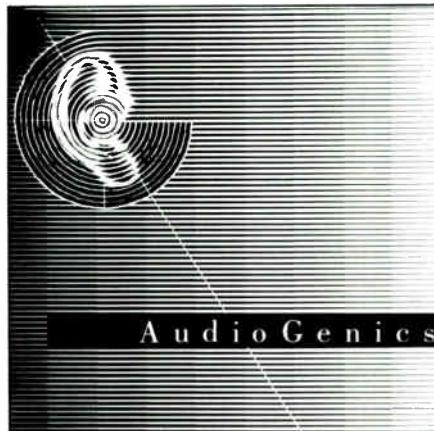
• ACTION SOUND
also REMOTE RECORDING
Rt. 2, Box 213, Wimberley, TX 78676
(512) 847-3853
Owner: Marc Kingston
Studio Manager: Steve Kingston

• ALL NIGHT RECORDS
also REMOTE RECORDING
208½ North Washington, Eldorado, AR 71730
(501) 862-7562
Owner: All Night Industries
Studio Manager: David Feinberg

• ALTIM STUDIOS
also REMOTE RECORDING
P.O. Box 330271, Fort Worth, TX 76163
(817) 346-1012
Owner: Tim Hood
Studio Manager: Larry Brownfield

• ARIAS RECORDING INC.
(formerly Ministry Recording)
also REMOTE RECORDING
1971 N. Hartford St., Unit 82, Chandler, AZ 85224
(602) 899-3316
Owner: Martin M. Zacharias
Studio Manager: Jan M. Zacharias

• ASE RECORDING
also REMOTE RECORDING
4857 I.S. 83rd E.A., Tulsa, OK 74145
(918) 627-1544
Owner: Prophet
Studio Manager: Joe Hancock
Engineers: Jim Lane, Joe Hancock
Dimensions of Studios: 30 x 45
Dimensions of Control Rooms: 20 x 24
Tape Recorders: Tascam 80-8 8 track; Otari MX5050 II 2 track, Tascam 3340 (Studio B) 4 track; Fostex A-7 2 track; Tascam 122 cassette; Tascam A-3300 2 track.
Mixing Consoles: Tangent 3216, 16 in x 16 out; Tascam Model 5 w/expander, 16 in x 4 out.
Monitor Amplifiers: Yamaha, Crown.
Monitor Speakers: UREI 811, JBL 4313, Yamaha NS-10s, Auratone 5Cs.
Echo, Reverb, and Delay Systems: Master-Room Studio B reverb, Barr Industries plate reverb, AKG BX-10 reverb, DeltaLab digital, Loft delay, Fostex delay.
Other Outboard Equipment: (2) dbx 160 compressor/limiters, (2) Symetrix 501 compressor/limiter, (2) Symetrix noise gates, Access Rack, Eventide Harmonizer, Eventide flanger, Rane 27 band EQ, Rane 27 band EQ w/analyser, Soundcraft Dual 10 EQ.
Microphones: Neumann U87s, AKG C414s, Sennheiser 421s, Shure SM57s, Electro-Voice RE20, AKG 451, Crown PZM.
Instruments Available: Any as needed.
Rates: Call for rates.



AUDIOGENICS
Dallas, TX

• AUDIOGENICS
also REMOTE RECORDING
P.O. Box 141325, Dallas, TX 75214
(214) 634-2024
Owner: Rick Peebles
Studio Manager: Rick Peebles
Engineers: Rick Peebles, Will Clay
Dimensions of Studios: 7 x 10, iso booth.
Dimensions of Control Rooms: 13 x 15.
Tape Recorders: Tascam 40-4 4 track w/dbx; Sony PCM-10/SL-5000 digital 2 track; Revox B77 half-track 2 track w/dbx; Sony K777 cassette.
Mixing Consoles: Ramses 8118 16x4x2, Studiomaster 8 into 4 (modified) 8 in x 4 out.
Monitor Amplifiers: Crown PS400, Crown D150, Crown D75.
Monitor Speakers: JBL 4313Bs (Control Room), Sennheiser HD420s (Studio One).
Echo, Reverb, and Delay Systems: Master-Room XL305 stereo reverb, DeltaLab Acousticcomputer DL2 with 2.5-second memory banks, Roland Chorus Echo.
Other Outboard Equipment: dbx 900 series noise gates, de-essers, parametric EQ, dbx 164 comp/limiter, Roland SEQ315 graphic EQ, Integrex Dolby-B decoder, Goldline Spectrum Analyzer.
Microphones: Neumann U87, Crown PZMs, AKG C451s, Shure SM57s and 59s, Countryman and DOD direct boxes.
Instruments Available: Synergy II+ digital synthesizer interfaced with Kaypro 10 computer (750-voice library, voice and sequence editing, many other features), LinnDrum, Moog Rogue, Jupiter-4, ARP Odyssey.
Video Equipment & Services: Off-line production of voice, music, sound effects for video and film. Complete MIDI-interfaced digital synthesis studio (ideal for scoring background music, jingles, logos, etc.).
Rates: \$35/hr, \$45/hr on location. Call or write for details.

• THE BAND FACTORY
also REMOTE RECORDING
1414 W. Roedale, Ft. Worth, TX 76104
(817) 877-3391

Owner: Edward R. Stradley
Studio Manager: Edward R. Stradley

• BILINGUAL JINGLES 'N MORE
5604 Drake N.W., Albuquerque, NM 87114
(505) 898-6761
Owner: Fred W. Baca
Studio Manager: Tere Baca

• B.T. PRODUCTIONS
P.O. Box 11006, Tucson, AZ 85734
(602) 883-7044
Owner: Bob Tripp
Studio Manager: Bob Tripp

• BUNS-UP STUDIO
also REMOTE RECORDING
P.O. Box 2393, Page, AZ 86040
(602) 648-9300
Owner: Jerry Edwards
Studio Manager: Jerry Edwards

• CEDAR CREST STUDIOS
also REMOTE RECORDING
P.O. Box 28, Mountain Home, AR 72653
(501) 425-9377
Owner: Bob Ketchum
Studio Manager: Bob Ketchum

• CHATEAU PRODUCTIONS
P.O. Box 13802, Arlington, TX 76013
(817) 261-5097
Owner: Jeff G. Peters

• AL CLAUSER (ALVERA)
402 S. Broadway, Skiatook (Tulsa area), OK 74070
(918) 396-1333
Owner: Al Clauer & Vera Clauer
Studio Manager: Al Clauer

• CREATIVE AUDIO PRODUCTIONS
326 Santa Isabel Blvd., Laguna Vista
Port Isabel, TX 78578
(512) 943-6278
Owner: Ben McCampbell
Studio Manager: Ben McCampbell

• CREATIVE SOUND PRODUCTIONS
ONLY REMOTE RECORDING
9000 Southwest Fwy #320, Houston, TX 77074
(713) 777-9975
Owner: Edward Smith
Studio Manager: Edward Smith

• CRYSTAL STUDIOS
P.O. Box 733, #19 Tanglewood, Bryant, AR 72022
(501) 847-8215
Owner: Ray Brooks
Studio Manager: Ray Brooks

• CULLICK'S RECORDING STUDIO
8103 Summer Trail Dr., Houston, TX 77040
(713) 468-9253
Owner: Michael Cullick
Studio Manager: Michael Cullick

• CURL STUDIOS
1606 Quail Run Road, Plano, TX 75066
(918) 251-5848
Owner: Mike Curl
Studio Manager: Mike Curl

• THE DEMO STUDIO
555 Cicero, San Antonio, TX 78218
(512) 656-1382
Owner: Jim Waller
Studio Manager: Jim Waller

• DUSTBOWL PRODUCTIONS
also REMOTE RECORDING
P.O. Box 140723, Dallas, TX 75214
(214) 826-7491
Owner: Bill Barton
Studio Manager: Bill Barton

• EXPLOSIVE STUDIO
P.O. Box 700295, Tulsa, OK 74170
(918) 742-3874, 743-8075
Owner: Gary Butler, Pride Hutchison
Studio Manager: Pride Hutchison, Dale Lawton, Scott Hutchison

• FOXFIRE STUDIOS
1220 Cedarbrook, Lancaster, TX 75146
(214) 227-2727
Owner: Keith Croxton
Studio Manager: Dennis Armstrong

• GODTEL PRODUCTIONS
330 E. Main St., P.O. Box 604, Nacogdoches, TX 75963
(409) 560-4282
Owner: Brother June Gentry
Studio Manager: Rick Smith

• GOLD LENA SOUND PRODUCTIONS
also REMOTE RECORDING
P.O. Box 555, Monticello, AR 71655
(501) 367-3076
Owner: Jimmy & Don Orrell
Studio Manager: Jimmy & Don Orrell

• GOOD SOUND SERVICES
also REMOTE RECORDING
8918 Biassonet St., Suite 406, Houston, TX 77074
(713) 988-5750
Owner: Alan Clarke
Studio Manager: Alan Clarke

• HEIGHTS SOUND STUDIO
2044 Columbia, Houston, TX 77008
(713) 880-3843
Owner: Karl Caillouet
Studio Manager: Karl Caillouet

• HOYT & WALKER
3422 Old Cantrell Rd., Little Rock, AR 72202
(501) 661-1765
Owner: Jeff Hoyt & Brent Walker
Studio Manager: Brent Walker

• IRON HORSE STUDIOS
also REMOTE RECORDING
P.O. Box 5652, Enid, OK 73702
(405) 242-2251
Owner: Paul Reinstein, John O'Neill
Studio Manager: Paul Reinstein

• JAZMINE PRODUCTIONS
359 Somerset Place, Abilene, TX 79601
(915) 673-2485
Owner: Mark McDowell
Studio Manager: Mark McDowell, Gil Gowing, Brian Youngblood

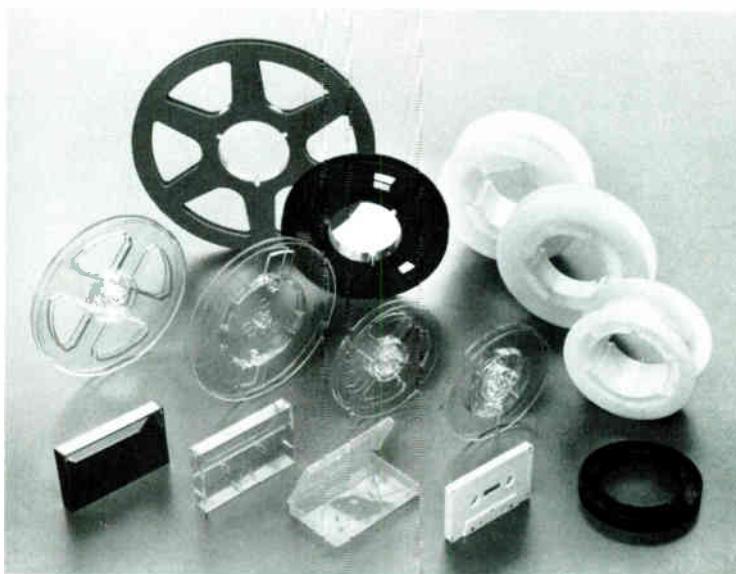
• JHB SOUND PRODUCTIONS
106 W. Robin Lane, Harker Heights, TX 76543
(817) 699-0528
Owner: John H. Brandt III
Studio Manager: John H. Brandt III

• KELLY PRODUCTIONS
4718 Geneva, Houston, TX 77066
(713) 583-1835
Owner: Steve Kelly
Studio Manager: Steve Kelly

• KUAT AM/FM RADIO PRODUCTION
also REMOTE RECORDING
University of Arizona, Tucson, AZ 85721
(602) 621-5828
Owner: Arizona Board of Regents
Studio Manager: David R. Saddler

• LAMBCHOPS
also REMOTE RECORDING
323 West McDowell Rd., Phoenix, AZ 85003
(602) 254-3849
Owner: Rick Lamb
Studio Manager: Rick Lamb

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Mix
THE RECORDING INDUSTRY MAGAZINE

ANNUAL NEW PRODUCTS DIRECTORY

Mix Magazine's yearly New Products Directory will be published in our AES Convention issue this October. If your company manufactures audio, video or musical equipment or supplies, you may be eligible for a *free* directory listing.

To receive a questionnaire, write to: Mix New Products Directory, 2608 Ninth Street, Berkeley, CA 94710 or call Lauri Newman at (415) 843-7901.

Deadline: July 5, 1985

• LONG CANYON SOUND
7415 Long Canyon Trail, Dallas, TX 75249
(214) 298-2973
Owner: Ron Walhall
Studio Manager: Ron Walhall

• LOST PERSON PRODUCTIONS
also REMOTE RECORDING
200 Timbercreek #115, Richwood, TX 77531
(409) 265-2166
Owner: Gregory R.H. Leach
Studio Manager: Chuck Balco

• MEDIASOURCE, INC.
5855 Sovereign Dr., Suite 108, Houston, TX 77036
(713) 778-0003
Owner: T. Burt Perrault, Patsy Perrault
Studio Manager: T. Burt Perrault, Patsy Perrault

• JOHN MICHAEL'S RECORDING
219½ W. Broadway, Muskogee, OK 74401
(918) 683-9290
Owner: John Medeiros
Studio Manager: John Medeiros

• MONKEY ISLAND RECORDING
Rt. 3, Box 139AA, Afton, OK 74331
(918) 257-5842
Owner: Ace & Carolyn Moreland
Studio Manager: Ace Moreland

• MOTHER DUBBERS
13626 Gamma Rd., Dallas, TX 75234
(214) 980-4840
Studio Manager: Russell Smith

• MURKY SOUND STUDIO
also REMOTE RECORDING
730 Thistlewood, Houston, TX 77079
(713) 556-5289, 468-4781
Owner: Len Frazier
Studio Manager: Len Frazier, Murky Waters
Engineers: Len Frazier, M. Waters, Russ Alvey, Philippe Gaffe
Dimensions of Control Room: 8 x 14
Tape Recorders: Otari MX5050 MKIII 8 track; Sony PCM-FI 2 track.
Mixing Consoles: Rama, Tascam/TEAC
Monitor Amplifiers: Yamaha P2200, Yamaha P2050
Monitor Speakers: JBL, Auratone
Echo, Reverb, and Delay Systems: MXR digital reverb, Yamaha echo & delay.
Other Outboard Equipment: Full dbx on 8 track, dbx compressor/limiters, MXR EQ, Yamaha EQ, SMPTE time code generator/reader.
Microphones: Neumann, AKG, Crown PZMs.
Instruments Available: Emulator II w/computer interface, Yamaha DX7, Sequential Circuits Prophet 5, Minimoog.

• MUSIC LANE RECORDING
P.O. Box 3829, Austin, TX 78764
(512) 447-3988
Owner: Lynn & Wayne Gathright
Studio Manager: Lynn Gathright

• THE MUSIK FAKTORY
1812 Procter St., Port Arthur, TX 77640
(409) 982-7121
Owner: Lois & Floyd Badeaux
Studio Manager: Lois & Floyd Badeaux

• OAKRIDGE—GRANPA'S RECORDING HOUSE
2001 Elton Rd., Ft. Worth, Haltom City, TX 76117
(817) 838-8001
Owner: Homer Sewell

• O B STUDIOS
also REMOTE RECORDING
5932 N. Grove, Oklahoma City, OK 73122
(405) 721-3727
Owner: Larry G. O'Rear
Studio Manager: Kathy Barnwell

• ON-SITE
also REMOTE RECORDING
1555-B Latrini Place, Arlington, TX 76010
(817) 275-4253
Owner: Gary D. Ballard
Studio Manager: Gary D. Ballard



• PARROT TRACKS STUDIO
also REMOTE RECORDING
5201 Meadow Creek Dr., Austin, TX 78745
(512) 441-4314
Owner: George Coyne
Studio Manager: George Coyne

• PEAK RECORDING STUDIO
also REMOTE RECORDING
42 Caddo Peak, Joshua, TX 76058
(817) 645-8385
Owner: Yvonne Mann
Studio Manager: Gary Mann

• PHANTOM PRODUCTIONS
also REMOTE RECORDING
P.O. Box 4870, Austin, TX 78765
(512) 443-7965
Owner: Martin Theophilus
Studio Manager: Chris Perez

• PLANET DALLAS STUDIO
P.O. Box 215029, Dallas, TX 75221
(214) 521-2216
Owner: Enterprize Associates, Inc.
Studio Manager: Rick Rooney

• POSTING BROTHERS PRODUCTION CO.
also REMOTE RECORDING
6800 Commerce "A", El Paso, TX 79915
(915) 775-1401
Owner: Paul Newell, Buzz Mayfield
Studio Manager: John A. Weitz

• THE PRODUCTION CO.
also REMOTE RECORDING
P.O. Box 1027, 510 N. Mt. Olive, Siloam Sprgs, AR 72761
(501) 524-4626
Owner: Ken Flory
Studio Manager: Ken Flory

• PROFESSIONAL AUDIO
210 Smith, Denton, TX 76205
(817) 382-4930
Owner: Bruce Clendenin
Studio Manager: Bruce Clendenin

• PROTEUS PRODUCTIONS
P.O. Box 1151, Bisbee, AZ 85603
(602) 432-4424

• RAGUSE RECORDING CO. (EVOLUTION STUDIO)
P.O. Box 470507, Tulsa, OK 74147
(918) 250-9749
Owner: Craig Raguse
Studio Manager: JoAnn Raguse

• RAVEN'S DEN
5409 Chaperito, Arlington, TX 76016
(817) 457-7989
Owner: James Hjort
Studio Manager: James Hjort



RAVEN'S DEN
Arlington, TX

• RBM RECORDING STUDIO
also REMOTE RECORDING
P.O. Box 1331, Abilene, TX 79604
(915) 691-1880
Owner: Randy B. McCoy
Studio Manager: Randy B. McCoy

• ROCK CLIFF AUDIO
2764 Ivandell, Dallas, TX 75211
(214) 337-0227
Owner: Michael Andrew
Studio Manager: Michael Andrew
Engineers: Michael Andrew
Dimensions of Studios: 11.5 x 15 x 8
Dimensions of Control Rooms: Integrated into studio for key-board applications.
Tape Recorders: Fostex A-8 w/remote, Dolby C, 8 track; TEAC A2000 ¼ track; Technics w/dbx M255X cassette; Sanyo RD W22 cassette dubbing.
Mixing Consoles: Studiomaster 8 in x 4 out, Fostex 16 point patchbay.
Monitor Amplifiers: Peavey CS 400
Monitor Speakers: Toby H20, JBLs in custom cabinets, Radio Shack Solo 3A
Echo, Reverb, and Delay Systems: ADM 1024 Effectron, Yamaha digital reverb, Technics 8040 Ambience/Echo.
Other Outboard Equipment: MXR 171 ⅓ octave EQ, MXR 127 stereo 15 band EQ, dbx 160X compressor/limiter, Commodore 64 w/SC model 64 sequencer, 910 expansion software, Panasonic monitor, Commodore 1541 disk drive, Roland MM4-MIDI thru box.
Microphones: Shure SM 57-8, PZM
Instruments Available: Storey and Clark upright, Moog source, S.C. Prophe 600, S.C. Six-Trak, Oberheim DX, Gibson Les Paul custom, Sunn Beta amp.
Video Equipment & Services: GE stereo-dolby VHS, Panasonic PK 557 video camera (on request)
Rates: \$15/hr. Specials for block rates. Musicians upon request.

• THE ROCK STUDIO
430 Kansas, Norman, OK 73069
(405) 329-8431
Owner: David Moore
Studio Manager: David Moore

• SANDY LANE RECORDING STUDIO
104 Sandy Lane, Clovis, NM 88101
(505) 762-2419
Owner: Gary Beevers
Studio Manager: Gary Beevers

• SCOTTSDALE CONFERENCE RESORT
also REMOTE RECORDING
7700 E. McCormick Parkway, Scottsdale, AZ 85258
(602) 991-9000
Owner: Western Conference Resorts
Studio Manager: Brian Court
Engineers: Brian Court, John Fitzpatrick, John Haro
Dimensions of Studios: 105 x 41, largest; 14 other rooms.
Dimensions of Control Rooms: 25 x 30.
Tape Recorders: Otari MX 5050 MK III-2 ¼" 2 track; Otari MX 5050 BQ II ¼" 4 track; TEAC 40-4 ¼" 4 track; TEAC A-3440 ¼" 4 track; TEAC 3300 ¼" 2 track; TEAC RX-777X cassette.
Mixing Consoles: Soundcraft 600B 24 in x 8 out, Tascam Model 50 12 in x 8 out, Tascam Model 5 8 in x 8 out.
Monitor Amplifiers: UREI, BGW, Yamaha
Monitor Speakers: JBL 4430, JBL 4311, Auratones, UREI active crossover.

Echo, Reverb, and Delay Systems: Eventide Harmonizer H949, MXR delay
Other Outboard Equipment: Scamp System (S02, S04, S07, S08, S31), Aphex Type-B Exciter, (12) dbx 160 compressor/limiter, dbx 150 noise reduction, Klark-Teknik EQ, Goldline RTA
Microphones: Neumann U89, Shure SM85, SM81, SM58, SM11, E-V RE20, Crown PZM, AKG, Audio-Technica
Instruments Available: Steinway grand piano
Video Equipment & Services: Grass Valley 1600-IL, (3) Sony 5850, (2) ADDA TBC, Chyron Graphics, Sony M3 Cameras, multi-media equipment also available.
Rates: Call for rates.

