

VOL. 5, NO. 7

THE RECORDING INDUSTRY DIRECTORY

\$1.50

Mix

**Recording Services
Special Issue**

**Remote Recording
Education Explosion**



**David Gates Studio
Video Marketing
George Tobin**

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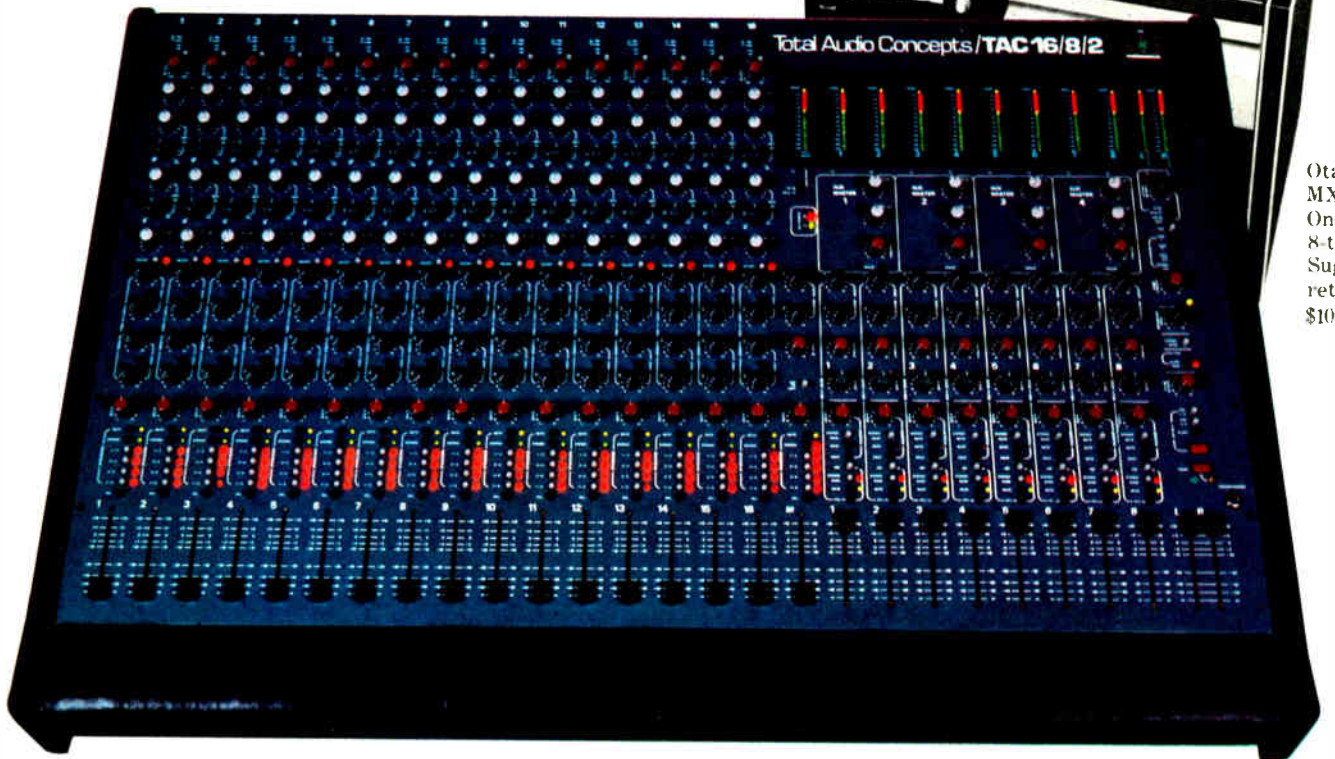
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Mix

Cover: Nashville's Sanborn Productions Mobile One remote truck. Built to accommodate two 24-track Ampex 1200 recorders and a Sound Workshop 1600 console for live recording or studio work at Bull Run Studios. Last year Bull Run recorded radio and TV shows for: Merle Haggard, Hank Williams, Jr., Mel Tillis, Charlie Daniels, Crystal Gayle, and Don Williams. Photo by John Guider.



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Now that we've entered the better half of 1981, we wanted to give you an idea of what to look forward to in the Mix for the rest of the year.

This is the second of our three part Summer Specials series. Titled **Recording Services**, this issue represents a broad survey of areas that many readers have asked us to explore: remote recording, educational recording programs, studio maintenance, independent engineering and production, tape duplication services and other supporting elements of the industry. Through a combination of listings and feature articles, we focus in on those low profile services that are largely responsible for the overall recording industry's rapid rise in quality, reputation and professionalism. We think this issue is one to keep in your active file for quick reference during common situations.