• SCRATCH AN SNIFF STUDIO
also REMOTE RECORDING
 200 Timbercreek, Suite #105, Richwood, TX 77531
 (409) 265-1127
 Owner: Chas. F. Balco
 Studio Manager: Chas. F. Balco, Cory Heckler

• SIMMERS AUDIO SYSTEMS
 2926 E. Highland, Phoenix, AZ 85016
 (602) 956-6963
 Owner: James Holm
 Studio Manager: James Holm

• SNOWBIRD JUNCTION RECORDING
ONLY REMOTE RECORDING
 4423 N. 23rd Ave. #A, Phoenix, AZ 85015
 (602) 265-6663
 Owner: Mike & Tina Craig
 Studio Manager: Mike Craig

• SOUND CUBE STUDIOS
 401 Willow Dr., Converse, TX 78109
 (512) 658-4172
 Owner: Ronald Thomas
 Studio Manager: Ronald Thomas

• SOUND ON SOUND
also REMOTE RECORDING
 5609 E. Rosedale, Ft. Worth, TX 76112
 (817) 451-2261
 Owner: Paul Sevy, Vic Stephens, Kenny Little
 Studio Manager: Vic Stephens

• SOUTHERN RECORDING
also REMOTE RECORDING
 56 E. 53rd Place, Tulsa, OK 74105
 (214) 233-9512
 Owner: Harlan P. Croy, president

• STARLINE PRODUCTIONS
also REMOTE RECORDING
 3719 Harold St., North Little Rock, AR 72118
 (501) 758-2086
 Owner: Starline Inc.
 Studio Manager: Howard Hutchez

• STELLAR WINDS STUDIO
also REMOTE RECORDING
 2501 Sublett Rd. #995, Arlington, TX 76017
 (817) 465-4780
 Owner: Joe & Mira Shaw
 Studio Manager: Joe Shaw

• STUDIO MOBILE
ONLY REMOTE RECORDING
 11226 Sagevale, Houston, TX 77089
 (713) 481-2551
 Owner: Erik Sweet
 Studio Manager: Erik Sweet

• STUDIO WORKS
also REMOTE RECORDING
 2058 Western Village, Houston, TX 77043
 (713) 461-1961
 Owner: Danny Erdeljac
 Studio Manager: Danny Erdeljac

• SUNSHINE HIGHWAY PRODUCTIONS
 3483 Coronado Ct., Ft. Worth, TX 76116
 (817) 244-5378
 Owner: Airburst Publishing Co.
 Studio Manager: Jon Cunningham

• TALLY-HO PRODUCTIONS
 107 E. Fairlane Dr., Longview, TX 75604
 (214) 759-6799
 Owner: Walt Tally
 Studio Manager: Walt Tally

• TEMPEST
also REMOTE RECORDING
 P.O. Box 1007, Tempe, AZ 85281
 (602) 968-9506
 Owner: Clarke Rigby, Andy Baade
 Studio Manager: Clarke Rigby, Andy Baade

• TEXAS SUNRISE MULTI-TRACK RECORDING STUDIO
 Rt. 4, Box 615, Edinburg, TX 78539
 (512) 381-0077
 Owner: Mike Lopez, Domingo Porras
 Studio Manager: Mike Lopez

• TMPS (TEXAS MOTION PICTURE SERVICE)
also REMOTE RECORDING
 4606 Clawson Rd., Austin, TX 78745
 (512) 444-5489
 Owner: W.T. Tyler & Stanley Ginsel
 Studio Manager: Larry Seyer

• TMS RECORDING
also REMOTE RECORDING
 P.O. Box 32551, Phoenix, AZ 85064
 (602) 274-8733
 Owner: Toby Schaefer
 Studio Manager: Toby Schaefer

• THE 25TH TRACK
also REMOTE RECORDING
 309 E. Vicksburg, Broken Arrow, OK 74011
 (918) 455-2459
 Owner: Walt Bowers
 Studio Manager: Walt Bowers

• UNICORN PRODUCTIONS
ONLY REMOTE RECORDING
 710 N. 59th, Waco, TX 76710
 (817) 772-5662
 Owner: Don Moore
 Studio Manager: Don Moore

• UNREEL RECORDERS
also REMOTE RECORDING
 Rt. 1, Box 36, Justin, TX 76247
 (817) 648-2291
 Owner: Kenneth Wilson, Barry Eaton
 Studio Manager: Kenneth Wilson, Barry Eaton



VOICEOVER STUDIOS
Dallas, TX

• VOICEOVER STUDIOS
 8625 King George Dr., Suite #335C, Dallas, TX 75235
 (214) 688-0600
 Owner: Chuck Webster
 Studio Manager: Wanda Webster
 Engineers: Chuck Webster
 Tape Recorders: Analog MCI JH-110B, 1" 8 track; MCI JH-110A 1/2" 4 track; MCI JH-110A 1/4" full track, MCI JH-110A 1/4" (2 ea) 2 track; MCI JH-110A 1/4" 4 track.

—LISTING CONTINUED ON PAGE 154

CLEAN PATCH BAYS NO DOWN TIME



VERTIGO BURNISHER AND VERTIGO INJECTOR RESTORE ORIGINAL PERFORMANCE TO YOUR PATCH BAYS

VERTIGO 1/4"TRS AND TT BURNISHERS:
 Each eliminates noise in main contacts under normal patching situations.

VERTIGO 1/4"TRS AND TT INJECTORS:
 Each injects cleaning solvent to eliminate intermittents in breaking contacts (normals) when patch cord has been removed.

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 12115 Magnolia Blvd. #116
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COME ON HUSH THE NOIZE!



We're quietly introducing the Hush II series. Amazingly effective single-ended noise reduction.

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 Eliminates noise caused by any effects devices. Good-bye gates.

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 Two channels in one rack mounted package.
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 (313) 853-3055

Circle #124 on Reader Service Card

**MASTERING STUDIOS.
PRESSING PLANTS..
DUPLICATORS...**

MIX Magazine's annual TAPE-TO-DISK Issue will be published this December. This one-of-a-kind special edition includes listings of mastering, pressing and tape duplication facilities throughout the U.S. To receive a questionnaire, call Lauri Newman at (415) 843-7901.

**Deadline for
Questionnaires:
September 6, 1985.**



—FROM PAGE 153

Mixing Consoles: Neotek Series I 16x8 etc (transformerless, digital specs).

Monitor Amplifiers: BGW 110Bs

Monitor Speakers: JBL 4313Bs

Echo, Reverb, and Delay Systems: AKG BX20E, Eventide delays, Echoplex.

Other Outboard Equipment: dbx 165 limiters, Eventide 910 Harmonizer with all options, Korg Vocoder, Wollensak 2870A and various other cassette mastering machines, Technics SPI5 turntable, Burwin TNE 7000 record de-popper, Omnitronics SPI, Broadcast Controls pulsing gear, Symetrix TI101 and other custom phone patch facilities.

Microphones: Neumann U89, U87, KM84, various AKG, Shure and Beyerdynamic.

Instruments Available: Piano - 6' grand Cable Conover - impeccably maintained (N/C)

Rates: \$55/hr. with 10% discount for C.O.D.

Extras: dbx noise reduction on ALL recorders (professional series) Exclusively licensed for TM's "Production Source" music

library in DFW area and 6 other music/sfx. libraries. Ampex high speed duplication chain modified to TM Programming specs — yields superior dubs. Original music and spot writing also available. References upon request.

Direction: Ad agency, A/V, album, demo and reel to reel or cassette duplication work. Designed and owned by 10 yr. Dir. of Eng. for TM Companies, Voiceover is technically excellent and "human engineered" for production efficiency. The studio was carefully constructed around a "not too wet—not too dead" sound to achieve the most natural and non-fatiguing voice spots. This trait with the addition of an unusually good sounding piano, has lead to growing recognition for its fine "piano-vocal" sound. We invite comparison. God bless you!

•• WATEREDGE PRODUCTIONS

also REMOTE RECORDING
P.O. Box 401, Port Isabel, TX 78578
(512) 943-4292

Owner: Art Hayes
Studio Manager: Art Hayes

•• WATERWHEEL SOUNDWORKS

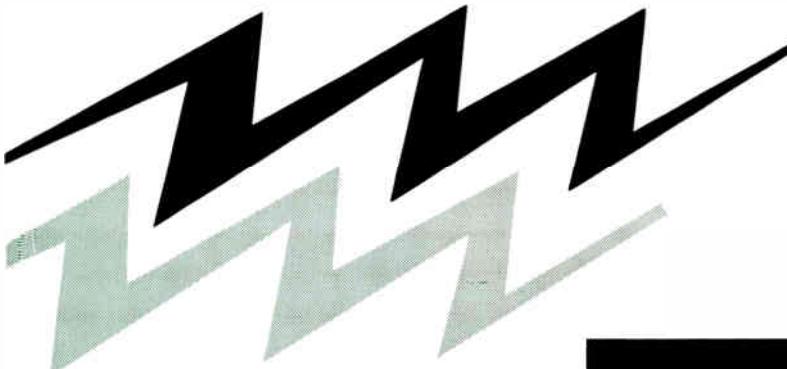
also REMOTE RECORDING
900 E. 5th St., Suite 111, Austin, TX 78702
(512) 477-1108

Owner: Butch Hancock

•• WEE NEVER QUIT STUDIO

1817 N. 15th, Broken Arrow, OK 74012
(918) 251-9057

Owner: Jack Brady Jr.
Studio Manager: Jack Brady Jr.

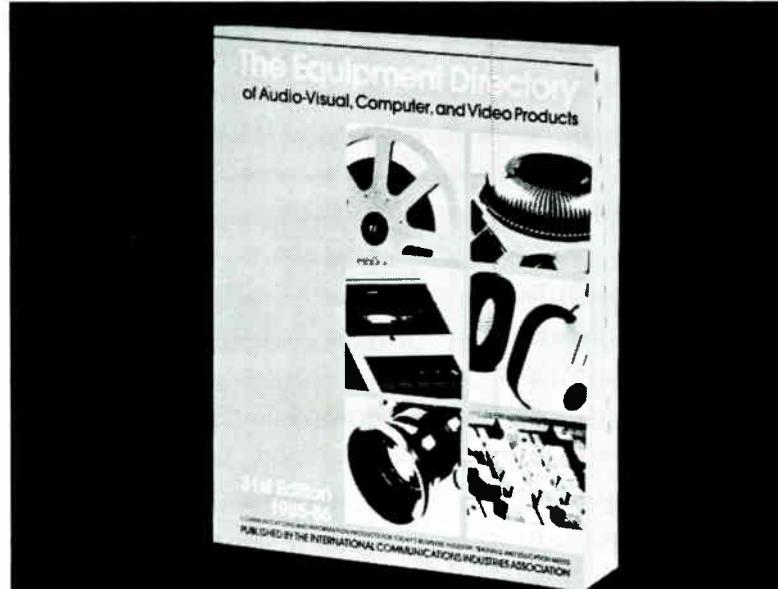


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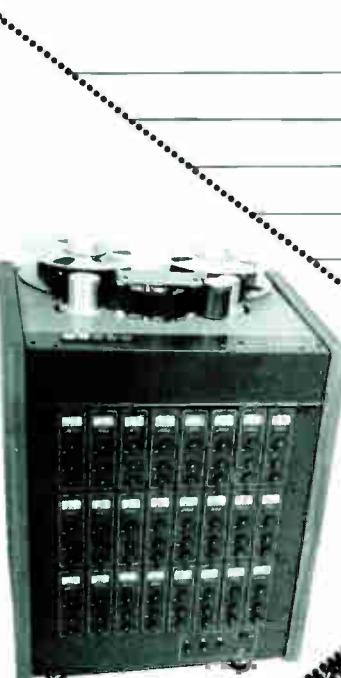
Why search everywhere to compare models, specifications and prices of audio-visual, computer and video products when they can all be as close as your fingertips. The 1985-1986 31st Edition of **The Equipment Directory of Audio-Visual, Computer and Video Products**, published by ICIA, contains more than 2,500 equipment items of over 500 manufacturers in easy-to-read and compare form. Other features include a listing of local dealers, industry trade names, helpful technical charts.

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► ACES TR-2: ½", ¼" 2 track

\$4,950.00

■ ACES TR-4: ½" 4 track \$6,950.00

24 TRACK TAPE MACHINE FEATURES:

- + 4dBm IN/OUT ■ 15/30ips
- Full-function 9 cue position remote-autolocator ■ stand
- 50% range vari-speed

◀ ACES TR-24: 2" 24 track

Recorder/Reproducer

\$19,950.00

■ 2" 16trk., pre-wired 24 trk

\$14,950.00



► ACES ML24:

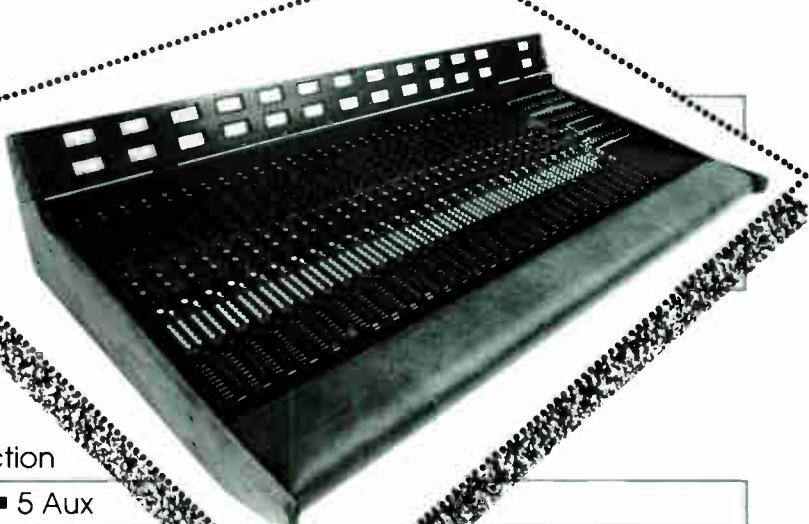
I/O console, 32 in x 24 buss,

Integrated wired patch bay

\$17,025.00

■ ACES SM16: Split console,

32 in x 16 buss \$15,665.00



BOTH CONSOLES FEATURE:

Fully modular construction

Audiofad long-throw conductive plastic faders ■ 5 Aux

ends ■ 5 band switchable EQ ■ Input LED PPM's ■ Stand

+ 48v phantom power ■ LED display (optional) ■ Two year parts

warranty ■ Other frame sizes available ■ Many options available

Circle #126 on Reader Service Card

19 South Glenwood Place Burbank, CA 91506 (818) 843-6320

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AUDIO & SERVICES
AND SUPPLY CO.**

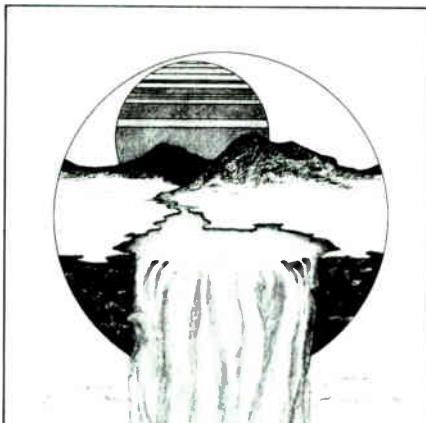


ANNOUNCER BOOTH STUDIOS, INC.
Richardson, TX

••• ANNOUNCER BOOTH STUDIOS, INC.
also REMOTE RECORDING
1300 E. Arapaho, Suite 101, Richardson, TX 75081
(214) 234-0301
Owner: Ted Stanford
Studio Manager: David McMahan
Engineers: Byron Parks, chief engineer; Charles Ferguson, Studio B engineer
Dimensions of Studios: Studio A: 15 x 12, Studio B: 6 x 10
Dimensions of Control Room: Studio A: 15x 15, Studio B: 9x 10
Tape Recorders: Studio A: Ampex 104 1/2" 4 track; Ampex 102 2 track, Ampex 700 2 track; Sony 854 1/4" 4 track Studio B: Fortex B-16 16 track; Otar 5050B 2 track.
Mixing Consoles: Studio A: Audiotronics 110A, 9 in x 2 out; Studio B: Ramae WR8118, 18x4x2
Monitor Amplifiers: BGW, Marantz
Monitor Speakers: Studio A Tannoy, Auratones; Studio B: Toby, Philips.
Echo, Reverb, and Delay Systems: AKG BX5, Roland SDE 1000 (2), Lexicon PCM 60 digital reverb.
Other Outboard Equipment: Eventide Harmonizer, dbx noise reduction, Ashly parametric EQ, Orban de-esser, Ashly comp/limiters, EXR Voice Exciter, Symetrix 2-way phone patch, Omni Craft pulser
Microphones: AKG 414s, Sennheiser, Shure, Sony
Instruments Available: Yamaha CX5M music computer, Korg Polysix, Minimoog synthesizer, Yamaha RX-11 drum machine
Other instruments available on request
Video Equipment & Services: Sony 1/4" video playback.
Rates: Studio A: \$60/hr. Studio B: \$60/hr

••• ARCA (AUDIO RECORDING CORP. OF AR, INC.)
100 N. Rodney Parham Rd., Suites 1A & 1B,
Little Rock, AR 72205
P.O. Box 5686, Little Rock, AR 72205
(501) 224-1111
Owner: Dick Marendt, Clyde Snider
Studio Manager: Clyde Snider

••• ASPEN RECORDING
603 Gladeview, Farmington, NM 87401
(505) 327-2928
Owner: Bill & Robin Woodard
Studio Manager: Robin Woodard



AUSTIN'S RIVERSIDE SOUND
Austin, TX

••• AUSTIN'S RIVERSIDE SOUND
also REMOTE RECORDING
7617-A New Riverside Dr., Austin, TX 78744,
P.O. Box 33207, Austin, TX 78764
(512) 385-4060
Owner: Herschel E. Cunningham, Richard Mullen, Bill Johnson
Studio Manager: Herschel Cunningham
Engineers: Richard Mullen, Layton DePenning, Eddie Habib, Andy Almon, Bill Johnson
Dimensions of Studios: Main cutting room 30 x 40, Live corridor 30 x 30 (30 ft ceiling), live sound room 14 x 30
Dimensions of Control Room: 15 x 20
Tape Recorders: Analog: MCI JH-24 16 16 track, MCI JH-110B 14-2 2 track. Digital: Sony PCM-701 2 track
Mixing Consoles: Ramae WR 8816 16x16.
Monitor Amplifiers: Crest, Biamp

Monitor Speakers: F-V Sentry 500, Yamaha NS10M, JBL 4311
Echo, Reverb, and Delay Systems: Lexicon 224, MXR digital delay
Other Outboard Equipment: DynaMite noise gates, EXR Exciter, dbx compressor & de-essers, (2) UREI 530, (3) UREI 535, (2) UREI 1176LN peak limiter, LA 4 UREI compressor, (2) parametric EQ.
Microphones: Neumann U-87, U-47, AKG 414, Sennheiser 421, E V RE20, Shure SM81, SM57, Beyer M88, 201, AKG 451, Countryman; Shure SM 58.
Instruments Available: Yamaha acoustic grand piano, Hammond organ w/Leslie, other instruments available for rental
Rates: Available upon request (call ask for Herschel).

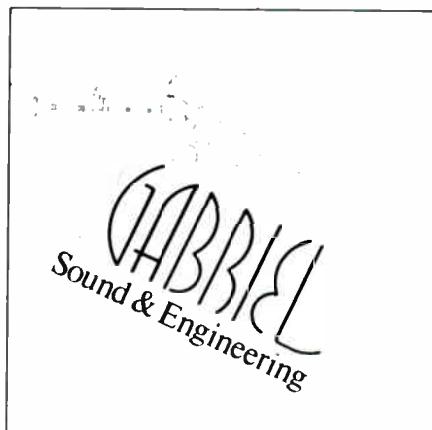
••• C AND L PRODUCTIONS
1511 N. 11th, Lamesa, TX 79331
(806) 872-7933
Owner: Lyle & Collin Roberts
Studio Manager: Lyle & Collin Roberts

••• COMMUNITY VIDEO SERVICES
also REMOTE RECORDING
4500 West Davis St., Dallas, TX 75211
(214) 263-8485
Owner: CCSD
Studio Manager: Tom Matasso, Chris Cavnar

••• CROSSROADS AUDIO INC.
ONLY REMOTE RECORDING
2623 Myrtle Springs Ave., Dallas, TX 75220
(214) 358-2623
Owner: Chuck and Diane Conrad
Studio Manager: Chuck Conrad
Engineers: Chuck Conrad, Doug Hall, Harold Pearce
Dimensions of Studios: 35 ft converted Greyhound bus specializing in audio for video and broadcast
Dimensions of Control Room: 7.5 x 14
Tape Recorders: Analog: Tascam 16 track, TEAC/Tascam 4 track, TEAC/Tascam 2 track
Mixing Consoles: Midas PR-03 32 in x 16 x 4
Monitor Amplifiers: Crown D150, Technics Class D
Monitor Speakers: IBL 4311
Echo, Reverb, and Delay Systems: Lexicon PCM 41, DeltaLab Electron, Dynacord DRS 80 digital reverb, MICMIX reverb
Other Outboard Equipment: dbx noise reduction, dbx 160X limiters
Microphones: Shure SM57, SM58, AKG 451-CK1 or CK5, Beyer M88; Audio-Technica ATM41, AT11R, HMF, Nady & Vega wireless mikes both hand and lavalier
Video Equipment & Services: JVC KY1900 ENG/EFP cameras, Panasonic 4600 switcher/special effects generator, Sony 1/4" VTRs, color and b&w monitors, etc. Video is at extra charge
Rates: \$500/day plus mileage and per diem. Video rates negotiable

••• MIKE DE LEON PRODUCTIONS
14146 Woodstream, San Antonio, TX 78231
(512) 492-0613
Owner: Mike De Leon
Studio Manager: Claudia De Leon

••• ETCOM INC.
also REMOTE RECORDING
813 N. Estrella, El Paso, TX 79903
(915) 562-5418
Owner: Etc.com
Studio Manager: John R. Carnilo



GABRIEL SOUND & ENGINEERING
Mesa, AZ

••• GABRIEL SOUND & ENGINEERING
also REMOTE RECORDING
833 West Main St., Mesa, AZ 85202
(602) 969-8663
Owner: Brent Gabrielsen
Studio Manager: Mike Allison

••• GOOD VIBRATIONS
1140 Harry Hines, Suite 6, Dallas, TX 75229
(214) 247-1537
Owner: Jim Cleek, Perry Lancaster, Ken Hergenrader
Studio Manager: Don Ashley

Engineers: Jim Cleek, Perry Lancaster, Ken Hergenrader, Curtis Drake, Dave Mills, Don Ashley, independents welcome
Dimensions of Studios: 28 x 28 main room, 10 x 15 drum room, 15 x 20 echo isolation room
Dimensions of Control Room: 10 x 18 control room
Tape Recorders: Tascam 85:16 16 track; Tascam 25:2 2 track, MCI JH-110A 2 track; Ampex AG 350 2 track, Optonica cassette 2 track, 3M M-64 4 track
Mixing Consoles: Tascam (modified) M-15 24x24x8x2, (6) Tascam M-12 24 in x 4 out
Monitor Amplifiers: Yamaha P2201 (2), P2100, Crown D 75 (2)
Monitor Speakers: JBL L300, 430IB, Auratone, Minimus 7
Echo, Reverb, and Delay Systems: Lexicon 200 1.3 software, Tapco 4400 spring, Roland SDE 3000, live chamber
Other Outboard Equipment: Aphex EQF-2s, Aphex CX-Is, Audioarts parametric, dbx 164 compressor
Microphones: Neumann U89, U67, KM54a's, AKG C-12a's, C-28s, C-61s, D12e, PZMs, Shure SM57s, SM58s, SM59, Audio-Technica AT813, PRO 4L, Sony ECM 22s, ECM 56f's
Instruments Available: Yamaha CS 60 poly synth, Fender Stratocaster, G&W bass, Yamaha DX7, Oberheim DX
Rates: \$35/hr, 12 hr block \$350, 24 hr block \$650

••• GRAND THEFT PRODUCTIONS
 1628 Canyon Oak, Irving, TX 75061
 (214) 254-6647
Owner: Jimmy Papa
Studio Manager: Mike Raupp

••• DUBBY HANKINS
 P.O. Box 16762, San Antonio, TX 78216
 (512) 492-2011
Owner: W.I. Davis Hankins
Studio Manager: Dubby Hankins

••• INSIDE TRACK, INC.
 313 N. Locust, Denton, TX, 76201
 (817) 566-2367
Owner: Lay & Lynne Miller
Studio Manager: Lynne Miller
Engineers: Jeff Wrenn, chief engineer, Troy Powers
Dimensions of Studios: Studio 20 x 30, Drum booth 10 x 10, Vocal booth 10 x 10.
Dimensions of Control Room: 24 x 24.
Tape Recorders: Tascam 85:16B 16 track, Sony digital 70IES 2 track, Technics 1500 2 track; TEAC 122B 2 track; Harman-Kardon CD91 2 track
Mixing Consoles: Tascam model 16 24x16x8
Monitor Amplifiers: Crown, Akai
Monitor Speakers: JBL 4411, Auratones
Echo, Reverb, and Delay Systems: Lexicon 200 digital reverb, master room XL305 reverberator, Tapco 4400 reverb, Eventide H910 Harmonizer, DeltaLab 256 and 1024 DDLS
Other Outboard Equipment: Aphex Aural Exciter, Orban "OPTIMOD" stereo comp/limiter/de-esser, UREI LA-4s, Tapco stereo 10-band graphic EQ, Technics turntable
Microphones: Neumann, AKG, Sennheiser, Crown, Shure, Beyerdynamic, TEAC, Electro-Voice
Instruments Available: 6 foot grand piano built by Kawai, vintage acoustic and electric guitars by Gibson, Guild, Ovation, and Washburn, Fender guitar amps, synthesizers available.
Video Equipment & Services: Beta and VHS single camera "live" recording.
Rates: \$50/hr with block rates available

••• ITI STUDIOS
also REMOTE RECORDING
 4305-A South Mingo, Tulsa, OK 74146
 (918) 663-7700
Owner: Sonny Gray
Studio Manager: Judy Pendergrass

••• LAKE SOUND
 Rt 2, Box 552, Roanoke, TX 76262
 (817) 431-1405
Owner: Rex Lake

••• LINCOLN INSTITUTE
 7622 Louetta Rd., Spring, TX 77379
 (713) 376-9679
Owner: Lincoln Foundation
Studio Manager: J.E. Lincoln, program director

••• MARSOUND RECORDING STUDIO
 915 N. Main St., Tucson, AZ 05705
 (602) 628-1554
Owner: Michael A Reinhard
Engineers: Michael A Reinhard, Jim Kitlas
Dimensions of Studios: A 12 x 14, B 12 x 13, C 12 x 24
Dimensions of Control Room: 12 x 22.
Tape Recorders: Tascam 85:16 track, TEAC 1/4" 3340S 4 track, TEAC/Tascam 1/4" 25:2 1/2 track



MARSOUND RECORDING STUDIO

Tucson, AZ



MUSHROOM STATION STUDIOS

Houston, TX

Mixing Consoles: Sound Workshop 1280B-SEQ 12x8x2; Soundcraft 800B 32 input
Monitor Amplifiers: ESS 500, Dynco 400
Monitor Speakers: JBL 4311, (4) JBL Bi-Radials, JBL 4560, Ampex
Echo, Reverb, and Delay Systems: (2) DeltaLab DL-2 acoustic computers, Fisher Space Expander
Other Outboard Equipment: (2) dbx 160 compressor/limiters, Neptune Graphic EQ, TEAC-1, (8X) dbx 154 noise reduction, Valley People 610 limiters & noise gates
Microphones: Neumann, Sennheiser, Shure, E.V., AKG, Sony, Audio-Technica, Crown P2M
Instruments Available: Hamilton upright grand piano, Moog synthesizer
Rates: \$20/4 track 1/4", \$40/8 track 1" Block rate discounts available
Extras: Pocketed rooms, angular ceilings, natural dividers, double walls, window & doors, adobe construction
Direction: Demos, LP and 45 RPM record production, film soundtracks, video pre-production, theater sound and sound reinforcement

••• MASTER WORKS PRODUCTIONS
also REMOTE RECORDING
 P.O. Box 26067, Tucson, AZ 85726
 (602) 586-9364
Owner: Chris Gussa
Studio Manager: Chris Gussa

••• M.D.L.P.
 1924 Lamanda, San Antonio, TX 78201
 (512) 341-5885
Owner: Mike De Leon
Studio Manager: Mike De Leon

••• MEL MORAN SOUNDTRACK RECORDING STUDIO
also REMOTE RECORDING
 2011 N. Alamo St., San Antonio, TX 78215
 (512) 224-4107
Owner: Mike Hettler, Jr
Studio Manager: Mike Hettler, Jr.

••• MUSHROOM STATION STUDIOS
also REMOTE RECORDING
 5511 Memorial Dr., Houston, TX 77007
 (713) 868-9326, 868-9724, 868-3382
Owner: J.C. Freeman
Studio Manager: J.C. Freeman
Engineers: Ted Kubricht, Richard Bender, John Glenn, Rick Paul, Dale Alvarez, Allen Heath
Dimensions of Studios: A 30 x 15, B 20 x 30
Dimensions of Control Room: Large 20 x 20
Tape Recorders: Analog 3M 16 (M 56) 16 track, Ampex 350-2 2 track, Ampex 351 2 track
Mixing Consoles: Lewis Erath custom 20 in x 20 out, submix acoustics customized by Ted Kubricht 16 in x 8 out
Monitor Amplifiers: Yamaha, NAD, Cerwin Vega, Alter, TOA, Crown
Monitor Speakers: Klipsch, JBLs
Echo, Reverb, and Delay Systems: Effectron, Echotron, plexi All the effects available under the sun in music—through Evans Music City
Other Outboard Equipment: All kinds available at session to be picked out by the artists at Evans Music Studio standard piano Lyons Healy grand, Yamaha grand, Hammond organ
Microphones: Altec, AKG, Shure, Sony, Neumann, Phantom power, RCA
Instruments Available: Anything available, they go to Evans

Music City find special effects, mikes, synthesizers, anything, if it's music, Evan's rents it or sells it. We use it in the session for you with a 24 hr notice.

Video Equipment & Services: Jim Allison, Video-7-Services, Marshall Jard, & ABC Channel 13). All Sony & Ampex 1" and Sony U-Matic, Ikegami, JVC, Panasonic, Hitachi.
Rates: 1 hr special is \$12,500; total production Audio rates are \$50/hr.

••• MUSIC MEDIA STUDIOS, INC.
 8377 Westview, Houston, TX 77055
 (713) 465-6563
Owner: I.B. Seligman, Yvonne McCord
Studio Manager: Yves Vincent

••• NOMOUNTAIN RECORDING
also REMOTE RECORDING
 P.O. Box 9866, Midland, TX 79708
 (915) 682-9673
Owner: Nick Carlton, Diane Carlton
Studio Manager: Nick Carlton
Engineers: Nick Carlton
Dimensions of Studios: 1800 sq. ft. total; (1) drum booth 12 x 15, (2) iso booths
Dimensions of Control Room: 15 x 25
Tape Recorders: Analog; Tascam 85-16B w/dbx 16 track; Otari MX5050-B 1/2 track 2 track; Revox (Studer) A-77 2 track; Tascam 122 cassette, Ampex ATR 800, 1/2".
Mixing Consoles: Neotek Series II 28x24.
Monitor Amplifiers: SAE, Crown, BGW
Monitor Speakers: JBL 4435 Bi-Radials, 4313, 4401; Auratones.
Echo, Reverb, and Delay Systems: MICMIX 305, G.B.S. reverb, DeltaLabs DL-5, Lexicon PCM 41, (2) MXR delay system II.
Other Outboard Equipment: Crown RTA-2, (2) UREI 539 EQ, UREI dual 10 band, R.G. dynamic processor, EXR Exciter, dbx 162 compressor/limiter, dbx subharmonic synth., Audiobarts 4200A parametric, dbx 157 noise reduction.
Microphones: AKG, Sennheiser, Sony, Shure, E-V, Crown
Instruments Available: Complete drum set, various keyboards, acoustic and electric guitar—anything you might need is available
Rates: Easy! Please call

••• OASIS PRODUCTIONS, INC.
 P.O. Box 200446, Austin, TX 78720
 (512) 465-7824
Owner: Oasis Productions, Inc.
Studio Manager: Brad McQuiddy
Engineers: Brad McQuiddy
Dimensions of Studios: small
Dimensions of Control Room: about the same
Tape Recorders: Studer A80 16 track; Sony/MCI IHI10C 2 track; Tascam 122B cassette; Sansui Tricode PCM PC-XI 2 track, Nakamichi RX-1 cassette.
Mixing Consoles: Soundcraft producer series 1600 w/patchbay, 24x16x8x2
Monitor Amplifiers: (2) Crown Micro-Tech 1000, Crown D-150A
Monitor Speakers: Westlake BBSM-10s & BBSM-6s, JBL 4312s & 4401s, Yamaha KM1000s, Auratones.
Echo, Reverb, and Delay Systems: Klark Teknik DN 780 digital reverb, Lexicon PCM60, Prime Time II, Eventide H910 Harmonizer, ADA 128, (2) DeltaLab Effectron II 1024.
Other Outboard Equipment: Full dbx 900 series rack; dbx comp/limit; (2) 160X, 163, (2) 165A; Valley People (8) dynamos; UREI 1176LN, Klark Teknik EQs DN360, DN332; White EQs.
Microphones: Neumann; (2) U-87s, KM-84; AKG; "The Tube."

—LISTING CONTINUED ON PAGE 158



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FROM PAGE 157



OASIS PRODUCTIONS, INC.
Austin, TX

(2) 414s, D12E, D521; Sennheiser (4) MD421s, MD441s; Shure 57s, 58s, 54s, 51s.
Instruments Available: Steinway upright piano; Oberheim OBX-A, DSX; Yamaha CX5M music computer, TX216, RX11 drum machine, MIDI Controller keyboard; Fender Strat & Teles (assorted years), Martin D-35 (1974), OO-18 (1956), Yamaha bass, 1961 Gibson Les Paul Junior. Amplifiers: Roland JC120, Fender Bassman, Bandmaster, Deluxe Reverb II, Brown Face Deluxe, Rockman X100, Bass Rockman, Groove Tube electric guitar preamp. Other instruments & amps available.
Rates: Please call for rates.

... POWER HOUSE SOUND
also REMOTE RECORDING
3319 Rockhill, Houston, TX 77045
(713) 433-5096
Owner: Lloyd E. Hughes & Ebbe Hughes Jr.
Studio Manager: Lloyd E. Hughes
Engineers: Joseph Holloway, David Smith, Lloyd Hughes, LeBaron Stokes
Dimensions of Studios: 20 x 20
Dimensions of Control Rooms: 10 x 15.
Tape Recorders: ACES TR-24 16 track; Tascam 32 2 track; TEAC 3340S 4 track; TEAC A3300 SX 2 track; Sansui Tricode PCM PC-XI 2 track digital; JVC Cassette KD A5 2 track; JVC Cassette KD 77 2 track.
Mixing Consoles: ACES SM 32x8x2.
Monitor Amplifiers: Crown Biamp, Realistic, Edcor headphone
Monitor Speakers: JBL 4320, KEF & Auratones
Echo, Reverb, and Delay Systems: DeltaLabs I024, Ibanez DM 2000 & Tapco 4400 reverb.
Other Outboard Equipment: MXR 15 band EQs, (2) Ashly SC 50.
Microphones: Shure, AKG & Sennheiser
Instruments Available: Korg Poly 6, Korg Poly 800, Oberheim DX drum machine, Yamaha DX7, Yamaha CS15, Fender Rhodes and Ludwig drum set.
Video Equipment & Services: Sony 1/4" video & JVC Hi Fi VHS recorders
Rates: \$35/hr. Block rates available.

... PRODIGAL SOUND
also REMOTE RECORDING
1510 Malone, P.O. Box 1443, Denton, TX 76202
(817) 566-5555
Owner: Greg Ellenwood
Studio Manager: Greg Ellenwood

... THE PRODUCTION BLOCK
also REMOTE RECORDING
2222 Rio Grande, Austin, TX 78705
(512) 472-8975
Owner: Joel Block
Studio Manager: Bill Harwell

... THE SOUND FACTORY RECORDING STUDIOS
1120 S. Highland, Tucson, AZ 85719
(602) 622-1265

Owner: Steve & Kimberly English
Studio Manager: Steve English
Engineers: Steve English, Taylor Smith, Sal Biondollo
Dimensions of Studio: Studio A: 34 x 16; Drum Room: 12 x 12; Iso: 10 x 10; Studio B: 15 x 17; Iso: 8 x 10; Studio C: 10 x 12.
Dimensions of Control Room: Studio A: 25 x 16; Studio B: 12 x 14; Studio C: 10 x 12.
Tape Recorders: TEAC 85-16B w/autolocator 16 track; TEAC 80-8 w/DX-8 8 track; TEAC 38 8 track; TEAC 32 2 track; TEAC 3300 2 track; TEAC I250 1/4 track; TEAC 244 Porta-Studio 4 track; (12) TEAC V-44 cassette.
Mixing Consoles: Wheatstone Audioparts 8X w/27 LED metering, 24x24x8; Tascam Model 5 w/expander MSEX, 20x20x4; (4) Tascam Model 1, 8x8x2.

Monitor Amplifiers: Crown, Gallien-Krueger, Sony
Monitor Speakers: JBL 4311, Auratone A, JBL 4301, Auratone B.
Echo, Reverb, and Delay Systems: Lexicon 200 digital reverb, Furman RV-1 stereo, live chamber 30x10x4, MXR digital delay, MXR flanger/doubler, (3) Ibanez DM-1000, Ibanez HD-1000 harmonizer, DOD stereo flanger, DOD stereo delay, Roland RX-1000, Roland SDE-1000
Other Outboard Equipment: (4) OmniCraft gates/key, (4) dbx compressor/limiters, Valley People limiters, various EQ (all types), test equipment (scopes, counters, analyzers, etc.). Computer Software, TRS-80 color computer w/disk drive, printer; Apple II w/2 disk drives, printer, modem.

Microphones: AKG, Sennheiser, Sony, Shure, PZM, Beyer.
Instruments Available: Yamaha CP-70B, Fender, Gibson, Ibanez guitars, various amps, Roland Juno-60, Roland Jupiter 4, Yamaha DX7, Drumulator w/extras chips, MSA D-12 steel guitar.
Video Equipment & Services: Sony camera, (2) VHS 1/2" machines.
Rates: Studio A: \$35/hr 16 track, \$30/hr 8 track; Studio B: \$20/hr 8 track; Studio C: duplication multi-track recording classes \$400/session (16 weeks) 4 sessions/year.

... S.R.S. INC.
4117 Guadalupe, Austin, TX 78751
(512) 452-6125
Owner: Sam Watson
Studio Manager: Benjamin Blank

... STAIRWAY 2 SOUND STUDIOS
716 Kyle, Arlington, TX 76011
(817) 461-2755
Owner: Kevin Montgomery, Mike Raupp
Studio Manager: Mike Raupp

**Tim
Stanton
Audio**

TIM STANTON AUDIO
Austin, TX

... TIM STANTON AUDIO
also REMOTE RECORDING
1501 West Fifth St., Suite 103, Austin, TX 78703
(512) 477-5618
Owner: Tim Stanton
Studio Manager: Richard Jones
Engineers: Tim Stanton, Richard Jones, Larry Seyer
Dimensions of Studios: 20 x 24 x 12
Dimensions of Control Room: 16 x 16
Tape Recorders: MCI JH-24-16 16 track w/AL III; Otari MX

5050B . II transformerless 2 track; (2) Tascam #32 2 track; (2) Yamaha K-1000 cassette decks.

Mixing Consoles: Rama WR8816, 16x4x16.

Monitor Amplifiers: Crest 2500S, Crown D150, D75, D60.

Monitor Speakers: JBL 4311Bs, Auratones, Yamaha NS10M, E-V Interface I Series II.

Echo, Reverb, and Delay Systems: Ursa Major 8x32 digital reverb; ADA digital delay; DeltaLab digital delay/chorus/flanger; MICMIX Master room reverb, Lexicon Prime Time digital delay w/memory extension, Loft 450 analog delay; Roland SDE-3000 digital delay.

Other Outboard Equipment: dbx 160X limiters (2), dbx 160s, Valley People Dyna-Mites, Loft chorus/phaser/flanger, gates, De-essers, a few light & bells and some tape & jive!

Microphones: Neumanns, AKGs, Sennheisers, Shures, RCA, Audio-Technica, EV.

Instruments Available: If we don't have it, we'll get it.

Video Equipment & Services: Access to all playback formats for sweetening w/o Q-Lock. Original scoring to picture w/Q-Lock.

Rates: Painless — call.

••• SUGAR HILL STUDIOS
5626 Brock, Houston, TX 77023
(713) 926-4431

Owner: Huey P. Meaux
Studio Manager: Andrew M. Bradley

••• TOMLYN RECORDING STUDIO
Rt. 3, Box 405, Flint, TX 75762
(214) 894-7713

Owner: Tom Russell
Studio Manager: Tom Russell

Engineers: Jim Phillips
Dimensions of Studio: 625 sq. ft.

Dimensions of Control Room: 110 sq. ft. LEDE

Tape Recorders: Analog: MCI JH-24-24/16 16 track; MCI JH-

110B-14 2 track; Technics 1520S 2 track; TEAC cassette C-3RX 2

track, 122B TEAC cassette, Yamaha K-950 cassette. Digital: Sony

PCM-F1 2 track.

Mixing Consoles: MCI 600 series 16116.

Monitor Amplifiers: Haler 500, Crown D-75, Kenwood.

Monitor Speakers: JBL 4313, 4311, Auratones.

Echo, Reverb, and Delay Systems: Lexicon 224X w/LARC, MICMIX 305, DeltaLab DL-2 Acousticcomputer and Korg

SDD-3000 programmable digital delay, Lexicon 8.2 update, Roland SDE-1000 programmable delay and CE-300 super chorus.

Other Outboard Equipment: Omni GT-4, dbx 160X, 165A limiter/compressors, Valley People stereo Dyna-Mite, Crown RTA scope, Aphex Aural Exciter, Orban 622B EQ.

Microphones: Neumann U87, KM84; AKG 414, 451; Electro-Voice RE-20; Sony C-35P; Sennheiser 421; Shure 78, 58; Crown PZM 30 GPBs and 6 LPBs.

Instruments Available: Oberheim DMX digital drums, Yamaha DX7 synthesizer; Kawai upright grand, Gibson Dove, Martin D-35s, Guild 12 string and Guild high string acoustic guitars, Fender Telecaster and Stratocaster electric guitars, Fender Jazz bass, Takamine C 140S classical guitar, set of Ludwig drums, Yamaha G100-I12 amplifier, various percussion, Yamaha TX-216(4 DX7 modules), Yamaha QX1 digital sequencer/recorder, Cherry Lane DX-Heaven, Yamaha DX-Pro, and Passport Software for Apple IIe, Garfield mini-Doc, Roland MKS-80 Super Jupiter with MPG-80 programmer, Rockman X-100, Bass Rockman, assorted digitrum programmers for DMX, Yamaha YME8 MIDI expander, direct boxes by Axe, UREI, Audience and Stewart.

Rates: Available on request.