• • •

Next month is an extra special **Studio Design** issue dealing with the latest developments in the acoustics, construction, equipment and economics of recording studios. The majority of the editorial for the issue will be coming directly from many of today's most respected and active designers, architects and builders. Get your orders in early for this issue.

September will be our next studio listings issue featuring the rooms of Southern California. This has been a dramatic year and we're sure you'll want to keep up to date on the big changes in the L.A. recording scene.

In October we complete our national survey of recording studios with a first time look at the North Central portion of the U.S. of A. We'll also begin a special series on the history of the microphone.

AES happens in November and we celebrate the event with our new products directory and a close look at the state of technology.

Tape-to-Disk is the topic of our December issue, dealing with the mastering and pressing of records. This often overlooked area actually provides for one of our historically most popular issues.

So stay in touch and we'll do our best to keep you informed. ■

TRACKS

CURRENT

By Chris Haseleu

MSMA's Seminar Considers Industry Problems

Some 200 recording industry representatives converged on Joe Wheeler State Park for the 4th Annual Records and Producers Seminar, organized by the Muscle Shoals Music Association and sponsored by various industry organizations. Using the theme: "Who Gets What In The Recording Business—Slicing The Recording Pie," the seminar ran from May 20th through the 22nd with participants from every major domestic recording center, Europe, and Asia. Attendees included writers, artists, engineers, producers, publishers, promoters, lawyers, record companies, equipment manufacturers, and performing rights organizations.

The educational activities included four panel discussions based around the seminar's theme with a recurring topic at all the discussions being the impending change in the mechanical royalty rate. On July 1, the rate will increase from its present 2¾¢ to 4¢ per cut. (The mechanical royalty is that money paid by record companies to publishers and writers for the use of their songs.) The rate increase has caused some friction between the record companies and the publishers, and will ultimately impact on everyone in the industry. The record companies are understandably reluctant to pass this increase on to the consumer. The result has been pressure by record companies on producers to obtain a lower rate from the publishers and/or writers. There is some hint that they may also try to reduce their costs by further limiting the production budgets, thus influencing studio incomes. In fairness to the publishers and writers, it should

be pointed out that at 4¢ per cut the rate is still lower than in most other countries. Also, increased income to the publishers may result in fatter demo budgets.

Another much discussed subject was the lack of any guidelines for royalties (mechanical, performance, artist, and production) that may result from the sale, rental or cable use of prerecorded video disks or tapes. Of similar concern were the losses due to home piracy of both video and audio programs. Both cable and satellite transmission systems are making this concern more pressing than ever.

The educational aspect also included displays by several equipment manufacturers. These included Ampex, MCI, Neve, Studer, 3M, and Redwood Research. Each company had equipment and/or representatives on hand to talk with seminar participants.

There were listening rooms available to pitch a song or artist to interested publishers or producers. The local studios also offered tours to those who might be interested in using their facilities.

In the evenings, the MSMA presented showcases of the talented musicians and songwriters that live and/or work in the area. Featured on the last night were Bonny Bramlet, Percy Sledge, and the Muscle Shoals Session Players.

In all, this year's seminar was successful in offering a fine mix of business, education, and pleasure. For those interested in finding out more about the MSMA, write to MSMA; P.O. Box 2009; Muscle Shoals, Alabama 35660.

Trident U.S.A. Opens

Trident Audio Developments Limited of Shepperton, England has announced the opening of a United States Corporate Headquarters in Stamford, Connecticut.

Known as Trident (U.S.A.) Inc., it will be fronted by vice president Ken Bray who was previously responsible for sales in Europe and the rest of the world.

The office will be selling and providing service support on a direct basis to the North Eastern U.S.A. and as necessary to the existing dealers in the South and West—Wilson Audio Sales in Nashville and Studio Maintenance Services in Los Angeles.

Other appointed personnel will include Mark Terry who will be Sales Manager and Jeff Hillier who is also crossing the Atlantic to become Chief Engineer.

According to Bray, "Amongst my first

tasks will be to ensure that existing customers in the North-East know we are here and that if they have any problems they are now able to talk directly with the Company—from then on my job is to move more Trident product into the area."

The opening of the office has coincided with the installation at Record Plant, New York, of a 56 input T.S.M. Series console. The board has gone into the recently refurbished remix room. Empirical Audio will in the future act as consultant dealers on behalf of Trident U.S.A. and Winn Schwartz of Empirical was responsible for the sale of the T.S.M. to Record Plant.

All inquiries regarding Trident products should now be addressed to:

TRIDENT (U.S.A.) Inc.
652 Glenbrook Road,
Stamford, CT 06906
Tel. (203) 357-8337
Attention of Mr. Ken Bray

SPARS Cancels Convention

The board of directors of the Society Of Professional Audio Recording Studios (SPARS) convened in Phila. on Thursday, Friday and Saturday (May 28,29,30) to address the realities of today's economic climate in relationship to the previously announced SPARS convention, "Partners In Progress For Profits," scheduled for August 27-30 at the Opryland Hotel, Nashville. It was unanimously concluded that SPARS must realistically recognize the sad economic state of the nation, and in particular, the plight of the recording industry. Cognizant of these non-controllable circumstances, and aware of a growing industry-wide opinion that the industry is "over-conventioned" in today's harsh economy, SPARS has cancelled its 1981 convention.

President of SPARS, Murray Allen, Universal Recording Corporation, Chicago, announced that in its place SPARS has developed a continuing "road show" program designed to bring SPARS to the industry vs. the industry coming to a SPARS convention.

The SPARS/Nashville Road Show scheduled for late August or early September, will feature a board of directors meeting, a cocktail reception and a seminar: "Music Diversification." It will be open to SPARS members and non-members. There will be *no charge* for any events.

The SPARS/New York Road Show will spotlight a no-holds-barred seminar: "Who's Kidding Who?" It will be a round-table discussion by record companies, recording studios, producers, financial experts, A&R executives and manufacturers, delving into the nitty-gritty aspects of the true state of the industry today. It will center upon topics normally reserved for "closed door" discussions. The objective is to pinpoint constructive suggestions for better harmony and healthier "bottom line" results. Additionally, SPARS will conduct a board of directors meeting, a cocktail reception, and a "Person To Person Conclave of Consultation." Consultation topics will include: finances, legal, maintenance, studio operation, marketing and promotion, equipment management, artist and client relations, producing, and others under consideration.

Otari Expansion

Otari Corporation, professional tape machine manufacturer, has announced an expansion move to larger facilities in Belmont, Calif.

The new building, with 20,000 sq. feet of offices, labs, and warehousing, more than doubles the company's previous facilities. Otari took occupancy in early April.

The new address is:
Otari Corporation
2 Davis Drive
Belmont, CA 94002

Alangrove Builders Announce Agent

Alangrove Builders Ltd. have named AIM Limited of Antrim, NH as their Agent for North America and the Caribbean.

Alangrove has been the primary contractor for construction of Eastlake Audio recording studios in Europe designed by Tom Hidley, since 1976. They have completed many world class studios including Abbey Road, Utopia, Maison Rouge and Phonogram in London; Studio Davout, and Studio Barclay in Paris; Union Studios in Germany; CBS/Sony in Japan; Estudio in Ecuador; Thunder Road in Canada; and Artisan Recorders in Los Angeles. Alangrove has also built video and motion picture facilities, audio/visual theatres and mobile recording vans.

For more information contact:

Mr. Bob Gross
AIM Limited
P.O. Box 99
Antrim, NH 03440 USA
Phone (603) 588-2821

GLI Opens Mid-West Office

GLI, a division of Integrated Sound Systems, Inc./New York, has announced the opening of its mid-west office in Kansas City, Missouri. The new branch office will be headed by Marc Rainen, formerly manager of Beatty Electronics, one of K.C.'s oldest hi-fi firms.

"As regional sales representative serving 10 states, I'm pleased to be providing the audio-

visual industry as well as the professional sound contractor with quality products and services that hadn't been available to them before," states Rainen, who has been in the retail business for over 15 years.

For more information, contact: Integrated Sound Systems, Inc., 29-50 Northern Blvd., Long Island City, NY 11101.

Studio Musician's Workshop

The San Francisco NARAS chapter has revised its plan for phase 2 of their highly successful Studio Musician's Seminar Series. The next session will feature a live rhythm date at The Automatt, employing the cream of the Bay Area's session players. Fred Catero will engineer and Jack Leahy will produce. Before and after the recording session, which will run from 1 till 6 on Sunday afternoon, September 20, there will be panel discussions where session participants will discuss their roles in the project and answer questions from the attendees. The attendance is limited to 100 and tickets are \$25 general admission. For more information, call Bev at 415/777-4633.