••• TRAX RECORDING STUDIO
8539 Ferguson Rd., Dallas, TX 75228
(214) 321-1837

Owner: Buford Jones, John Storey

Studio Manager: Buford Jones

••• WALK ON WATER STUDIOS, INC.
also REMOTE RECORDING
Rt. 2, Box 566-H, New Braunfels, TX 78130
(512) 629-4396

Owner: Ken Brazele, Ron Stirm, Bruce Weldy

Studio Manager: Brian C. Carr

••• WOODEN STUDIOS
also REMOTE RECORDING
7334 Rampart, Suite 102, Houston, TX 77081
(713) 988-9872

Owner: Gus Buzbee

Studio Manager: Gus Buzbee, Holland Young

••• ZANBECK SOUND PRODUCTIONS
Rt 4, Box 1249, Little Rock, AR 72206
(501) 888-7045

Owner: Zane Beck, Chuck Bailey, Bobby Gibson

ATTENTION NORTHEAST STUDIOS!

The October issue of *Mix* will feature our annual Northeast Studios Salute to AES. For more information on this special advertising supplement, call Jeff Turner at (415) 843-7901.
CLOSING DATE: AUG. 7TH

USED RECORDING EQUIPMENT FOR SALE

MICROPHONES

AKG: C61, C28, C29, C12A, C12, C24, C414EB, C414E, D12, D15, D19, D24, D30, D202. Neumann: KM54, KM254, KM53, KM253, KM56, KM64, U64, U67, U47, M49, M50, M250, U48, SM23, SM2, SM69. Telefunken: M260, M154, Elam 251. Sony: ECM 51, C500, ECM377, C37A. Pearl: 8CK. Beyer: M101. Altec: Tube Mic. RCA: BK5 A, BK5 B, 44BX, 77B. Schoeps: CM51 V, MB 527, CM61. Sennheiser: MKH 405. Shure: SM53. B & O: Ribbon Mic

RECORDING CONSOLES

Harrison 3232 A Automated Updated VCA's Mods • Aengus Wired for 16x8x16 has 8x8x8 in place, 2 Phono Inputs with Map EQ • Neve 32x24 (group) x 24 / 8 Limiters / 8 Aux Sends • Helios 16x8x16 Older Type • MCI 542 with 28 I/O Modules • API 20 Input 8 Groups 16 Monitor 550 EQ • Trident Series 80 6 years old • Trident Series 80 B as new.

TAPE RECORDERS

24 Tracks: Otari MTR 90 MK 2 24 track • MCI 24 Track JH 114 with Auto Locator. 16 Tracks: 3M M56 with Remote • JH114-16 1979 w/ Autolocate III. Other:

Scully 280-8 w/ 4 track & 2 track heads • Studer A80 8 track • 3M M64 4 track • 3M M64 2 track • Ampex 440-4. Cassette Decks: Technics RSM 45 • Hitachi D7500.

OUTBOARD GEAR

DeltaLab DL-1 Digital Delay • Eventide 1745M Digital Delay • Eventide Instant Phaser • AKG BX-10 Reverb • MXR Flanger Module • Orban De-Esser • RCA BA6A Limiter • EMT Stereo Plate Reverbs • Roland SPH323 Stereo Phaser • MXR Digital Delay • MXR Phaser Module • UREI (5) 1109 Cards • UREI Little Dipper • Lexicon 122S DDL.

RACK MOUNT EQUALIZERS

Furman PQ-6 Parametric • UREI 545 Parametric • Pultec HLF-3 Hi LO Filter • Altec Graphic • Furman Parametric • U.A. 550 Hi Lo Filter • White 3400 1/3 Octave Graphic.

RACK MOUNT LIMITERS

UREI 1176 (Not LN) • Electrodyne Compressor Limiter • Pye Limiters • Decca Tube Limiter • Altec Tube Limiter.

EQUALIZER MODULES

API 554 • API 550 • MAP EQ • Altec 9061A • Orange County Sweep EQ • Melcore GME • B & B EQF-1 • ITI Parametric.

LIMITER MODULES

Allison Gain Brain 1 • Orange County Comp/Limiter • API 525C • API 525A.

AMPLIFIERS

McIntosh MI-75 • McIntosh MC-75 • McIntosh MC-30 • McIntosh MC-40 • Crown IC-150 Pre Amp • Crown D-60 • Langevin AM-16 • Marantz 240 • Crown SA 30-30.

CONSOLE COMPONENTS

Neve 1058 Input Module • API: 515Q Assign Module, 512 Input Module, 325 Line Amp Cards, 312-5 Line Amp Cards, 575 Oscillator.

MISCELLANEOUS

Pultec MH-4 Mixer • Stephens VSO as is • dbx 28 channels.

Dan Alexander Audio
Box 9830
Berkeley, CA 94709
415/527-1411



•••• ACCESSIBLE SOUND
5146 Kingfisher, Houston, TX 77035
(713) 723-4668
Owner: Kenneth Bujnoch
Studio Manager: Kenneth Whitenton

•••• STEPHEN ARNOLD—RECORDING & PRODUCTION
1404 Forest Lane, Garland, TX 75040
(214) 494-6882
Owner: Stephen Arnold Productions
Studio Manager: Carol Blalock
Engineers: Peter Dowdall, Charlie Pollard

•••• AUDIO VIDEO RECORDERS OF ARIZONA
also REMOTE RECORDING
3830 N. 7th St., Phoenix, AZ 85014
(602) 277-4723
Owner: Floyd Ramsey
Studio Manager: Tim Ramsey

•••• AUSTIN RECORDING STUDIO
also REMOTE RECORDING
4606 Clawson Rd., Austin, TX 78745
(512) 444-5489
Owner: W.T. & Audrey Tyler
Studio Manager: W. Tyler

•••• BENSON SOUND, INC.
3707 S. Blackwelder, Oklahoma City, OK 73119
(405) 634-4461
Owner: Larry R. Benson
Studio Manager: Linda Groves

•••• BOYD SOUND STUDIO
P.O. Box 682, 103 N. Ballard St., Wylie, TX 75098
(214) 442-1620
Owner: Anthony D. Boyd
Studio Manager: Anthony D. Boyd

•••• JIM BRADY RECORDING STUDIOS
25 E. Glenn St., Tucson, AZ 85705
(602) 791-3884
Owner: Jim Brady
Studio Manager: Jim Brady

•••• BRASSWIND RECORDING STUDIO, LTD.
2251 Texas Ave., Shiloh Place, Suite F,
College Station, TX 77840
(409) 693-5514
Owner: David O. Cooper
Studio Manager: David O. Cooper
Engineers: David O. Cooper, James Haislet, Jeff Cowan
Dimensions of Studios: 18 x 28

Dimensions of Control Room: 13 x 16
Tape Recorders: Analog MCI JH 110C-8 (1") 8 track, MCI JH 110B VP 2 track (2), Aiwa dubbing cassette deck, Telex 6120 stereo cassette duplicator Digital Sansui PC XI Tricode PCM 2 track

•••• BUFFALO SOUND STUDIOS
910 Currie St., Fort Worth, TX 76107
(817) 335-7733
Owner: Jim Hodges
Studio Manager: Buff Haskin



CASTLE AUDIO
Carrollton, TX

•••• CASTLE AUDIO
1015 N. I-35 East, Suite 200, Carrollton, TX 75006
(214) 242-4283
Owner: Tom Townson
Studio Manager: Drew Townson
Engineers: Drew Townson, Stacy Brownrigg
Dimensions of Studio: 30 x 26 x 13, isolation booth and widely variable acoustics
Dimensions of Control Room: 22 x 17 x 14
Tape Recorders: Otari MTR 90 II 24 track, Otari MTR-10 2 track, Otari 5050B 2 track
Mixing Consoles: Sony/MCI 636 36 AF/1 all parametric, 9 returns, 4 automated returns
Monitor Amplifiers: Haller, Pulsar, QSC
Monitor Speakers: JBL 4435 4411, Realistic, Auratone Echo, Reverb, and Delay Systems: Lexicon digital reverb, MIC MIX reverb, Lexicon PCM 41 DDL, Roland 2000 DDL, Roland 555 chorus echo, tape slap
Other Outboard Equipment: DeltaLab Harmonic computer, EXR Vocal Exciter, Orban parametric EQs, White 1/3 octave EQs, dbx compressor/filter, dbx noise reduction, vocal stressor, Valley People Dyna Mites, UREI LA4 compressors, UREI digital metronome, Aiwa F990 cassette deck, Eumig FL1000 cassette deck
Microphones: AKG C12, pair C12A, pair C28, 414EB, D12E, Neumann/Tetekunen pair U87 U67 pair KM54, Also Sennheiser, Crown PZM, Shure, E-V, Audio Technica
Instruments Available: Yamaha C7 grand piano, Moog synthesizer, Yamaha DX7 digital synthesizer, Oberheim and Linn digital drum machines, Mesa Boogie amp
Rates: Available upon request

•••• CECCA SOUND
3198 Royal Lane, Suite 104, Dallas, TX 75229
(214) 350-6945
Owner: Charley Pride
Studio Manager: Chuck Rainey
Engineers: Bob Pickering, Kraig Pride, Chuck Rainey, John Mayfield
Dimensions of Studio: 20 x 30
Dimensions of Control Room: 28 x 16
Tape Recorders: MCI JH 24 24 track, MCI JH 110B 4 track, MCI JH 110B 2 track, MCI JH 110B Mono

Mixing Consoles: MCI 53BD with JH 50 500 automation
Monitor Amplifiers: UREI, Crown
Monitor Speakers: UREI 813, JBL 4313
Echo, Reverb, and Delay Systems: (3) large custom made plates, Lexicon 224 digital, Lexicon Prime Time, Ursa Major Space Station, Marshall 5402
Other Outboard Equipment: Allison Research Kepex and Gain Brains, EXR Exciter, Valley People Dyna Mite, UREI LA4 comp and 1176 comp, dbx 162 stereo comp and 165 comp, Audio Design Recording vocal stressor, DeltaLab DLS All tape machines equipped with Dolby 'A,' Amber spectrum analyzer
Microphones: E-V CS15E, E-V RE20, Sennheiser 421 and 431, Neumann U87, U69, U47, Beyerdynamic M201, AKG 414, 551, Milab VM 41, DC 96, DC 63, Crown PZM, Countryman EM101, Sennheiser Binaural head
Instruments Available: Baldwin 9 ft. grand piano, 7 piece Pearl kit and drum rack, LinnDrum, Korg Poly 61, Yamaha electric piano
Direction: Specializing in records, films and custom commercials
Record producing, film scoring and publishing available
Selected



BRASSWIND RECORDING STUDIO, LTD.
College Station, TX

Mixing Consoles: Trident Series 70 16x16x16
Monitor Amplifiers: Crown PSA 2 and Crown D 75
Monitor Speakers: JBL 4431 Auratone cubes
Echo, Reverb, and Delay Systems: Ursa Major 8x32 digital reverb, DeltaLabs Effectron ADM 1024 digital delay
Other Outboard Equipment: Eventide H949 Harmonizer, dbx 1604 compressors, Valley People stereo Dyna Mite Ashly parametric EQ White 1/3 octave EQ w/active electronic crossovers
Microphones: AKG Beyer, C ducer, Crown, PZM, Electro Voice, Neumann, Sennheiser, Shure, Sony
Instruments Available: Yamaha CP 80 electric grand, Roland Juno 60 synthesizer, LinnDrum, Fender Precision bass, Gibson Les Paul Artisan guitar, Princeton Reverb II amp, Sonor Signature Series drums (8 piece kit)
Video Equipment & Services: Audio post production for video Adams Smith 2600 SMPTE synchronizer
Rates: 30 track \$150/hr, 24 track \$90/hr, 8 track \$45/hr, 2 track \$30/hr, digital 2 track \$45/hr
Audio video lock up (24 track) \$150/hr, (8 track) \$95/hr
Discounts available upon request

•••• BROADWAY STUDIOS
1713 Broadway, Lubbock, TX 79401
(806) 747-5257
Owner: Bruce Alderson, Craig Alderson, Tom Woodruff
Studio Manager: Bruce Alderson

•••• EMMIT BROOKS RECORDING STUDIO
115 East Idaho Ave., Las Cruces, NM 88005
(505) 524-1889
Owner: Emmitt H. Brooks
Studio Manager: Emmitt H. Brooks

—FROM PAGE 46, DENVER/NICHOLS
father too. I've been with my kids when they've been sick. It's the hardest thing in the world to live with. You would do anything to keep your child from hurting. It's a scene all of us are familiar with, except for most, the end result is not that you're going to lose your child.

"About a week later we were in Mozambique. Sometimes what happens for me is a song starts coming on and I just go off with this song that's happening in my head. I practically have to be lead around so I don't get lost. One day in Mozambique I wrote this song. I think it's one of my very best."

"'African Sunrise' is just a couple of electric guitars and a lot of percussion which Paulinho da Costa came in to do," explains Roger. "At the end of it are some chants we added from people working in the fields. The chants worked out great."

While the instrumentation may have been pretty standard, Nichols has his own way of dealing with studio equipment.

"The most unique piece of equipment I use is my little speakers for mixing and recording. They're Visonik David 9000s. I take them everywhere I go. We've used them to record the last five or six Steely Dan albums, the *Nightly* album and the stuff I do for Motown. For me, they're the truest little speaker as far as tonal range and balance."

Nichols used very little outboard gear because, "My whole concept is getting the natural sound of the instruments, not limiting or equalizing them to death. Maybe we used some dbx 160-X limiters on the vocal, limiting two dB at the most. I don't like to limit anything a lot. I'd rather ride the knob while I'm doing the recording to keep the vocal level up at the right place."

"For this project, we used a (Neumann) U47 tube microphone on John's vocal," Nichols says, adding that Denver is pretty much a one-take vocalist. "That seemed to be the warmest. I like using tube mics on vocals and saxophones when I'm recording digitally because digital seems to accentuate the odd harmonics, as does any piece of digital equipment. Tube mics seem to accentuate the even harmonics, so doing a vocal or a lead saxophone, it just makes them sound so much warmer and pleasing amongst the rest of the instruments."

Also on this album, Nichols used the Roland 3000 digital delays, the AMS digital reverb and the Eventide 2016 digital reverb.

"We used three EMT plates and even used this little digital reverb called an ART-01A which is an inexpensive, \$1500 digital reverb. We used that for some effects that didn't need the fidelity of the AMS or the Eventide 2016. We also used the Klark-Teknik digital reverb.

"Also on this project, I have this little Sony mixer that's called the MXP-61. It's a 12 input, four output, very quiet portable mixer that we used for a lot of echo returns. We could EQ them and bring them back up to a couple of the faders and that gave us 12 extra return faders.

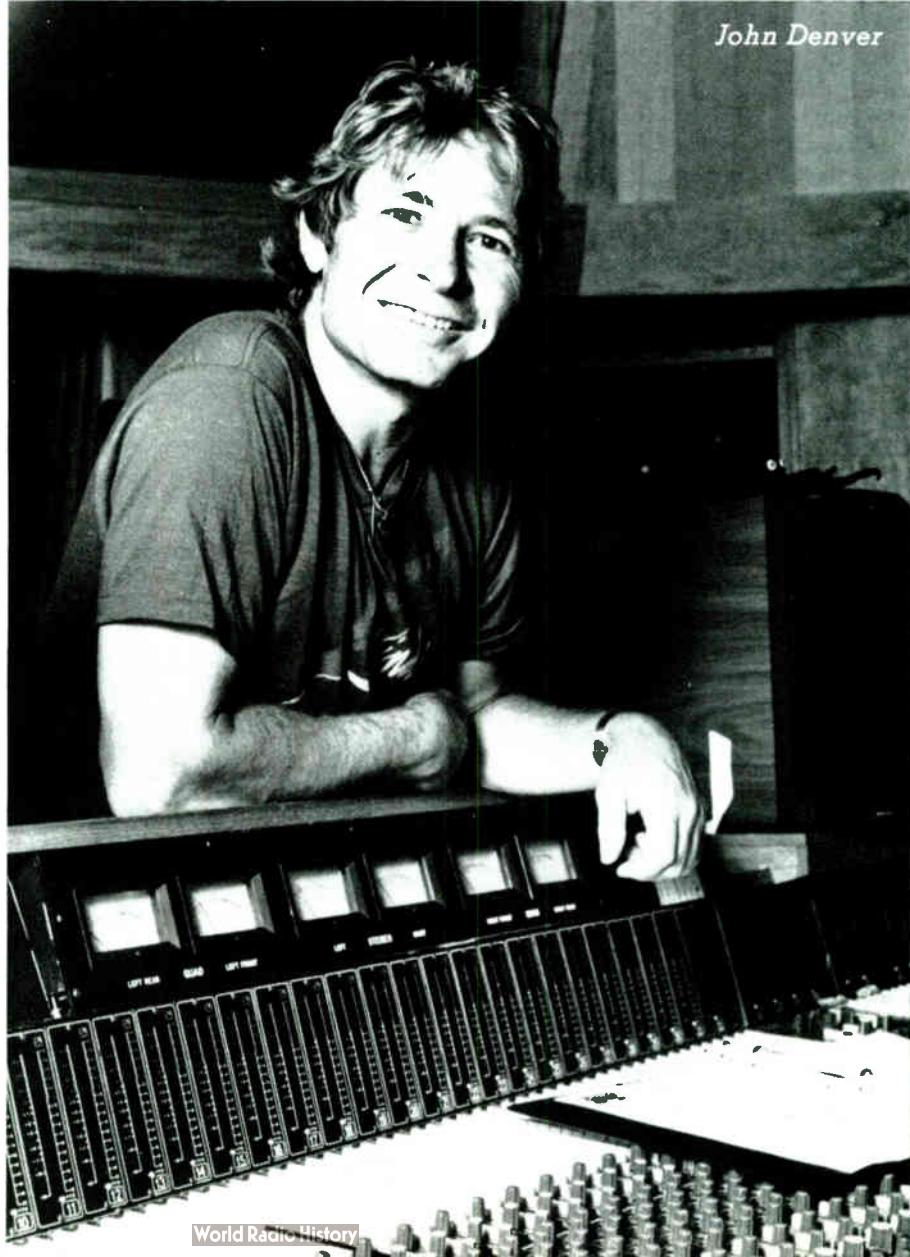
"For mixing this, I used a concept we found on the *Nightly* album. We were getting pushed for time at the end of the year, so we didn't really want to get a mix, take the thing home to listen to it and then come back to do any changes. In the studio part of the complex, we set up a little living room, put a couch, a

stereo with the David 9000s, a nice high power amplifier and an F1 (Sony PCM). We'd make our copies, bring the tape out, plug it into this little stereo and sit to listen in a different environment, like we would at home. We'd make any last minute decisions, then touch it up in the control room, come out, listen to it and go to work on the next tune.

"I mix everything to digital also, so that nothing gets in the way of music from the time you hear it in the control room when they're doing the tracks, to the time you play it at home on your Compact Disc. It's exactly the same. I've taken my Mitsubishi two-track digital machine home and compared tapes we make in the studio to the Compact Disc to make sure they're exactly the same. It's almost impossible to tell the difference between the Compact Disc and the mixes we do here in the studio."

PHOTO: SHERRY RYAN BARNETT

John Denver



recorded projects include: Charley Pride, Atlanta, Milan Williams of the Commodores, Stella Parton, Chuck Rainey, Foghat, Peter Frampton, Brian Auger, Kenny Rogers, Freddy King, Chocolate Milk, Star Studded Strutters, Steven Bishop, Tom Merriman, Dolly Parton, David Foster, Don McClean, Chuck Mangione, and feature motion picture film "Ellie." Radio and television commercials: WXNE-TV-Boston, KLAC Radio-Los Angeles, WNOL-Detroit, Metromedia, Golden West, Great Empire Communications, 700 Club, Christian Broadcasting Network (CBN), American Airlines, What-A-Burger, Cabbage Patch Dolls, Butterkrust Bread, A&W Root Beer, J. C. Penney, and True Value Hardware

**** CEDAR CREEK RECORDING
3012 Brighton Rd., Austin, TX 78745
(512) 444-0226

Owner: Austin Media Productions, Inc

Studio Manager: Fred Remmert

Engineers: Ron Rogers, Fred Remmert, Travis Remmert

Dimensions of Studio: 15 x 20 x 7 (approx.)

Dimensions of Control Room: Several rooms of various sizes

Tape Recorders: MCI JH24 24 track; MCI JH10B 2 track; Technics 1520 2 track, Sony 1/4 track, Technics RS-M 85 cassette (others available)

Mixing Consoles: MCI JH636 w/automation, 26 x 24

Monitor Amplifiers: Crown PSA-2 (mains), Roland SPA 120 (references).

Monitor Speakers: JBL 4430 Bi-Radials (mains), JBL 4401 (references), Bose 301 (references), Auratones, ECI 2-way mini-speakers.

Echo, Reverb, and Delay Systems: Lexicon Super Prime, (2) Lexicon 224 reverb; Eventide 949 (delay).

Other Outboard Equipment: Orban 622B parametric EQ, UREI 530 graphic EQ; (2) dbx compressor/limiters (165A), UREI 1178 stereo limiter; Eventide 949 Harmonizer, Valley People "Dyna-Mite" noise gates (4).

Microphones: Neumann, AKG, Sennheiser, Shure, E-V, Beyer, and any others available on request.

Instruments Available: Kawai 6' grand, Oberheim OBX-A polyphonic synthesizer, full Tama studio drum kit, Gibson electric guitar, B&W bass guitar; Ovation acoustic, Takamine acoustic, Mesa Boogie Mark II B amp.

Rates: \$50/hr plus engineer and tape

Extras: Our studio is surrounded by 9 acres of private property covered with Texas trees. Kitchen facilities, TV, artists' lounge



area, sundeck, relaxed atmosphere. We also offer in-house producing, and the availability of the best musicians in Texas for sessions.

Direction: As many as we can go in. Clients include: Freeflow Productions; 14K; James Anderson; Steve Mendell; Private Lives; many others

**** CEREUS RECORDING

also REMOTE RECORDING
3620 N. Scottsdale Rd., Scottsdale, AZ 85251
(602) 990-8163

Owner: Allen Moore, CEO

Studio Manager: Diane Moore

Engineers: Allen Moore, Bob Pachman

Dimensions of Studio: 20 x 20

Dimensions of Control Room: 15 x 15

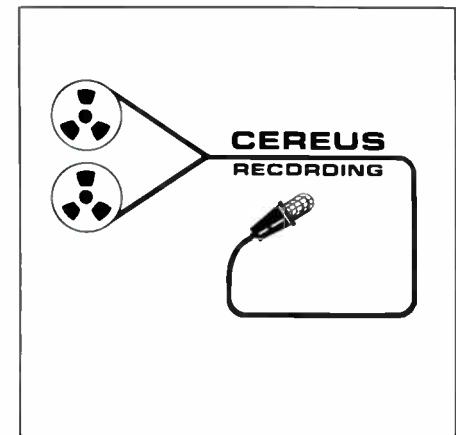
Tape Recorders: Soundcraft 760 Mark III Series 24 track; Otari MK 5050B 2 track, Nakamichi DMP100 (digital) 2 track; Sony 1/4" U-matic UO5600 2 track

Mixing Consoles: Soundcraft 1600/P B 20x8x16; Sound Work shop I280 12x8

Monitor Amplifiers: McIntosh 2300, Bose 1800, Altec Lansing, McIntosh headphone amp

Monitor Speakers: JBL 4430, Electro-Voice Sentry 100, Aural tone 5C

Echo, Reverb, and Delay Systems: Lexicon 200 digital reverb,



CEREUS RECORDING
Scottsdale, AZ

(2) Lexicon PCM 60 digital reverbs, Lexicon PCM 41, Lexicon PCM 42

Other Outboard Equipment: MXR Transposer, Orban 622B parametric, (2) UREI LA4 compressor/limiters, (2) dbx 160 compressor/limiters, (2) MXR 31 band graphic, Symetrix noise gates, EXR Exciter, Technics RSM 85 cassette recorder, (2) Jensen direct boxes, AKG headphones, Aphex Compellor, (16) Technics RSB-50 cassette decks with line amps.

Microphones: Neumann U87, AKG D12, C452, C414; Sennheiser MD421, 441; (3) Crown 30 GP PZM; Electro-Voice RE-20; (4) Shure SM57, SM58.

Instruments Available: Yamaha grand, Oberheim system w/current updates, SCI system with Commodore 64, Mini Doctor click, programmers.

Video Equipment & Services: Sony VO 5600 3/4" VCR.

Rates: Call.

**** CHATON RECORDINGS

5625 E. Naumi Valley Dr., Scottsdale, AZ 85253
(602) 991-2802

Owner: Ed & Marie Ravenscroft

Studio Manager: Ed & Marie Ravenscroft



CMG STUDIOS
Nuevo Leon, Mexico

**** CMG STUDIOS

Privada Alamo 3310 Nte., Monterrey,
Nuevo Leon, Mexico 64530

(83) 51-47-45

Owner: Cesar M. Gomez L.

Studio Manager: Cesar M. Gomez L.

Engineers: Cesar M. Gomez, Antonio Cuevas C., Sergio Garza R.

Dimensions of Studio: 24 x 18

Dimensions of Control Room: 18 x 12

Tape Recorders: Soundcraft SCM-760 24 track, w/autoloader; Otari MX 5050 2 track; Technics RS-1506 4 track; Tascam 300-B 2 track, Revox PR-99.

Mixing Consoles: Soundcraft Series 1600 24x8x2.

Monitor Amplifiers: Crown

Monitor Speakers: JBL 441L, 4301; Auratone.

Echo, Reverb, and Delay Systems: (2) Ecoplate, Orban 111, Eventide 200.

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Other Outboard Equipment: Noise gates by Valley Audio and Symetrix, dbx limiters, Eventide Harmonizer, de-esser, Pioneer cassette decks (2), DeltaLab flanger, Koss earphones.

Microphones: Neumann U87, U47; AKG 414, 421; Shure SM77, SM57, SM58; Crown PZM; Shure SM81; Sennheiser MD421; Beyerd M201.

Instruments Available: Rogers drums, Roland Rhythm Composer TR-808, MicroMoog synthesizer, Precision bass, Fender guitar, Latin Percussion, congas, Oberheim OBA, LinnDrum, Yamaha DX7.

Rates: \$30/hr. Day and week block rates available on request.



COOKSOUND
Houston, TX

**** COOKSOUND
also REMOTE RECORDING
4801 Woodway, Suite 355W, Houston, TX 77056
(713) 960-8222

Engineers: Mark Allen Meyer, Dwight Cook, Emily Getz. Outside engineers welcome.

Dimensions of Studios: A: 30 x 20. B: 15 x 21. Both rooms are Sonex treated, acoustically pleasing, with non-parallel walls.

Dimensions of Control Room: A: 35 x 25. B: 35 x 25. C: 25 x 15 over-sized, acoustically treated, non-parallel walls, and a 30 foot floor-to-ceiling window with a breathtaking view!

Tape Recorders: Sony/MCI JH-24 24 track; Sony/MCI JH-16 16 track; Sony/MCI 1" video layback 3 track; Sony/MCI JH-110 2 track; Studer A-810 2 track; Tascam Model 58 8 track; Tascam 40-4 4 track; Sony digital FI 2 track.

Mixing Consoles: Spectrasonics 24x8x4x2 (custom) 20/28-24, Tascam Model-5 EX 16 in x 4 out.

Monitor Amplifiers: Crown.

Monitor Speakers: JBL, Auratone.

Echo, Reverb, and Delay Systems: Klark-Teknik, MICMIX, Tapco, Sound Workshop, Eventide, plus many outboard units available. Everything is patchable including 18 pairs of tie lines between all control rooms.

Microphones: Full selection of microphones and direct boxes.

Instruments Available: Kawai grand piano. Sequential Circuits T-8, and Drumtraks with MIDI interface.

Video Equipment & Services: Video synchronization, using Sony Sync Master, with SMPTE time code featuring both 3/4" U-matic and 1" C-format video sync.

Rates: Ratecard and information upon request.

Extras: We have a very creative and professional staff, and our engineers are producers as well. We will take care of you the way you want to be taken care of! We are dedicated to truly servicing our customers. Everyone is shocked when they see what a beautiful facility this is! Then they are amazed at the quality sound you won't find better—anywhere!

Direction: This business has been dedicated to the Lord, and it's to Him we owe our success. Cooksound is a commercial audio and audio-for-video studio, staying on the leading edge of technology. We are serving the advertising, film, video, industrial and contemporary Christian music industries.

**** CORNERSTONE RECORDING COMPANY
also REMOTE RECORDING
100 W. Wilshire/C-2, Oklahoma City, OK 73116
(405) 848-8400

Owner: Kenneth A. Sarkey

Studio Manager: Kenneth A. Sarkey, Ric Duncum.

Engineers: Kenny Sarkey, Dave Thomason, independent.

Dimensions of Studios: A: 30 x 45 x 14 w/5 isolation booths; B: 12 x 13

Dimensions of Control Room: A: 18 x 20; B: 14 x 15

Tape Recorders: Stephen's Electronics 821 24/16 track w/Q II Autolate computer; MCI JH-110B 2 track w/Autolate; Otari 5050B 2 track; Otari 5050A 2 track; Sony TC-630 1/4 track; Nakamichi, Technics cassette, Sony CCP-13B high speed cassette duplicating system.

Mixing Consoles: Tangent 3216, 28 in x 24 out, Tascam 10, 12 in x 8 out

Monitor Amplifiers: Hafler D4-500, (2) Crown D-150, Crown D-60, Technics SU 8600.

Monitor Speakers: JBL 4435 bidirectional, Auratone 5C, JBL 4311s, RTR's Altec Model 5s.

Echo, Reverb, and Delay Systems: Lexicon 224 digital reverb, EMT 140 tube stereo reverb, AKG BX-10 reverb, Lexicon Prime Time delay.

Other Outboard Equipment: UREI LA-4 compressor/limiters;

dbx 160 compressor/limiter; dbx 165 compressor/limiter; EXR Exciter; PAIA Dual Limiter (cue); Valley People Dyna-Mite stereo limiter/gate/de-esser; Crown EQ-2; Dynaco graphic EQ; Omni Craft noise gates, Audio Control Real-Time Analyzer & graphic EQ; dbx noise reduction; phase & flangers; UREI 1176 comp/limiter; Orban 245E stereo synthesizer, Orban 536A dynamic sibilance controller, Technics SL1200 MKII broadcast turntable.

Microphones: Neumann, Sennheiser, Sony, Shure, Beyer, Electro-Voice, Altec, Crown PZM, AKG, RCA.

Instruments Available: Yamaha 7.5" grand piano, Rhodes stereo electric piano, Wurlitzer electric piano, Hammond B-3 organ w/Leslie, Yamaha DX7, Chromapolaris, MiniMoog synthesizers, Rogers drum kit w/double bass, Yamaha drum set with 5 concert, 5 double headed toms, Yamaha & Fender guitar amps, LP congas, complete percussion/effects.

Video Equipment & Services: JVC GX-N704 color camera w/direct access color character generator; Pentax PV R1000A 1/2" VHS stereo video recorder (5 heads); Ikegami HL-79D camera, Sony & JVC 3/4" decks, Mole Richardson light kit.

Rates: 16 & 24 track recording and mixing: \$90/hr. including engineer and all studio instruments. Discount block and producer rates available.

**** CRYSTAL BROOK RECORDING STUDIO
120 North First, Suite 301F, Lufkin, TX 75901
(409) 632-5411

Owner: Triumvirate Enterprises, Inc.

Studio Manager: Lee Atkins

Engineers: Lee Atkins, R.P. Harrell, Tommy Melder; Jon Sprinkle, chief maintenance; Buzz Bazzoon, Ron Ricks, editing.

Dimensions of Studios: Studio A: 37 x 21; B: 14 x 8.

Dimensions of Control Rooms: 9.5 x 14.5

Tape Recorders: Soundcraft SCM-24 track recorder; Ampex 440 1" 8 track; Otari 5050B-II 1/2 track recorder; SV 110 digital processor; Otari 550B 1/2 track; Nikko 1000C cassette deck; Tascam 35-2B 1/2 track recorder; Yamaha cassette deck; Tascam 22-2; Technics SV-110 digital recorder.



CRYSTAL BROOK RECORDING STUDIO
Lufkin, TX

Mixing Consoles: Soundcraft Model 1600/24 Producer Series 24x8x2x24.

Monitor Amplifiers: Crown DC300A, Crown DI50A, Yamaha P2200, Yamaha P2100.

Monitor Speakers: EV Sentry 500 studio monitors, EV Sentry 100A studio monitors, JBL 4313 studio monitors; TOA RS21M

Echo, Reverb, and Delay Systems: Ecoplate Plate Reverb; DeltaLab digital delay.

Other Outboard Equipment: Omni Craft GT4 noise gates, dbx "Over Easy" compression limiters, parametric & graphic equalizers, real time analyzer, Spectrum Audio analyzer, digital delay, Milam headphones distribution system, Aphex Aural Exciter; dbx Type I noise reduction system, Dolby B & C noise reduction systems, Roland analog & digital delay systems.

Microphones: Neumann, Sennheiser, Shure, EV, AKG, Crown PZM, Sony.

Instruments Available: Yamaha grand piano, Korg Poly synth,

—LISTING CONTINUED ON PAGE 164

MR. BONZAI

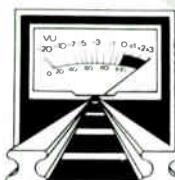
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—FROM PAGE 163

vintage B3 organ w/Leslie, Pre-CBS Fender amplifier, Yamaha/Adam acoustic guitars, Yamaha electric guitar, Music Man bass guitar, complete Gretsch drum kit w/Zildjian cymbals, digital drum computer, Fender Rhodes electric piano

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••• CRYSTAL CLEAR SOUND
4902 Don Dr., Dallas, TX 75247
(214) 630-2957

Owner: Merle D. Baker

Studio Manager: Keith Rust

Engineers: Keith Rust, chief engineer, many of Dallas' finest free-lance engineers

Dimensions of Studios: 32 x 42 x 12

Dimensions of Control Rooms: 15½ x 22½

Tape Recorders: MCI JH-24 24 track, MCI JH-110B 2 track, Studer A810 2 track, TEAC 40-4 4 track; Denon DR-M3 cassette 2 track, Ampex 440 2 track

Mixing Consoles: MCI JH 636 Automated 28 in x 24 out.



Other Outboard Equipment: dbx 165 limiter, Orban parametric, Kepex Gain Brain, UREI metrorome, Orban de-essers, Countryman phase shifter, Tannoy The Cat reverb

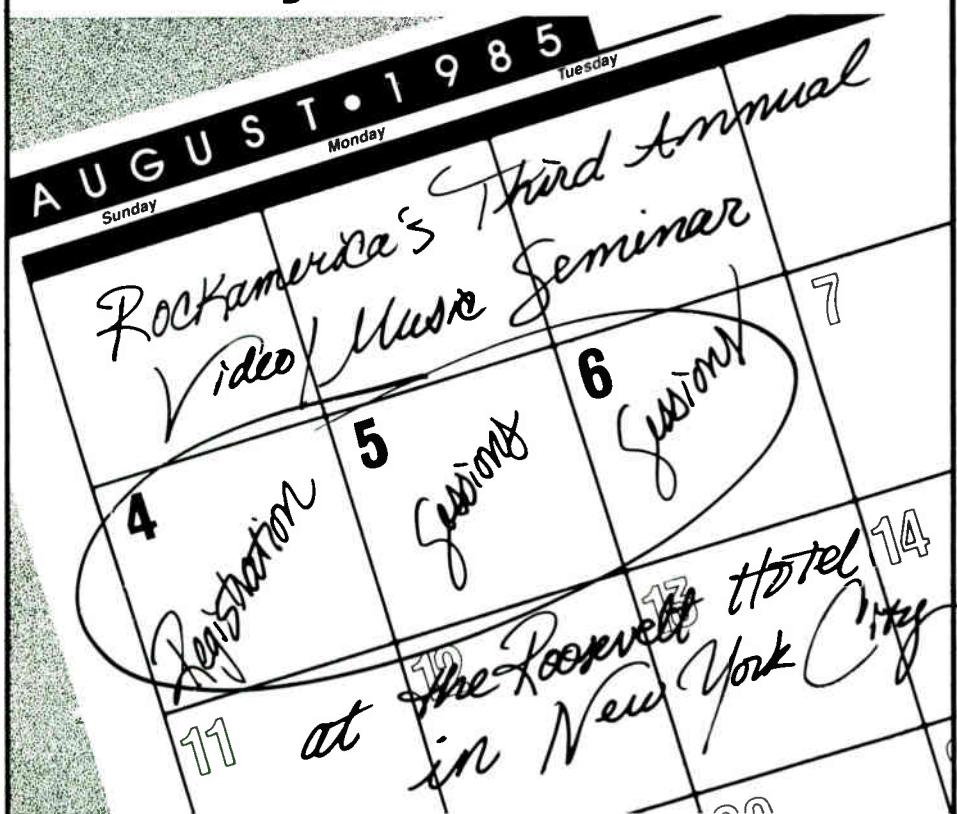
Microphones: Neumann U87, KM84, AKG 414 EB, 452, EV RE20, RE15; Shure SM81, SM57; Beyer M160; Sennheiser 421, 441; Sony ECM 33F

Instruments Available: Baldwin SD-10 9 foot concert grand; Fender Precision bass; Roland Jazz Chorus guitar amp, misc. percussion

Rates: Very reasonable, album packages & night rates, please call!



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DALLAS SOUND LAB
Irving, TX

••• DALLAS SOUND LAB

Four Dallas Communications Complex, Suite 119, Irving, TX 75039
(214) 869-1122

Owner: Russell Whittaker

Studio Manager: Jerry Marshall

Engineers: Rusty Smith, Ron Cote

Dimensions of Studios: Studio A: drum booth - 23 x 14; Iso booth - 20 x 11; rhythm area - 24 x 16; scoring area - 44 x 29
Studio B: voice-over booth - 10 x 8. Studio C: theatre - 38 x 29

Dimensions of Control Rooms: A 23 x 21; B 15 x 14.

Tape Recorders: Digital: Sony PCM 3324 24 track; Sony PCM F-1, 2 track; Technics SV100 2 track. Analog: Otari MTR 90 24 track; Otari MTR 10 4 track, Otari MTR-10 2 track; Otari 5050 4 track. (2) Otari 5050 2 track, MCI JH-114 24 track, MCI JH-113B 4/2 track; MCI JH-110 1" video layback recorder. Studer-Revox B710 cassette

Mixing Consoles: SSL 6056-E automated with total recall 48 in x 32 out, MCI (automated) JH 536 28 in x 32 out, MCI JH 636 24 in x 24 out.

Monitor Amplifiers: Crown Delta-Omega M2000, assorted other amps by Yamaha, Crown, Crest, and BGW

Monitor Speakers: UREI 813-B Time Aligns; Yamaha NS-10 M; Tannoy SRM-12B, Auratone 5-C; JBL 4673, JBL 440i

Echo, Reverb, and Delay Systems: Quantec Room simulator, AMS Logic 158G-S, Lexicon 224, Lexicon PCM-41, Lexicon PCM-42, Sequential Circuits Pro-FX Eventide 949 Eventide 91C, BAE plate, (2) Yamaha FS-1000, live chambers.

Other Outboard Equipment: Compressors, limiters, expanders, exciters, EQ by Allison, Aphex, dbx, Dietz, Orban, SSL, UREI and Valley People.

Microphones: Full array of mikes by: AKG, Beyer, Countryman, Crown, EV, Neumann, Sanken, Sennheiser, Shure and Sony. Vintage tube mikes by AKG, Neumann, and RCA.

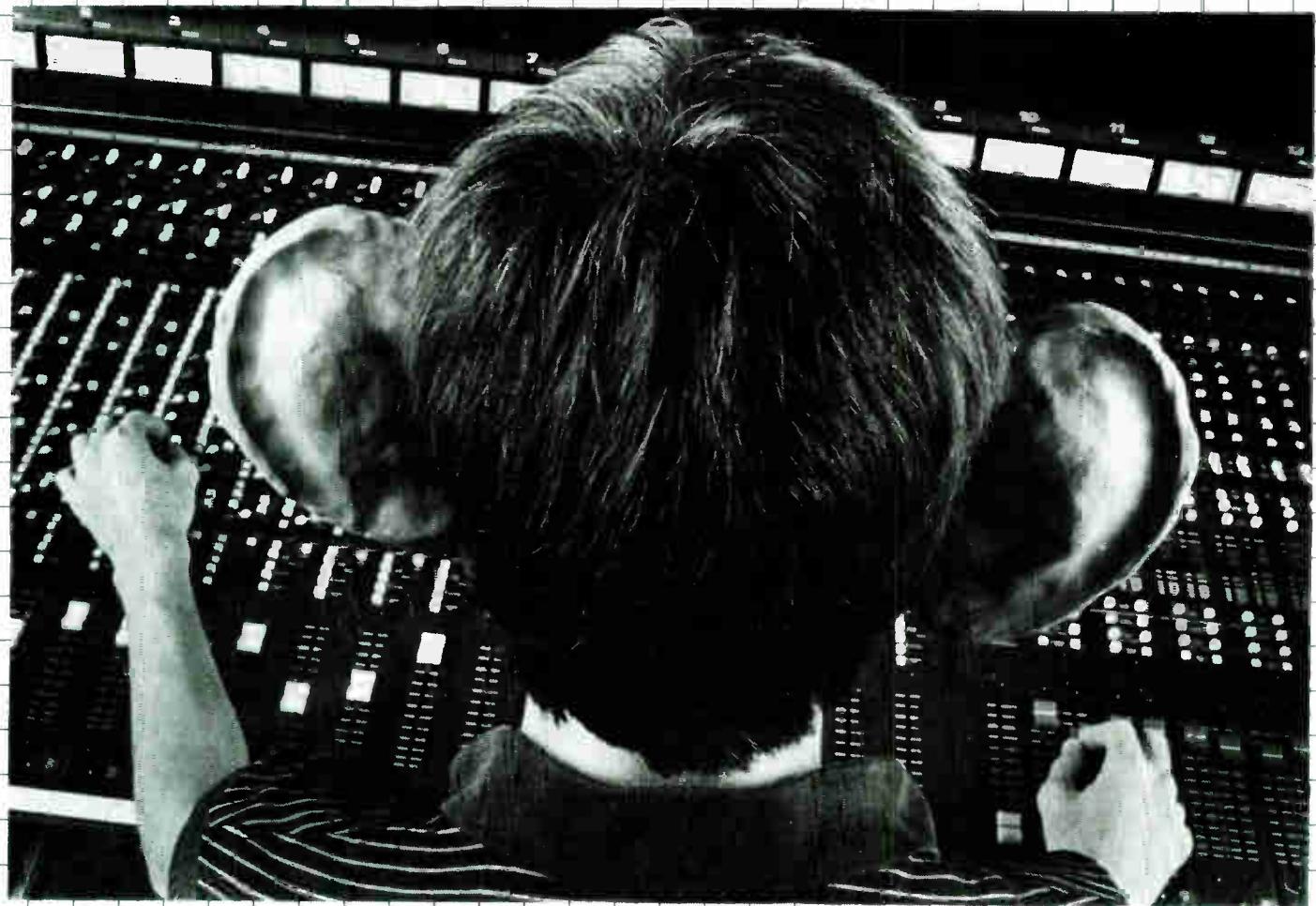
Instruments Available: Steinway 9' concert grand; Kurzweil 250 (2) Yamaha DX7, Yamaha CS-50, Yamaha CP-70; Sequential Circuits Prophet V and 1000 Sequencer, Korg Poly 800; Oberheim X-pander; Hammond B-3 w/Leslie, Minimoog, Hohner Clavinet, LinnDrum, Linn 9000.