Professional Audio Buyers Guide

SIE Publishing has announced the release of their new professional audio buyers guide. Contained within its 240 pages is catalog information on speakers, amplifiers, microphones, recorders, equalizers, analyzers, test equipment, duplicators, wireless microphone systems,

lighting and computers; representing over a thousand products and more than seventy manufacturers.

The professional audio buyers guide is available for \$15.95, from SIE Publishing, P.O. Box 4139, Thousand Oaks, CA 91359, 213/991-3400.

Studer/Revox Names Advertising & PR Manager

Sam Borgerson has been appointed Advertising and Public Relations Manager of Studer/Revox America, according to an announcement made by the company's President, Bruno Hochstrasser. Borgerson will direct all advertising and related activities from the firm's principal office in Nashville.

Roxy Theatre to Open

Finishing touches are being put on Nashville's Roxy Recording Theatre, a \$1.5 million portion of the Roxy Production Center, an ambitious sound, video and film complex. The building is a 9000 square foot theatre with a full stage for recording and video production, dressing room and lounge, and seating for two hundred and forty people. The theatre will also be available for showcases, lectures and live shows. The center is headed by Aubry Mayhew. Chief engineer is Tom Brown, former MCI engineer and studio mixer. The Roxy Production Center is located at 827 Meridian St., Nashville, TN 37207.

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THE FUTURE IS CLEAR

SESSIONS

..... NORTHEAST

At Sigma Sound Studios in Phila. PA, in to record a single is **Garfield Fleming** with producer **Roger Meltzer** for B.U.T., Inc., with engineer **Jim Gallagher**.

Dick Fegy (formerly of the David Bromberg Band) and his wife **Camilla** have recently completed some preliminary recording on an album project at **Amphion Recording**, Rockville, Conn.

Minot Sound's White Plains, New York, recent recording and mixing activity includes: **David Sanborn's** "Voyeur" Warner Brothers Records engineered by **Ray Bardani**; produced by **Michael Colina & Ray Bardani**, and **Al DiMeola, John McLaughlin & Paco DeLucia** on CBS Records; their live album mixed by **Ray Bardani**.

Recent activity at **Kingdom Sound** in Syosset, Long Island includes **Donald "Buck Dharma" Roeser** of Blue Oyster Cult starting work on his first solo album for CBS. Donald produces himself with **Clay Hutchingson** engineering. Also, **Glen Kolotkin** mixing a new **Duke Jupiter** single for Coast to Coast Records.

Recently recording at **Blue Rock Studio**, New York City, **Brian Eno** working on a project with **Michael Ewasko** engineering, "The Waitresses" recording an album for Ze Productions. **Kurt Munkacsi** engineering and co-producing with **Chris Butler**.

..... SOUTHEAST

At **Axis Sound Studios** in Atlanta, GA., **SOS Band** on Tabu Records, **Sigidi** producing, **Steve Williams** engineer. **Fifth Avenue** on Lyons Records, **Al Few** producing, **Greg Webster** engineer.

The **Artisan Recorders Mobile Unit** out of Fort Lauderdale, Fla. recently recorded **Point Blank** live at the Sunrise Musical Theatre in Ft. Lauderdale, Fl. **Terry Manning** and **Peter Yianilos** engineered.

At **Muscle Shoals Sound Studios** in Sheffield, Alabama, **Barry Beckett** is producing **Bonnie Bramlett** for MSS Records, distributed by Capitol Records. **Gregg Hamm** is engineer. Among the musicians playing on the sessions are members of the Muscle Shoals Rhythm Section, including **Jimmy Johnson**, **David Hood** and **Roger Hawkins**.

Dolly Parton recently returned to **Sound Emporium Recording Studios** in Nashville to cut a demo of "Piss Ant Country Town," a theme from

her upcoming film "Best Little Whorehouse In Texas". **Harold Lee** engineered the sessions, with **Gregg Perry** producing.

Recent recording activity at **Quadrafonic Studio** in Nashville, TN includes: **Dobie Gray** recording his latest album for Robox Records with **Bud Reneau** and **Wray Chafin** producing and **Willie Pevear** engineering. **Marc Speer** in mixing the last touches on his new album for Kat Family Records with **Steve Gibson** producing and **Rich Schimer** engineering and **Jimmy Stroud** backing up the session.