Video Equipment & Services: BTX Softouch computer interlock system, Audio Kinetics Q-Lock 310 interlock system, (2) Sony SS850 ¾", JVC 8250 ¾", JVC 8200 ¾", Panasonic 3060 ½", MCI JH-110B 1" layback recorder, Sony monitors, MCA monitors, NEC 45" projection system, 35mm and 16mm high-speed interlock projectors, dubbers, and master recorders by NTM.

Rates: \$70-\$235/hr. Block rates available on request

Direction: Dallas Sound Lab is designed to meet the complete needs of clientele dealing with any aspect of audio production including simple voice-over jingle work, demo and album production, and complex interlock recording for video or film. Studio A: Up to 48 track recording capability with video or film interlock. Services include 40-piece capacity orchestra scoring to picture, ADR, SFX assembling, video sweetening, and album jingle production with up to three sound stages (15,000, 6,000 & 3,000 sq. ft.) for live TV shows, concerts, etc. Studio B: Up to 24 track recording capability with video or film interlock. Services include ADR, SFX assembling, video sweetening, voice-over work, and laybacks to 1" masters. Studio C: Film theatre for 16mm or 35mm interlock screening and transfers

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•••• DARCI SOUND
also REMOTE RECORDING
2736 N. 11th St., Beaumont, TX 77703
(409) 898-4556
Owner: Ray Murphy
Studio Manager: Mike Bertrand

•••• DIGITAL SERVICES RECORDING
ONLY REMOTE RECORDING
2001 Kirby, Suite 1001, Houston, TX 77019
(713) 520-0201 (24 hours)
Owner: John A. Moran
Studio Manager: John Moran
Engineers: John Moran, Trent Burns, various independents
Dimensions of Studios: 30 foot C50 truck
Dimensions of Control Rooms: 550 square foot control and editing room.
Tape Recorders: (2) Sony PCM 3324 24 track digital; Otari MTR90 24 track analog; Sony PCM 1610 2 track digital; Sony SAE 1100 digital editor; Sony PCM100 2 track digital, Sony PCM FI 2 track digital; Otari 5050B 2 track analog
Mixing Consoles: Neve 5442, MCI 636, 32 in x 24 out automated.

Monitor Amplifiers: Phase Linear, Crest.
Monitor Speakers: Klein & Hummel, MDM-4, ADL 4311, & Auratones.
Echo, Reverb, and Delay Systems: Sony DRE 2000 digital reverb, MCMIX, Masterroom 300, ADR complete Scamp system.
Other Outboard Equipment: If we don't have it, we can get it.
Rates: Less than you would expect for this kind of equipment.
Extras: All our equipment is available for use anywhere at any time at any place. We format any material for compact digital disk and also do sound for video, as well as produce the best sounding records imaginable.
Direction: Clients: Frank Zappa, Neil Young, Chicago Opera, Earl Thomas Conley, Dionne Warwick, The Krayolas, Dr. Rockit, Barbara Mandrel, T.G. Sheppard, Barbra Streisand, Talking Heads, Neil Diamond, lots more.

•••• EAGLE AUDIO, INC.
911 So. Main St., Fort Worth, TX 76104
(817) 877-4338
Owner: Mike McColm, Curtis Butts, David Peloubet
Studio Manager: Mike McColm

•••• EDENWOOD RECORDING STUDIOS
7319-C Hines Place, Suite 201, Dallas, TX 75235
(214) 630-6196
Owner: Jerry Swafford
Studio Manager: Jerry Swafford
Engineers: Jerry Swafford, Dave Scott
Dimensions of Studios: Studio A: 640 sq. ft.; Studio B: 150 sq. ft.

Dimensions of Control Rooms: Control A: 250 sq. ft., Control B: 150 sq. ft.
Tape Recorders: Studer A-800 24 track, Otari MX5050 4 track, Otari MTR10 2 track w/center SMPTE, Otari 5050B 2 track; Ampex 351 2 x 2; Ampex 351 2 x 2.
Mixing Consoles: Tangent 3216-VCA, 30 in x 24 out; Sound Workshop Model 30, 12 in x 8 out.

Monitor Amplifiers: Crown, BGW.
Monitor Speakers: JBL 4330 Bi-Radials, 4310s, Auratones
Echo, Reverb, and Delay Systems: AKG, DeltaLab.
Other Outboard Equipment: Orban de-esser; dbx 160x2, 165; UREI 1176, dbx 900 w/noise gates, Para EQ, de-esser, N/R, etc.; DeltaLab DL-2.

Microphones: Neumann U87; AKG 414EB, D202, 707; Sennheiser 421, Sony ECM 22P, ECM 21P, FI13; Crown PZM; Shure SM81; EV 664; Beyer, MB.
Instruments Available: 9' Kawai, Hammond RF100 w/Leslie, Minimoog, electric guitar, electric bass.

Video Equipment & Services: 3 machine SMPTE interlock w/BTX, SMPTE reader, generator video display (Cypher); 3/4" JVC.

Rates: Audio for Video: \$125/hr.; 24 track \$95/hr.; 4, 2, mono: \$80/hr.

•••• GILLEYS RECORDING STUDIO
4500 Spencer Hwy, P.O. Box 1242, Pasadena, TX 77504
(713) 941-7193
Owner: Mickey Gilley
Studio Manager: Bert Friot

•••• GOODNIGHT AUDIO
11260 Goodnight Ln., Dallas, TX 75229
(214) 241-5182
Owner: Gordon Perry
Studio Manager: Mandy Smith

GRAVITY RECORDING

GRAVITY RECORDING STUDIOS
Nogales, AZ

•••• GRAVITY RECORDING STUDIOS
141 Spur Place, Nogales, AZ 85621
(602) 281-1746
Owner: Miguel Crisantes
Studio Manager: Miguel Crisantes
Engineers: Miguel Crisantes, Mike Hide
Dimensions of Studios: 19 x 39, drum booth 9 x 14
Dimensions of Control Room: 19 x 23
Tape Recorders: Otari MTR 90 24 track, Otari MTR 10 2 track; TEAC 35-2 2 track; Technics 88 2 track, Technics M95 cassette; TEAC I22 cassette
Mixing Consoles: Soundcraft 2400 28/24 w/Spectrum analyzer and automation.
Monitor Amplifiers: UREI 6500 with UREI filters, McIntosh 2200 w/Soundcraftsmen filters.
Monitor Speakers: UREI 811, Tannoy, Auratones, EV Century
Echo, Reverb, and Delay Systems: Lexicon 224 w/all programs, Ecoplate by Sound Technology, DeltaLab DL1, MXR doubler, Lexicon PCM-60, Lexicon Prime Time 95-II.
Other Outboard Equipment: 949 Harmonizer, Lexicon Prime Time, Valley People noise gates, dbx 162, dbx 165, UREI 1178, Aphex Aural Exciter, EXR Exciter, GT-4 noise gates, Symetrix noise gates, MXR flanger, E.H. Vocoder, MXR dual 15 band graphic EQ, 8 channels of dbx NR, Scott Graphic Analyzer
Microphones: Neumann U87, U88, U77, KM 45, Beyer 500, AKG 414, Sennheiser 421, E.V. RE16, RE20, Shure, Sony
Instruments Available: 6'9" Kimball grand, Tama drums w/Paste cymbals, OB8 keyboard, Prophet 5, ARP strings, LinnDrum w/extension chips, Hammond B3 w/Leslie, Fender Rhodes, Simmons drums, assorted Fender, Gibson guitars, Kurzweil 250, Synergy by Digital Keyboards, Yamaha DX7, Roland Juno 60.
Video Equipment & Services: Equipped for video sweetening, full line of VCR available.
Rates: Please call for rates.

•••• HRS PRODUCTIONS
1119 W. Garland Ave., Garland, TX 75040
(214) 487-8120
Owner: Huddleston Recording Studio, Inc.
Studio Manager: Scott Cockran, Betty Flores

•••• INERGI RECORDING STUDIO
15825 Memorial Dr., Houston, TX 77079
(713) 493-1533
Owner: Vincent Kickerillo
Studio Manager: Gen. Mgr. Chief Engineer - David Kealey
Engineers: David Kealey, Chris Smith, Buz Smith
Dimensions of Studios: 25 x 40 w/18 foot ceiling
Dimensions of Control Rooms: 18 x 19 w/12 foot ceiling
Tape Recorders: MCI JH114, 24 track; (2) MCI JH110 2 tracks 1/2"; MCI JH110 1/2" 2 track.
Mixing Consoles: MCI JH1536-C, 36 in x 32 out automated.
Monitor Amplifiers: BGW.
Monitor Speakers: Audicon, JBL 4313s, Auratone, UREI 813, Yamaha.
Echo, Reverb, and Delay Systems: EMT 240, Lexicon and Eventide delay, Lexicon 224 digital reverb.

Other Outboard Equipment: Scamp rack; Aphex model 602; Marshall Time Modulators; dbx & UREI compressor/limiters; ADR Vocal Stressor; parametric equalization; Dolby noise reduction on all equipment; automation, Tri-sereo Chorus.

Microphones: Neumann U47s; U87s; KM84s; AKG 414,

452s; Sennheiser 421D; Beyer; Sony; Crown PZM; Shure SM56,

SM58s; SM85; Telefunken U-47 tube; Electro-Voice RE-16,

RE-20.

Instruments Available: Yamaha grand piano, Fender Rhodes,

Clavinet, Music Man guitar amps, Pearl drums, Poly 6, Prophet

T-8, Yamaha DX7, LinnDrum comp, Marshall, Yamaha TX-816,

Simmons drums.

Rates: On request.

**** JANUARY SOUND STUDIOS
3341 Towerwood, Suite 206, Dallas, TX 75234
(214) 243-3735

Owner: January Sound Studios, Inc

Studio Manager: Dennis Lowe

Engineers: Larry Wallace, Linda Adelkoff, Tom Adler, Russ

Alvey, Chris Green, Dennis Lowe

Dimensions of Studios: Studio A: 22 x 35; Studio B: 12 x 15.

Dimensions of Control Rooms: Studio A: 18 x 22; Studio B:

14 x 20

Tape Recorders: (2) MCI JH-24 24 track; (4) MCI JH-110-B 2 track (1/4" & 1/2" heads); MCI JH-110-A 4 track; Electro-Sound 8 track (1"); Otari MX 5050 2 track; Technics M95 cassette; Sansui PCM PCI 2 track.

Mixing Consoles: (2) MCI JH 536-D AF/LM 36 in x 32 out, Quantum QM 128 12 in x 8 out.

Monitor Amplifiers: McIntosh, Crown, BGW.

Monitor Speakers: Custom Sierra control monitors, JBL 4430s, JBL 4433-As, Westlake BBSM 6s, JBL 4313-Bs, JBL 4401s, Visonik Little Davids, Auratone 5Cs.

Echo, Reverb, and Delay Systems: Lexicon 224, Lexicon Prime Time, EMT 140, EMT 240 (Gold Foil), AKG BX20 EI, Ecoplate, Space Station SST 282, DeltaLab ADM 1024, Marshall Time Modulator 5002, Sequential Circuits Pro-FX 500, (2) MICMIX Master-Room IIIs.

Other Outboard Equipment: Comp/lim: dbx 165, dbx 165A, Valley People Inc. Dyna-Mite, Kepex and Gair Brains, UREI LA-2A. Other: UREI 530 Graphic EQ, UREI 535 Graphic EQ, UREI 546 dual parametric EQ, Orban/Parasound De-esser, Technics turntables, Burwen Research TNE 7000A & DNF 1201A.

Microphones: Neumann: U87s, U47, M49, KM84. AKG: 414s;

451s, The Tube, Sennheiser: 441, 421s. Shure: SM57s, Unidyne IIIs. Sony: F113s. RCA: 77DXs. Beyer: M160.

Instruments Available: Steinway 9' grand piano, Fender Rhodes, Fender Rhodes with Dyna-My-Piano modifications, Hohner Clavinet, Kawai spinet with tack piano modifications, MiniMoog.

Video Equipment & Services: Sony BVU-800 3/4" record/play, Sony U-Matic player, (2) JVC VHS decks, MCI JH-45 & -48 interlock system.

Rates: Call for rates.

Tape Recorders: MCI JH-24 24 track; Technics 1506 2 track; Technics 1520 2 track; Nikko ND-990 cassette; Nakamichi BX-1 cassette.

Mixing Consoles: Rivendell (custom) 28 in x 4 out.

Monitor Amplifiers: Crown PSA-2

Monitor Speakers: JBL 431B, MDM-4, Auratone 55

Echo, Reverb, and Delay Systems: Lexicon 200, Lexicon 95 Prime Time II, MICMIX Master-Room XL-305, Fostex 3050.

Other Outboard Equipment: dbx 163, Technics SH-9010 parametric EQ, Biamp graphic EQ, Dyna-Mites, Omni Craft GT-4, UREI 1172, Drawmer noise gates.

Microphones: Sennheiser MD-421, MD-441, AKG C451E, C414 EB, DM-1000, DM-500, Neumann U-47 FET, Shure SM57, SM58, EV RE20. Have access to AKG Gold Tube, Beyer 88, 201, Neumann KM84.

Instruments Available: Kawai baby grand (isolation booth), Tama 7 piece drum set (isolation booth), Martin D-26, Ibanez electric guitar, Marshall, Music Man 110RD.

Rates: Available on request.

**** KLUDGIT SOUND, INC.

also REMOTE RECORDING

Box 171, Cerrillos, NM 87010

(505) 471-0051

Owner: Baird Banner

Studio Manager: Busy McCarroll Banner

Engineers: Baird Banner, chief engineer

Dimensions of Studios: 35' 22 w/oak floors

Dimensions of Control Rooms: 18 x 15

Tape Recorders: Otari MTR 90 24 track; Otari MTR 12 2 track; Otari MX5050 2 track; Pioneer RT701 2 track; (2) Tascam 122B cassettes.

Mixing Consoles: Sound Workshop 4036, 30 in x 24 out, with 32 channel ARMS automation; Soundcraft 24-2, 24 in x 2 out.

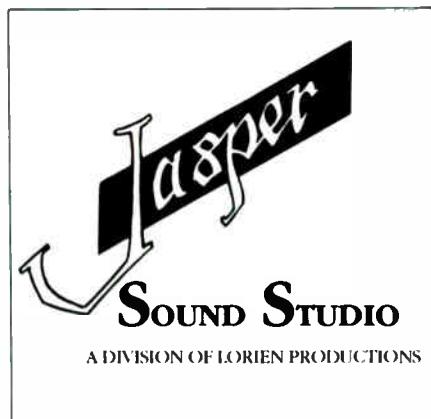
Monitor Amplifiers: (2) BGW 500/250; UREI 6500 power amp.

Monitor Speakers: JBL 4430 Bi-Radials; UREI 828 Time Aligned; SPICA Auratone & SC 50s; Tannoy.

Echo, Reverb, and Delay Systems: Lexicon 224 digital reverb, Ecoplate reverb, Lexicon Super Prime Time, Lexicon 102 stereo digital delay, Eventide Clockworks #910 Harmonizer, Roland Space Echo RE201, Mutron Bi-Phase, MXR phase, MICMIX.

Other Outboard Equipment: (2) UREI 539 room EQs; UREI 527 1/2 octave EQ; (4) Valley People Kepex IIIs; (2) UREI LA 4

-LISTING CONTINUED ON PAGE 168



JASPER SOUND STUDIO
Austin, TX

**** JASPER SOUND STUDIO
3401 Harper's Ferry Lane, Austin, TX 78745
(512) 282-2734

Owner: Gordon R. Garrison, William N. Garrison

Studio Manager: Gordon R. Garrison

Engineers: Gordon R. Garrison, Luis Morales, Brian Green

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compressors; dbx 162 stereo compressor/limiter, Dolby A noise reduction, dbx effects rack with sublance compressor, UREI 545 parametric EQ, (2) UREI 1176 LN limiters

Microphones: Shure SM81, SM57, 58, 59s, Neumann U47, U48s; Crown PZMs; AKG 451; E-V RE20s; Beyer Dynamic, Beyer ribbon, Sennheiser 421 & 441

Instruments Available: LinnDrum LM2 synthesizer; Kawai grand piano, Wurlitzer electric piano, assorted drums and percussion, other instruments available by appointment

Video Equipment & Services: Engineers have extensive experience in audio recording for video, we will in the near future have sweetening capabilities

Rates: \$80/hr 24 track, please call for more information on block discounts & accommodations

Extras: Kitchen, sauna, guest houses, quiet country atmosphere.

Direction: The only full production 24 track studio currently in New Mexico, we also offer PA, consultation, and installation services to regional clubs and theatres. Partial credits include Flora Purim & Airto Moreira, Bow Wow Wow for RCA Records, The Grandmothers, Michael Murphy

•••• LIMELIGHT RECORDING STUDIO

5116 34th St., P.O. Box 154, Dickinson, TX 77539

(713) 337-1272

Owner: Don Westmoreland

Studio Manager: Don Westmoreland

Engineers: Don Westmoreland, Don Westmoreland, Jr., Henry Westmoreland, Matt Westmoreland, Doug Groover

Dimensions of Studios: 30 x 26 w/12' ceiling, drum booth: 10 x 8 x 12, vocal booth: 9 x 5 x 12

Dimensions of Control Room: 24 x 16 w/12' ceiling

Tape Recorders: Soundcraft Series 760 24/16 track; Tascam w/dbx N.R. 80-B 8 track, TEAC A3340S 4 track, Otari MX-5050B 2 track, TEAC A-6100 2 track, Tascam 122 cassette deck

Mixing Consoles: Soundcraft 1600 24 in x 8 out

Monitor Amplifiers: McIntosh (tube).

Monitor Speakers: JBL 4311 B, Auratone cubes

Echo, Reverb, and Delay Systems: Lexicon 200 digital reverb, Master-Room XL-305, Ursus Major Space Station, Lexicon Prime Time II; MXR digital delay

Other Outboard Equipment: Orban 622B parametric EQ, (2) dbx 163 compressor/limiter; (2) Ashly SC-50 compressor/limiter; MXR pitch transposer w/display, Omni Craft noise gates, Tapco graphic EQ, Aphex Aural Exciter.

Microphones: AKG 414, 452, Beyer M-500, Sennheiser 441, 421, Shure SM81, SM53, SM57, Electro-Voice RE-15, 655, Audio-Technica 813, 811

Instruments Available: Tama Super Star drums, Yamaha DX7 synthesizer, Wurlitzer studio piano, Sequential Circuits Pro One synthesizer, Fender (tube) bass amp, Fender Precision bass, Fender Telecaster guitar, Silvertone (1960) bass, acoustic guitars (6 & 12 string), Roland TR-707 digital drummer

Rates: 24 track \$75/hr, 16 track \$65/hr, 8 track \$45/hr; 4 & 2 track \$35/hr Block rates available

•••• LONG BRANCH STUDIOS

also REMOTE RECORDING

6314 E. 13th St., Tulsa, OK 74112

(918) 832-7640

Owner: Bill Belknap, Walt Banfield

Studio Manager: Gregg Gardner

Engineers: Bill Belknap, Walt Banfield, Gregg Gardner and freelancers

Dimensions of Studios: 80 x 50 w/40' ceiling. Largest studio in the Southwest

Dimensions of Control Room: A: 18 x 22 (brand new) B: 12 x 18

Tape Recorders: Analog: Ampex MM 1200 24 track, Ampex MM 120 16 track, (3) Ampex ATR 102 mixdown 2 track; Nagra #3 & #4 2 track, Scully 2 track. Digital: Technics SV100 2 track mixdown.

Mixing Consoles: Automated Processes Inc 24 in x 24 out w/additional 8 channels for mixing, portable 8 channel w/API parts

Monitor Amplifiers: McIntosh MC-2300, Crown D-150, Crown 300-A, BGW 100, Phase Linear 930

Monitor Speakers: Studio: Altec Super Reds; Control Room: Big Reds, Century 100-A, Auratones.

Echo, Reverb, and Delay Systems: EMT plate AKG BX-10, MICMIX, Eventide Harmonizer, room delay, Lexicon/Electrion/Yamaha digital reverb

Other Outboard Equipment: Graphic equalizers, sublance control, UREI LA-3A compressor/limiters, UREI 1176 compressors, API 525 compressor/limiters, instant flangers, notch filter, Kepex, Orban compressors, Allison Research computer automation, Dolby playback (2 channel), dbx (4 channels), Mini Mag sync system, video sync, transient stimulator, GT-gates

Microphones: Neumann, Sennheiser, Shure, Electro-Voice, Crown PZM, RCA, Beyer, AKG, Sony, large selection of each

Instruments Available: Yamaha 9' grand, Rhodes electric piano, Jupiter 4 synthesizer, Camco studio drums, various percussion, various drum machines, Simmons electric drums, DMX drum machine, Yamaha DX7 synth, alphaSyntauri computer keyboard, Fender Precision bass guitar, Ensoniq synthesizer

Rates: Available upon request



•••• LONGHORN RECORDING STUDIO

206 North First, Clyde, TX 79510

(915) 893-2616

Owner: Laurance Gayao

Studio Manager: Jun Cabus



LUXURY AUDIO WORKSHOP, INC.

Las Vegas, NV

Reggie Dozier Maintenance engineer Don Whittlebeck, Bill Shostak, Independent engineers.

Dimensions of Studio: Studio A: 1000 sq ft Studio B: 18 x 18 Dimensions of Control Room: Studio A: 20 x 16, Studio B: 13 x 13

Tape Recorders: 3M M79 24 track, (2) 3M M79 2 track; MCI JH110 2 track.

Mixing Consoles: Studio A: API 36 in x 24 out; Quad 8 26 in x 24 out; Spectra Series 26 24, 26 in x 24 out

Monitor Amplifiers: Yamaha

Monitor Speakers: Studio A: Lakeside LM1, Auratones, Studio B: JBL custom, Auratones

Echo, Reverb, and Delay Systems: Lexicon 224, AMS RX16, Lexicon Prime Time, Lexicon PCM 41, EMT 140ST

Other Outboard Equipment: Kepex II, UREI 1176LN, UREI LA3A, dbx 169, ADR Vocal Stressor, Eventide Harmonizer, phasers, flangers, ADR parametric EQ, Gain Brain, Orban de-esser

Microphones: AKG Tube Neumann U67, U47, U87, KM64; Sennheiser 421, 441; AKG 414EB, 451, D-12E; E-V RE20, RE16, Crown PZM; PCA DX77, 44; Shure SM56, SM457, SM58, SM61, 545, 505, 565.

Instruments Available: Kurzweil 250, Synclavier II, (2) Oberheim DX drum machine w/Simmons chip, Yamaha DX7, Roland JX8P, Studio A: Yamaha 5' grand piano; Studio B: Yamaha 5' grand

Rates: Studio A: \$100/hr Studio B: \$60/hr w/engineer

Extras: Two lounges, one for each studio, refrigerator, TV, and private phone, coffee bar, game room, restaurant; next to studio, limousine service to and from airport and hotel is available.

Direction: L.A.W. is one of the finest state-of-the-art recording studios in Las Vegas. We have recorded such artists as Gladys Knight & the Pips, Paul Anka, Waylon Jennings, Jim Stafford, Eddie Rabbitt, Doc Severinson, James Best, and many others. Our staff is highly qualified to insure a smooth session. With our two 24 track studios we have time available for you. L.A.W. would like to thank all the artists and producers that have selected our studio...

LUV SOUND & RECORDING STUDIO

Dallas, TX



•••• LUV SOUND & RECORDING STUDIO

also REMOTE RECORDING

3784 Realty, Dallas, TX 75244

(214) 241-7854

Owner: Kenco Productions

Studio Manager: Ken Hughes

Engineers: Gary Scott, chief engineer, Kenton Hughes, ass't engineer, Bob Sullivan; various freelance engineers

Dimensions of Studios: 27 x 18, isolation booth: 10 x 12

Dimensions of Control Room: 18 x 16

Tape Recorders: Otari MTR 90 24 track; Tascam 85 16B 16 track, Otari MX5050B 8 track, Tascam 40-4 4 track; (2) Otari MX5050BII 2 track.

Mixing Consoles: Trident Series 70 28 in x 16 out

Monitor Amplifiers: QSC Series three 3500, QSC Series Three 3350, (2) Symetrix

Monitor Speakers: JBL 4430, Auratones

Echo, Reverb, and Delay Systems: Lexicon 200 digital reverb; Fostex model 3180 spring; DeltaLab ADM 2048 Super Time Line.

Other Outboard Equipment: dbx 160 compressor/limiter; Valley People 430 Dynamite; EXR EX-IV Exciter; Omni Craft GT-4 gate, UREI 537 1/2 octave room EQ, 24 track Dolby noise reduction.

Cassette decks: TEAC C-3RX, Technics SL 1200 turntables

Microphones: Neumann KM 84, AKG C452, C451, 414, D12, 330, E-V RE20, Crown PZMs; Sennheiser 441; Shure, TEAC, Audio Tech; Countryman 85 FET DIs, Neumann U87.

Instruments Available: Kawai 6 ft. grand piano, Yamaha bass amp B 100, Peavey Pro 40 amp, Yamaha acoustic guitar.

Video Equipment & Services: On request.

Rates: On request.

Direction: Credits: Bob Wills Original Texas Playboys, Laura Lee McBride, 1983 Miss Texas, Gloria Gilbert, Hollie Hughes, Delta Records, Oak Records, Johnnie High, Carlette, Joe Alan, Oak Productions (Ray Ruff). Home of Luv Records, Merv Records.

We consider this studio to be Dallas' "Songwriters Demo Haven" as well as a complete facility for a wide range of in-house studio or live productions.

•••• LUXURY AUDIO WORKSHOP, INC.

also REMOTE RECORDING

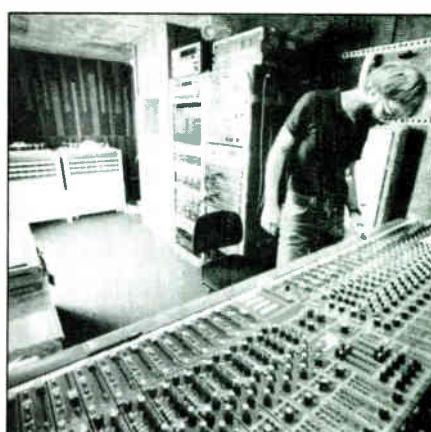
2570 E. Tropicana Ave., #19, Las Vegas, NV 89121

(702) 451-6767

Owner: L.A.W. Inc.

Studio Manager: Lee Watters

Engineers: Lee Watters, Mike Lyman, Holly Sharpe, Jerry Hall,



MIDCOM, INC.
Irving, TX

•••• MIDCOM, INC.

ONLY REMOTE RECORDING

Three Dallas Communications Complex, Suite 108

6311 N. O'Connor Rd., LB 50, Irving, TX 75039-3510

(214) 869-2144

Owner: Mike Simpson

Engineers: Mike Simpson, Jim Fitzgerald, Bob Singleton, Jeff

Jones, Don Worsham, Tom Burrows, David Roberts
Dimensions of Control Rooms: 7½ x 23½ x 7½
Tape Recorders: (2) Otari MTR-90 24 track; Otari MTR-10 2 2 track; Studer A810 2 track w/center time code track; Studer A710 cassette; Otari MX-5050-BII 2 track; Studer D-820 digital 2 track (available Aug. 1985)
Mixing Consoles: Sound Workshop Series 34, 52 in x 24 out; Soundcraft TS 24, 40 in; Soundcraft Series 800B, 32x8x2.
Monitor Amplifiers: BGW 750 & 250.

Monitor Speakers: JBL 4430 Bi-Radial w/White Instruments ½ octave equalizers, bi-amped w/White Instruments crossover, Auratone 5C monitors for near field.
Echo, Reverb, and Delay Systems: Lexicon Model 224XL digital reverb with LARC, Lexicon Model 200 digital reverb, Lexicon Model PCM-60 digital reverb, Lexicon Model 95 "Prime Time II" digital audio processor, Eventide Model H-910 Harmonizer.

Other Outboard Equipment: 24 channel "TTM" noise reduction system (Dolby, dbx, or Telcom), dbx Series 900 frames equipped with Model 903 comp/limiters, Model 904 noise gates, Model 905 parametric EQs, Model 906 flanger, and MICMIX Dynafex/exciter cards, dbx 160X limiters, Orban 414 comp/limiters, RTS 3 channel/dual listen intercom system, Clear-Com 2 channel intercom system and elaborate Q/Talkback system interfaced w/full duplex FM business band and motion picture service radio system, RTS 4 channel JFB system, 10 line on board key telephone system, and RCC and Cellular mobile telephone.

Microphones: Neumann U89s, TLM170s, KM84; AKG C-414 EB, P48s; Sennheiser MD441s, MD421s; Beyerd M69s, M88s, M500s, M201s; Shure SM58s, SM57s, SM81s, SM85s; Crown PZM GPB 30s, 2LVS; Cetec Vega R-42 handheld and lavalier wireless microphones available at extra charge.

Transmission Equipment Interface and Accessories: RTS Model 414 and 416 distribution amplifiers, custom 1x1 buffer/distribution amplifiers capable of driving +28 dBm, Telco interface via 50 pair punch block to dedicated patch panel, each pair with separate resistive termination and/or capacitive coupling, 4 RDLS on board for auto answer program feeds 400 foot power cable and 42 pair snake on DC motor driven reels.

Video Equipment & Services: BTX Softouch, Cypher, and Shadow time code editing and synchronization system interfaced to our MTR-90s or our Studer A810. We also carry a Sony VO-5800 U-matic ¾" video recorder/player, a Panasonic AG6800 VHS HiFi recorder/player, a Sony CVM-1900 monitor/receiver, (2) 9" B&W monitors, (2) CCTV cameras, (2) 12 input routing switchers, (8) external video inputs.

Rates: \$2400/day for 2 machine recording, \$1800/day for single machine recording, \$1200/day for live video mix or 2 track. All rates based on 10 hour production day, 135/mile from Dallas/Fort Worth.

Credits: "Face of the '80s"; Bob Banner Associates syndicated special, "Stars Salute the U.S. Olympic Team"; NBC TV Special, "SMU Presents"; Bob Banner Associates, "Country Crossroads"; ACTS Network/Southern Baptist Radio & TV, "Van Cliburn Presentations"; live remote for National Public Radio, "The Imperials" and "Silverwind" in concert live mix and 24 track for Word of Faith/Sparrow Records/Word Records. Additional credits on request.

Direction: Midcom's 48 track remote audio facility specializes in location audio recording for video, teleproduction, and live music events. Equipped with state-of-the-art gear, Midcom prides itself on staying on the leading edge of technology. Midcom offers the finest remote truck and crew to be found in the southwest.

**** NATIONAL RECORDING CO.
1614 Hampton Rd (I-30 at Summerhill),
Texarkana, TX 75503
(214) 793-4116
Owner: V.E. Howard
Studio Manager: Chuck Richardson

**** OMEGA AUDIO & PRODUCTIONS, INC.
also REMOTE RECORDING
8036 Aviation Place, Dallas, TX 75235
(214) 350-9066
Owner: Paul A. Christensen
Studio Manager: Paul A Christensen
Engineers: David Buell, Hassell Teekell
Dimensions of Studios: Studio A: 35 x 40; Studio B: 12 x 15;
Remote recording truck: 8 x 20.

Dimensions of Control Room: 22 x 20
Tape Recorders: (3) Otari MTR-90 24 track; (3) Otari MTR-10 2/4 track; Otari MX 5050-B 2 track; Studer/Revox A-77 2 track; Eumig cassette; Panasonic cassette; Autogram stereo cart.

Mixing Consoles: Amek M2500 36 in x 24 out; Custom 30 in x 24 out; API 2098 32x16x24.

Monitor Amplifiers: Crown PSA-2, (4) Crown D-150A, Crown D-40, (2) Yamaha 2200.

Monitor Speakers: JBL 4435 Bi-Radial, JBL 4313, JBL 4311, Auratone and JBL 4430.

Echo, Reverb, and Delay Systems: Lexicon 224XL digital reverb w/LARC remote control, LP140 reverb plate, Ecoplate II, Master-Room reverb, ADA stereo tapped delay, DeltaLab DL2 digital delay, 3 DeltaLab 2048.

Other Outboard Equipment: BTX 4600 5 machine controller w/Shadow interlock, BTX 5100 time code generator, Eventide 3.

-LISTING CONTINUED ON PAGE 170

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(302) 697-6226



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OMEGA AUDIO & PRODUCTIONS, INC.
Dallas, TX



PANTHEON RECORDING STUDIO
Scottsdale, AZ

Monitor Amplifiers: BGW, Crown, Spectra Sonics
Monitor Speakers: Big Red w/mastering cab crossovers, JBL 4310, Yamaha NS10M, Auratones

Echo, Reverb, and Delay Systems: Ecoplate (plate reverb), Quad Eight CPR 16 digital reverb, AKG BX-10 reverb, (Lexicon 200 and 224 digital reverbs and ALL digital delay systems are available on a day to day basis at extra charge.)

Other Outboard Equipment: Roland Vocoder, Eventide Harmonizer, (3) UREI 1176 limiters, noise gates, (4) flanger, Eventide 32 channel, dbx 216 noise reduction, (2) UREI LA-4A, dbx 160, (2) Infonics 201 limiters.

Microphones: Various Neumann, AKG, E.V., Sennheiser, Sony, RCA and Shure

Instruments Available: Gretsch drums, Steinway 1937 'B' 78" grand, Rhodes 88, Juno 60, Yamaha CS 80, Oberheim DMX, Simmons drum, various guitars (acoustic & electric), percussion instruments, Kurzweil, Rickenbacker & Music Man basses.

••• PEDERNALES RECORDING STUDIO

Route One, Briarcliff Two, Spicewood, TX 78669

(512) 264-2064

Owner: Willie Nelson

Studio Manager: Larry Greenhill

••• PRECISION AUDIO, INC.

1171 Harry Hines, Suite 119, Dallas, TX 75229
(214) 243-2997

Owner: Precision Audio, Inc

Studio Manager: Rick Sheppard

Engineers: Rick Sheppard

Dimensions of Studios: 25 x 25 x 11 ceiling
Dimensions of Control Rooms: A: 15 x 15 x 11 ceiling, B: 13 x 13 x 8 ceiling

Tape Recorders: MCI JH114 24 track; (2) Scully 280 2 track; (3) Crown 722 2 track; TEAC 38 8 track, (2) TEAC 3340 4 track.

Mixing Consoles: A: Custom built, 28 x 28 out, w/8 mixing busses; Tascam Model 10, modified B: Custom built 32 in x 32 out, w/8 mixing busses.

Monitor Amplifiers: Crown, Southwest Tech, ILP.

Monitor Speakers: UREI 81's with matching custom built UREI sub-woofer system, Speakerlab Super 7s

Echo, Reverb, and Delay Systems: EMT stereo plate model 140; MICMIX Model III, Lexicon Prime Time digital delay, Electron ADM 245 digital delay, Tapco 4400; MXR-01 digital reverb; tape delay echo.

Other Outboard Equipment: UREI 539 room EQs, (3) MXR 2/3 octave dual EQ, 48 channels STC noise reduction, 24 channels dbx noise reduction, UREI LA3A compressor/limiters, (2) MXR dual limiters #136, (4) PAIA custom limiters, (6) cassette decks (Real Time), large Telex 300 duplicator system, (2) turntables.

Microphones: (2) Neumann U87, KM88, (2) Sennheiser 441, (5) 421U; (3) AKG C451E, (4) Sony ECM22P, (2) AKG D224E, (4) D100E; (3) Shure SM53; E-V 635A, (2) C-ducer piano mikes.

Instruments Available: Yamaha C3 conservatory grand piano, 11 piece Ludwig trap set, Yamaha 115B bass amp, (2) Checkmate guitar amps, Vox continental organ, Hammond M3, Gibson Grabber bass, Gibson ES-340TD electric, acoustic guitars by Yamaha, Epiphone & Dobro; Kramer electric; Soundchaser/Apple II plus digital synthesizer; large custom built two keyboard studio synthesizer; ARP string ensemble, LinnDrum

Rates: 24 track: \$90/hr, 16 track: \$75/hr, 8 track: \$50/hr. Call for any current specials

••• RAMPART STUDIOS

also REMOTE RECORDING
6105 Jessamine, Houston, TX 77081
(713) 772-6939

Owner: Steve Ames

Engineers: Steve Ames, Dan Yeaney

—LISTING CONTINUED ON PAGE 172

POWERHOUSE RECORDING STUDIO

Filling your needs without emptying your pockets

FEATURING: Stevens 821A • Scully 280 • Ampex ATR-700 • Studer Revox A77 • API 32x16x24 • BGW 750 • Fostex LS3B • EMT 250 Gold • AKG BX10 • Lexicon Prime Time • Spectrasonic 610 Complimiters • Fairchild 663 Limiters • Audio Desine "Scamp" Rack • Eventide Harmonizer • Klark Tekniks Graphic EQ • Orban De-Esser • Neumann U87's and U47's • AKG 452 and C 414's • Sennheiser 451 and 421's • E.V. Re 20's and much more.



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LAS VEGAS, NV 89102
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- 1983 September — SOLD OUT**
- 1983 October, Fall AES New Products.** Video Production Supplement. Women in Audio. The Crusaders. Joe Jackson.
- 1983 November, North Central Studios.** Compressors/Limiters. Canadian Recording. Vocal Miking. Herbie Hancock.
- 1983 December, Tape to Disk Listings.** Stereo Mastering Recorders. Audiooptics. Stan Freberg. Godley and Creme.
- 1984 January, Northwest Studios.** Reference Monitors. Michael Sembello. Video Hardware/Software. Steve Smith Studio. Huey Lewis.
- 1984 February, Independent Engineers & Producers.** NAMM Show. Allan Holdsworth. Keyboard Artists Forum. Ronnie Lane.
- 1984 March, Southeast Studios.** Microphone 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.
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- 1985 May, Northeast Studios.** Digital Reverb. Flo & Eddie. Holophonics. Emmylou Harris. Humberto Gatica.
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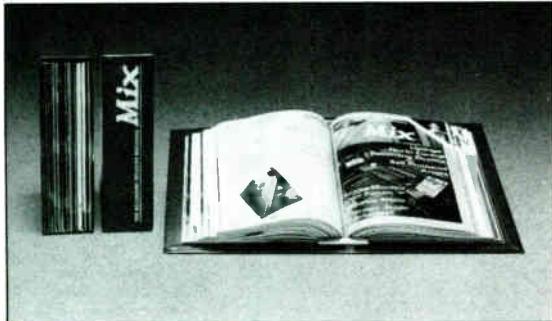
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RS

RAMPART STUDIOS
Houston, TX

Dimensions of Studios: 40 x 24 (drum room, vocal booth, iso. room)

Dimensions of Control Room: 12 x 18

Tape Recorders: Soundcraft 24 track, 3M 2 track, Ampex 2 track, Sony 1/4 track, Technics cassette deck.

Mixing Consoles: Soundcraft 1624 (16x24x2) 56 channel remix.

Monitor Amplifiers: Crown, Yamaha, NS 10Ms.

Monitor Speakers: JBL 4430s, Auratones.

Echo, Reverb, and Delay Systems: Lexicon 200 digital reverb, EMT 140 plate, Lexicon PCM-41, Lexicon 91, Lexicon PCM-60.

Other Outboard Equipment: Eventide Harmonizer, Aphex Aural Exciter, Aphex CX-1, UREI 1176 comp/limiters, UREI comp/limiters, Orban Para-EQ, Orban de-esser, dbx and GT-4 noise gates, MXR flanger, Gold Line RTA, Dyna-Mite exp/comp, Crown SL2 pre amp, Denon TT.

Microphones: Neumann U-67s, U-87s, KM-84s, AKG 414s, 451s; Sennheiser 421s, 441s; E-V RE-20s; Beyerd 201s; Sony 22Ps; RCA 77s

Instruments Available: Kawai grand piano, Fender Rhodes, OB-8 synth, Minimoog synth, Yamaha drums, Drumulator,



Roland, Linn, DX drum computers; Fender amps, LP congas, percussion etc.

Video Equipment & Services: Scoring, sweetening, etc.

Rates: Hr/rates, Block rates: Available upon request.

Extras: Coffee bar, lounge area, etc.

Direction: Rampart is a creative environment for both artists and producers, with an experienced professional staff. Specialists in record, jingle, and demo projects. Clients include: ZZ Top, Night Ranger, The Judy's, Shake Russell Band, The Dishes, Hey Boy, Random Culture, Tokyo, Apace, Columbia Records, Atlantic Records, Exxon, and many more.

**** REAL SOUND PRODUCTIONS

also REMOTE RECORDING
924 W. Mitchell #247, Arlington, TX 76013
(817) 461-5848 metro

Owner: Patrick I. Taylor

Studio Manager: Patrick I. Taylor

**** REEL SOUND RECORDING CO.

ONLY REMOTE RECORDING
P.O. Box 280, Manchaca, TX 78652
(512) 472-3325, 282-0713

Owner: Malcolm H. Harper, Jr.

Studio Manager: Malcolm Harper, Jr.

Dimensions of Studios: 42' tractor trailer Acoustical design by Tom Hidley.



REEL SOUND RECORDING CO.
Manchaca, TX

Dimensions of Control Rooms: Truck includes control room, lounge and overdub room.

Tape Recorders: (2) MCI JH-24 24 track, (2) MCI JH-110-B 2 track, (2) Nikko cassettes. Digital. Sony ICM 3324 24 track (on request)

Mixing Consoles: MCI JH-636LM automated, 36 in x 36 out.

Monitor Amplifiers: Crown, Aka

Monitor Speakers: JBL 4430, Auratone, Westlakes.

Echo, Reverb, and Delay Systems: Urs Major 8x32 w/8 programs, AMS RMX-16 digital reverb, DeltaLab DL-1, DL-2.

Other Outboard Equipment: dbx 900 rack (4) limiters, (2) DS, (2) parametrics, (4) Valley People Dyna-Mites; (6) Drawmer gates; (4) LA-3a limiters; RTS intercom; Jensen 48 input microphone splitter; Gary color TV system w/switcher

Microphones: E-V, Shure, Neumann, AKG, Countryman, C-Tape, Sennheiser, Beyer, Crown PZM.