Current studio activity at **Music City Music Hall** in Nashville, TN., jazz musicians **Joe Sample**, **Wilton Felder**, and **Styx Hooper** of **The Crusaders** are busy working on a jazz/country fusion project for MCA Records. Songs being recorded include "Wine to Five", "On the Road Again", "Lukenbach Texas" and "Today I Stopped Loving You". **Bill Harris** engineering those sessions. Producers **Chet Atkins** and **Pat Carter** adding the final touches to harmonica wizard **Terry McMillan's** first single for RCA.

..... NORTH CENTRAL

Currently in the studio at **Fifth Floor Recording** in Cincinnati, Ohio is **ZAPP**, recording a new album for Warner Brothers Records, **Robin Jenney** engineering, **Greg McNeily** assisting. Dayton, mixing a new single for Liberty Records, **Robin Jenney** engineering, **Greg McNeily** assisting.

Recent projects completed at **Solid Sound** in Ann Arbor, Mich., **Millette's Borderline Express L.P.** by country artist **Evelyn Clark** and tracks for Cherie Records artist **Jerry Carr**. Singles just completed include **Dick Siegel's** "Beware". All of the above sessions were engineered by **Rob Martens** and **Will Spencer**.

..... SOUTHWEST

From Manchaca, Texas, **Reelsound Recording's** 24 track remote bus was in Houston at the Summit to record **The Gap Band** and **Yarbrough and Peoples** in concert for live album. **Michael Evans** was producing for Total Experience productions. **Malcolm H. Harper, Jr.** was engineering with **Greg Klingensmith**, **Mason Harlow** and **Jay Atchison** assisting.

Rainbow Sound, Inc., Dallas, TX has just completed an album for **Butch Onstott** as well as a single "Lady Hobo" for **Tom Shoemaker**. Both were produced by **Lonnie Salazar** for Big L Productions and are on the ICA label.

At **ACA Recording Studio** in Houston, Texas current sessions include an LP for **The Broken**

Consort (a Renaissance music Ensemble), and LP for **The Lee Bass Band** (A Texas Hard Rock trio), and LP featuring 12 Texas 60's Rock Groups for BOMP Records in LA (Tracks include **Roy Head** and **Johnny Winter**). 45 RPMs included **The Recipients**, **Johnny Blaine**, **John Cantrell**, and **Robert Ramirez**.

Omega Audio of Garland, Texas, has been keeping their 24 track mobile rig busy lately with a variety of projects. Recently the facility was used to cut 24 track material for **Merle Haggard** at the Longhorn Ballroom in Dallas, Texas. Engineering was by "Fuzzy" **Owen**, **Paul Christensen**, and **Russell Hearn**.

..... NORTHWEST

At **Bear West Studios** in San Francisco, CA, **Automatic** is working on a new album, **Doyle Williams** and **Mark Needham** engineering, **Larry Kronen** assisting. Also **Chuck Vincent** and "Shuffle" featuring **Chuck Vincent** on bass and vocals, **Pee Wee Ellis** on sax, **Mark Isham** trumpet and synth., **Greg Douglass** guitar, **James Levi** drums, and **John Turk** on piano; are in the middle of their second album. **Pee-Wee Ellis** producing, **Mark Needham** engineering and **Larry Kronen** assisting.

Sessions in Studio B at **Russian Hill Recording** in San Francisco include: **Stuart Glasser** of Airstrip Records and **Stephen Hart** of Corasound mixed the debut album for **The Visitors**, **Robben Ford**, up from Los Angeles, **Merl Saunders** and **Stud Blank** helping out on D.A. **Lucchesi's** new single. **Joe Tarantino** engineering and **Chris Jacks** assisting.

At **New Age Media** in San Rafael, CA., **New Boots Band** has recently finished their demo tape. **Boots Hughston** producing, **Pete Slauson** engineering. **New Age** is now offering color video tape demos for bands and single performers.

..... SOUTHERN CALIFORNIA

At **Rusk Sound Studios** in Hollywood, CA., **Christian Hansen** recording in **CBO Records, Inc.**, producer: **Jai Winding**, engineer: **Steven D. Smith**, asst. engineer: **David Clark**.

At **Skyright Exchange Studios** in Granada Hills, CA., Producer/Engineer **Steven Richardson** is cutting tracks for Singer/Songwriter **Rory O'Brien** for his up-coming singles release of "Can't Believe I'm The One", and "Hey, Hey, Hey, Yeah". An August release is expected, and independent engineer **Dave Mertens** finished post-production work for **Pat Boyle-PBR Productions**.