Video Equipment & Services: Sony monitors and switcher

Rates: Call (based on day rate, mileage, tape and expenses)

Extras: 46 and 24 track remote recording for studio & live albums, TV audio support and radio broadcast syndication. DIR Broadcasting, Westwood One, RKO Network, PBS Network, NBC radio, Capitol records MCA, Epic, Ward records, Bensen Co., Savoy records. Credits: Triumph, Robert Plant, Quiet Riot, ZZ Top, Journey, Ted Nugent, The Fixx, Genesis, Autograph, The Gap Band, Frankie Beverly & Maze, Hall & Oates, Marley Haggard, Willie Nelson, Ray Charles, George Jones, Sawyer Brown, Alabama, Oak Ridge Boys, Amy Grant, Leon Paullo, Dave Perkins, Rev James Cleveland, B.B. Thomas, Jay Aron Group, Billy Square, Neil Young, Loretta Lynn, Dolly Parton, Mel Tillis, T.G. Sheppard, Shelley West, Farrell and Farrell, David Meece, DeGarmo and Key Band, Jerusalem.

**** RIVENDELL RECORDERS, INC.

2223 Strawberry Village, Pasadena, TX 77502

(713) 472-5062

Owner: Rivendell Recorders, Inc

Studio Manager: Chuck Sugar

Engineers: Paul Mills, Chuck Sugar

Dimensions of Studios: 28 x 42 x 14

Dimensions of Control Room: 18 x 20 x 11

Tape Recorders: Studer A80 Mk III 24 track, Ampex ATRIO2 1/4" and 1/2".

Mixing Consoles: Trident Series 80, 32 in x 24 out.

Monitor Amplifiers: H&H V800, AB, Crown, HK

Monitor Speakers: UREI 813, Yamaha NS10, Auratone

Echo, Reverb, and Delay Systems: AMS RMX-16, EMT 140ST (tubel), (2) DeltaLab DL-1

Other Outboard Equipment: Eventide 949 Harmonizer, Lexicon Prime Time, Marshall Modulator, EXR Exciter; (2) LA2; (2) LAS4; (2) 1176; (2) 3ba 165; (2) ADR Corryex limiter; ADR Vocal Stressor; (4) Kepex II; various graphics and parametrics

Microphones: Telefunken U47, Neumann U67, U87, KM84; (2) AKG C414; Sennheiser 441, 421; Shure SMB1; E-V RE20; various Shure.

Instruments Available: Kawai grand, Yamaha drums; Hammond B3, Synclavier I, w/music print option. Roland Jupiter 6, Drumulator.

Rates: Call for information.

**** ROSEWOOD SOUND, INC.

4307 Merrill Road, Dallas, TX 75229

(214) 350-0905

Owner: Jimmy Kelley

Studio Manager: Linda Kelley

**** SIERRA RECORDING

669 Seminary South, Fort Worth, TX 76113

(817) 921-3881

Owner: Maximo Corporation

Studio Manager: Randy Adams

COMING

SEPTEMBER:

- Southern California Studio Listings
- Special Supplement: Digital Recording
- Film & Video Sound

AD CLOSING: JULY 7TH

MATERIALS DUE: JULY 15TH

OCTOBER

- AES Special Issue/New Products Directory
- Testing & Measurement
- Ambisonics

AD CLOSING: AUGUST 7TH

MATERIALS DUE: AUGUST 15TH

NOVEMBER:

- North Central & Canadian Studio Listings
- Special SMPTE Issue/Video Supplement
- Women in Media Production

AD CLOSING: SEPTEMBER 7TH

MATERIALS DUE: SEPTEMBER 15TH

For Advertising Information call (415) 843-7901

Engineers: Tony Rodriguez, Randy Adams, Tim Hood, Andres Gamon

Dimensions of Studio: 42 x 30 main room, 10 x 14 iso booth

Dimensions of Control Room: 28 x 20 LEDE control room

Tape Recorders: Stephens 821B 24 track; Ampex 102 2 track; MCI JH110 2 track; Technics M85 cassette; Nakamichi 550 cassette; Tascam 3340 4 track.

Mixing Consoles: Neotek Series III, 28 in x 24 out.

Monitor Amplifiers: UREI, Crown.

Monitor Speakers: UREI 813, JBL 4311, Auratone, Yamaha Echo, Reverb, and Delay Systems: Master-Room XL515, Lexicon Super Prime Time Harmonizer H910, Ursu Major 8x32 digital reverb, Ecoplate III reverberator, ADA STD-1 digital delay.

Other Outboard Equipment: UREI 1176 limiters, UREI LA4A compressors, Aphex Aural Exciter, Ibanez Stereo Chorus, Eventide Omnipressor, Kepex, Scamp Rack, Multimax compressors.

Microphones: Neumann U87, Sennheiser 421, Crown PZM, AKG 414, 451, 452, C24 stereo tube, D12; Wright; Beyer 260, 500.

Instruments Available: 7'4" Kawai grand piano, Fender Rhodes, Sequential Circuits Prophet 5, Elka, ARP Omni 2, Mini-Korg synthesizers, Slingerland drums, G&L bass, Guild and Martin guitars.

Rates: Available upon request.

**** SOUND ARTS RECORDING STUDIO

also REMOTE RECORDING

2036 Paskett, Suite A, Houston, TX 77092

(713) 688-8067

Owner: Jeff Wells

Studio Manager: Barbara Pennington

**** STAR TRACK RECORDING STUDIOS, INC.

also REMOTE RECORDING

5840 S. Memorial, Ste. 210, Tulsa, OK 74145

(918) 622-6444

Owner: Rod & Sallie Slane

Dimensions of Studios: A: 20 x 34, 12 x 9 drum booth, 12 x 12 piano room; B: 12 x 12 dub booth; C: voice only

Dimensions of Control Room: A: 17 x 22; B: 13 x 16; C: 9 x 12

Tape Recorders: Analog: Otari MTR 90 24 track, Otari MTR 10 2 track, (2) Otari MX 5050 B 2 track; Ampex AG 440 2 track, Ampex ATR 100 full track, Otari MK III 4 4 track.

Mixing Consoles: AMETEK Custom TAC 24/8/2 24 in x 24 out; Custom built TEAC/Tascam Model 5 8 in x 4 out.

Monitor Amplifiers: Crown D150s, Crown D75s, Crown Powerline II.

Monitor Speakers: JBL 4430, JBL 4313s, JBL 4301, Auratones. Echo, Reverb, and Delay Systems: (2) Ecoplates, Lexicon PCM 41, Yamaha analog delay E1010, Eventide delay & Harmonizer, Orban reverb.

Other Outboard Equipment: Roland CPE 800 automation, Eventide Harmonizer, Scamp rack EQs, comp/limiters, Dual de-esser, Dynamic filter gates, stereo panner, (4) dbx 160X, (4) dbx 160, Omni Craft noise gates, Lexicon digital delay, EXR Exciter II, Electron II, UREI graphic EQ.

Microphones: U87s, KM84s, KM83, U89, MC 421s, RE 20, 414 EB, 451s, 452s, SM5, SM57s, PZM, C-dusers.

Instruments Available: Kawai 6' grand piano, Fender Rhodes, Pearl 5 piece kit, Roto toms, tympani, Gon Bops, Roland Juno 6, Roland Vocoder, Roland bolt 60 amp, Boss chorus, digital tuner, Latin percussion, LinnDrum computer, JP6, Juno 106, Apple IIe w/polyphonic, MIDI 4 software, MSQ-100 digital recorder, SBX 80 sync box.

Video Equipment & Services: Adams-Smith 2600 synchronizer, 1/4" JVC M550, post video/audio synchronization, scoring & mixing, MCI JH-110-3 LB layback to 1" video tape.

Rates: Studio A: 16/24 track, \$95/hr; Post video/audio, \$115/hr. Studio B: \$40/hr; Studio C: \$60/hr. Block rates available.

**** STUDIO D

1700 S. Lamar, Suite 112, Austin, TX 78704

(512) 441-4001

Owner: Audio Production Services, Inc.

Studio Manager: Dennis Davis

**** STUDIO SOUTHWEST

2611 N. Beltline Rd., Sunnyvale, TX 75182

(214) 226-1789

Owner: Jimmy Wallace, Matt Tapp

Studio Manager: Jimmy Wallace

Engineers: Mike McClain, John Early, Matt Tapp

Dimensions of Studios: Main room: 27 x 23. Isolation booth A 10 x 11; booth B: 10 x 12; booth C: 7 x 6.

Dimensions of Control Room: 25 x 17

Tape Recorders: MCI JH24 24 track; MCI JH-110-B 1/4" 2 track; MCI JH-110-B 1/4" 2 track; Technics IS00 2 track; Tascam 1223 2 track.

Mixing Consoles: MCI 556 automated 48 in x 32 out Spectra VU

Monitor Amplifiers: UREI 6500, 6250; Crown DC150; (3) Crown DC300

Monitor Speakers: JBL 4430s, Yamaha NS-10s, Auratones

Echo, Reverb, and Delay Systems: AMS Reverb, Lexicon 200 reverb, Audient 7" plate reverb, Lexicon PCM 42 delay, (2) DeltaLab DL4 delays, (2) Eventide H910 Harmonizer.

Other Outboard Equipment: UREI LA4 compressor/limiters,

ilm cameras. New 45 x 40 sound stage, JVC 3/4" recording and manual editing system off-line. 1" and 1/4" remote facilities. Our video facility is state of the art and interfaced with both our audio studios. We do music video production

Rates: \$95/hr Daily and weekly rates available. With video \$300/hr. Package quotations are welcome. Accommodations are available. All tape at wholesale prices

**** VINTAGE RECORDERS

4831 N. 11th St., Phoenix, AZ 85014

(602) 241-0667

Owner: Billy Moss

Studio Manager: Billy Moss

Engineers: Chief eng., David Brown; Asst. Eng., Paula F.T.

Wolak, Chief tech., Andy Barrett

Dimensions of Studio: Drum booth: 12 x 8, iso room: 9 x 9,

Main studio: 26 x 20, Reception, 16 x 11

Dimensions of Control Room: 16 x 21

Tape Recorders: Studer A-80 mk II w/updates 24 track; Ampex ATR-104 1/2" 2 track, 1/4" 2 track, 1/2" 4 track, Otari MX 5050 B 1/2" 2 track, TEAC 122 cassette; Sony PCM T01 digital stereo.

Mixing Consoles: Trident "B" range (the Davlen Trident) 28/16/24; Studer 189-080 20/8/16.

Monitor Amplifiers: UREI-6500, Crown DC-300, Crown DC-150, Yamaha P-2200, Haffer DH-500 (3).

Monitor Speakers: UREI-813 (original), Westlake Audio BBMS-6, Auratone.

Echo, Reverb, and Delay Systems: EMT plate (tube type stereo), Eventide 1745M w/harm, Eventide H-910 Harmonizer, DeltaLab DL-2 Acousticcomputer, Lexicon Prime Time, UREI Cooper time cube, Roland Chorus echo SRE-555.

Other Outboard Equipment: ITI ME-230 stereo parametric EQ, (2) Aengus graphic EQ (2), Klein/Hummel UE-100 EQ (tube type), Crown EQ-2 EQ, Pultec EQH-2 (2), Pultec PEQ-1 (2), Aphex Aural Exciter model 602, Teletronics LA2A limiters (org.), dbx 160 limiters (2), Studer comp/limiters (4), Roger Mayer noise gates (8), Symetrix Hybrid telephone interface, CEC automatic 2" x 14" tape degausser.

Microphones: Neumann: U67 (2), M49b (4), U47 (2), U47FET, IM64 (6); AKG C12 (3), D12, C45le (2); Sony C37A C47, C57, ECM50, C22; RCA 44BX (2), 77DX (2), 77A (2), 44JR (2), MI 3045; Sennheiser 441 (2); Shure 57, 58 (many); Altec 633 (saltshaker).

Instruments Available: Yamaha C-7V 7' grand piano, Fender Rhodes, Hammond B-3 w/Leslie 122RV, Prophet 5, Roland Jupiter-8 synth., '55 Fender Strat., '61 Fender Esquire, Gretsch Country Gentleman, early Kay country western guitar, '64 Rickenbacker 12 string, Fender Vibrochamps, Fender Champ amp (tweed), '71 Marshall 100 1/2 stack, '57 Precision bass (tele. style), '59 Precision bass, '64 Precision bass, '64 fretless Precision bass, '68 Tele bass, Fender Bullet bass, large Gretsch drum set with 10 old snare drums.

Extras: All production services and top quality musicians available. We can help you from start to finish on any type project you might have. We pride ourselves on our ability to professionally and efficiently complete projects to our clients total satisfaction.

Direction: Mick Fleetwood, Richard Dashut, Christine McVie, Billy Burnett, George Hawkins, Glen Campbell, The Crusaders, Terry Becker, Wilton Felder, Tom Kendzia, Dan Consiglio, Lucien Diess, Peter McLan, Paul Ray, Dear Enemy, Alice Cooper, Dick Wagner, Gentlemen After Dark, Seal, David Brown, The John Colter Band, Steve Ross, Lindsay Buckingham, Steve Smith, Jimmy Iovine, Gregg Edwards, Stevie Nicks, Soundtrack - Against All Odds (Violet and Blue), Huey Lewis, Entertainment Tonight, MTV, Friday Night Videos, Making It Big.



STUDIO SOUTHWEST
Sunnyvale, TX

dbx 160 and 162 compressor/limiters, (2) Valley People Dyna-Mite stereo limiters, UREI 535 graphic EQs, UREI 546 parametric EQs, 24 channels Dolby A.

Microphones: Neumann, AKG, Sennheiser, Beyer, Shure, Electro-Voice, Crown PZM

Instruments Available: Yamaha conservatory 7' grand piano, Yamaha CP70 and CP80 electric grand pianos, Fender Rhodes piano, Hammond B-3 organ w/Leslie, Prophet 5, Prophet 600, Yamaha DX7, LinnDrum 11, Ludwig drum kit, Simmons drum kit, Marshall 50-watt-100-watt amps, Fender twin reverb, Latin Percussion congas, full percussion kit.

Video Equipment & Services: (2) Sony 1/4" video machines, Sony monitors, custom audio to video dubs (24 hour turn-around in most cases)

Rates: Available upon request. Exceptional block rates available

Extras: Two in-house production companies: Southwest Music Company, Inc. - record production and music publishing Musique - music production. Sound Southwest - professional sound reinforcement and instrument rental on premises. In-house copy writing and voice-overs by M.G. Audio (Michael Brown)

Direction: Album, single, music production - industrial recording. We offer a creative, comfortable atmosphere for artistic music projects and commercial recording

**** SUMET-BERNET SOUND STUDIOS, INC.

also REMOTE RECORDING

7027 Twin Hills Ave., Dallas, TX 75231

(214) 691-0001

Owner: Ed Bernet

Studio Manager: Bobby Dennis

**** UNITED AUDIO RECORDING

8535 Fairhaven, San Antonio, TX 78229

(512) 690-8888

Owner: Robert Bruce

Studio Manager: Joyce Bedell

Engineers: Marus Perron, AES, BS EE, MS EE, chief engineer; Robert Bruce, ASCAP, SBE; Terry Osborne, B.A.; Bob O'Neil, B.S.; Video: Ken Ashe, Mike Bowie

Dimensions of Studio: A: 35 x 34 x 20 (height); B: 20 x 15

Dimensions of Control Room: A: 23 x 25; B: 20 x 15. New mixing room designed by Lakeside Associates

Tape Recorders: Studer A80 MK IV 24 track; 3M M79 24 track, Ampex ATR100 4 track, Ampex ATR100 2 track, 1/2" mastering; Ampex ATR100 2 track; Scully (6 ea.) 280B 2 track, Scully 280B 4 track.

Mixing Consoles: A: Spectra Sonics with Valley People automation, model 1024-24, 24 in x 24 out; B: Interface Electronics 100, 16 in x 4 out.

Monitor Amplifiers: Crown, Spectra Sonics, BGW.

Monitor Speakers: UREI 813B Time Aligned, Auratones, E-V Sentry 100, Yamaha NS10M.

Echo, Reverb, and Delay Systems: Eventide Harmonizer, Lexicon 224 digital, Ursu Major Space Station, Lexicon Super Prime Time, Eventide SP-2016 digital effects processor.

Other Outboard Equipment: UREI 1178 limiters, LA4 compressors, Universal Audio LA2 compressors, Allison Gain Brains & Kepex, dbx 165, UREI graphics 1/2 octave, Orban parametric, Orban De-Esser, UREI notch filter set.

Microphones: Neumann U87, U86, U47, KM84, KM88, T4, 170; AKG C414, C451; E-V RE20, RE16, RE15, RE55, CS15, Shure SM81, SM77/57; Sennheiser 441, 421; Beyer; Crown PZM.

Instruments Available: Baldwin grand piano, Rhodes 88, Baldwin tacker piano, Sequential Circuits Prophet 5 synthesizer, Oberheim, Ludwig tympani, Hammond B3 w/Leslie, orchestra bells and chimes, wind chimes, bell tree and other percussion instruments. Ludwig drum kit. Other instruments available on request.

Video Equipment & Services: Ampex VPR80 1" mastering system with computer editing. Ikegami HL79 cameras. Arriflex

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(415) 843-7901.

—FROM PAGE 112

funk), thus enabling the concert hall to make true-digital recordings of its live broadcasts. The WDR sale also marks the first time the DSP is being sold outside the United Kingdom.

"WDR, with its characteristic thoroughness, evaluated the benefits and technology of Neve and its product before signing up," said Neve managing director, Laci Nester-Smith. "In going digital they have opted for a state-of-the-art product that reflects this proven technology. The DSP also gives them an immense lead in European music production."

Delivery of the DSP to Cologne is slated for the second quarter of 1986—just prior to the formal opening of the Kolner Philharmonic Hall mid-year.

In addition to the console, Neve will be equipping the venue with all transmission lines necessary to provide digital multitrack mastering and broadcasts from the same control room. Additionally, the WDR contract includes a provision for fiber-optic cables for digitized microphone feeds from the stage to the mixer.

**HAVE A
RECORDING STUDIO
PROBLEM?**
Call DataLine
(213) 651-4944

The Society of Professional Audio Recording Studios, a non-profit organization, offers SPARS members, and non-members referred by a SPARS member, a national telephone 'hot-line.'

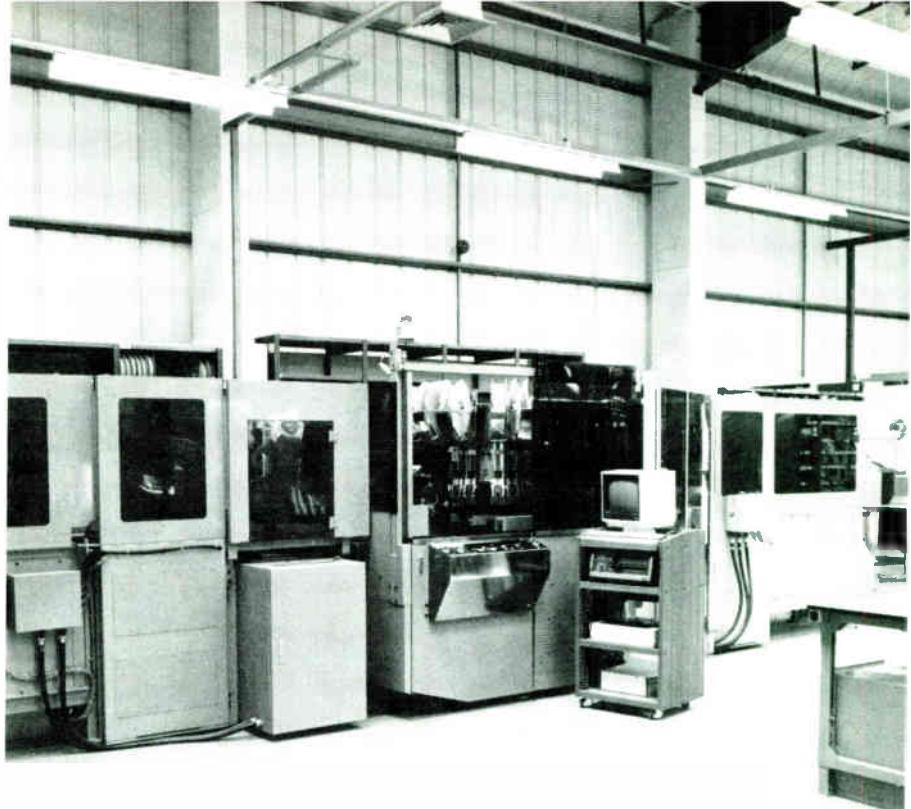
Questions regarding any area of recording studio operations including business practices, audio engineering, and technical maintenance will be answered by SPARS-approved sources at no charge.

Want a problem solved?
Call SPARS—
(213) 651-4944



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Soundcraft's new Borehamwood, England manufacturing plant.

SOUNDCRAFT OPENS AUTOMATED FACTORY

Soundcraft Electronics Limited, the British producer and exporter of professional audio equipment has officially opened its new 3/4 million pound manufacturing division in Borehamwood, Hertfordshire. The 35,000 square foot Borehamwood site was chosen primarily for its proximity to Heathrow and Central London, in addition to the wealth of local technological expertise available. The factory employs 120 people, with research and development, sales, marketing and customer service activities all remaining at Soundcraft's Great Sutton Street offices in London EC1.

Now a 6½ million pound

turnover company with 200 employees, Soundcraft has achieved its success largely through exports; during the last three years almost 90% of output has been sold overseas.

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"As a singer/songwriter, I hadn't previously known a lot about recording techniques and studio technology. So my newfound relationship with my Fostex B-16 will teach me a most important dimension of a musician's career — engineering.

"Not that I'm becoming a studio engineer. Fostex is relatively simple to use; for me, having this equipment at home enables me to produce really superior demos. The sound quality is comparable to many 24-track studios.

"If I record something I'm really satisfied with, I then have the option of transferring tracks to a 24-track machine, and continuing.



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