Recent studio activity at **Music Grinder** in Los Angeles includes, **Freddie Cannon** recording

Lee Herschberg
Director of Engineering
Warner Bros. Records

“Rickie Lee’s voice can go from a whisper to very loud, and digital captures that.”

Lee began his engineering career with Decca in 1956, moved to Warner Bros. in 1966, and became Warner's Director of Engineering in 1969. His experience spans the recording of such artists as Frank Sinatra, James Taylor, and most recently, Rickie Lee Jones. Herschberg is a true believer in digital recording, and agreed to tell us why.

Q. You've probably had as much experience with the 3M Digital System as anyone.

A. Yes, probably. I've been working with it for two years and had one of the first systems. We've been through the ups and downs and it's been well worth it. At this point, the 3M digital machine works as well as most analog machines.

Q. How do you justify the extra expense of digital recording?

A. Well, I think from any studio point of view, you've got to have the equipment that will bring in the artists. And if digital recording is truly the state-of-the-art, you've got to consider the clients you'll attract, and their needs.

Q. You've obviously done a lot of projects digitally. Why?

A. To me, digital recording is almost like the tape machine is nonexistent. You don't have any of the inherent problems you have with analog. I think everybody is aware of the major benefits of digital recording. No wow or flutter, lack of tape noise and no need for noise reduction. And digital allows you to do things you couldn't do with analog. Like compiling 3 or 4 tracks onto one. There's no degradation of quality.

Having 32 tracks has helped, and so has the addition of a digital editor.

Q. What do you say to an artist who's considering a digital project?

A. I'd say, yes, if it's up to me, go ahead and do it with digital.

Sometimes, on an analog session when the digital is available, I'll record the first couple of tracks on both machines. Then, on the first couple of playbacks, we'll listen to them side by side. That usually does it right there. There's no comparison.

There's nothing wrong with analog recording. And never has been. It's just that, with digital, you're hearing on playback what you just did in the studio. And you begin to hear all the shortcomings of analog machines — the things you've come to accept. And suddenly, those things are no longer acceptable.

Q. What musical formats are suited to digital?

A. Any format, really. It's particularly good for music with a lot of dynamic range. Like Rickie Lee.

Q. What would you say to other engineers and producers considering digital?

A. Well, digital isn't for everybody. And I'm not trying to say it is. There will always be people who prefer analog, and a lot of great records are made that way. It's just that, to my ears, digital is far superior, and it's the next logical step.



Lee Herschberg recently recorded Rickie Lee Jones on the 3M Digital System. The album, *Pirates*, is available from Warner Bros. Records.

3M Hears You . . .

3M

with **Jimmy Haskell** producing, **John Kovarek** at the console, and **Melissa Manchester** is back again doing work with **Steve Kagen** arranging, and **Gary Skardina** handling the engineering chores.

Currently at **Heritage Studios** in Hollywood is manager **John Ciambotti** readying sides on **Al Stahaley**. **Randy Nicklaus** and **Kevin Reach** are engineering...**Juli Burson** assisting.

At **Emerald City Recording**, in Grover City, CA, the 1960's group "The Castaways" are re-recording their hit single "**Liar Liar**". The two original members of the group, **Bob Le Roy**, and **Denny Craswell** are going for a sixties-ish "Live" sound. The engineering for this project is being done by **Emerald City's Wizard**, "**Lumpy**".

Christ Family's Pure Righteousness, in Hollywood, CA has started recording the first of a series of albums from the collection known as "**The Song of The Lamb**." The albums are set up

in a sequence that relates to the pilgrimage of the Life of Christ. First mix-down was held at the **Mix Doctor**, with **Gary Gladstone** at the Board.

Activity at **Devonshire Sound Studios** in North Hollywood, **Joel Diamond** producing **Helen Reddy**, with **Bill Halverson** at the board and **Russell Schmitt** assisting, and **Lionel Richie** producing **Kenny Rogers** and the **Commodores** with **Reggie Dozier** at the board and **Mike Mancini** assisting.



Round Sound Studios, Toronto Ontario, Canada, is pleased to announce they have upgraded to 16 track. They are the first studio in

Canada to install the **SoundWorkshop Series 3020/20** recording console, thanks to **Gerr Electro-Acoustics Ltd.** 2" tape is handled by **JBI** with autolocate and sound is monitored by **JBL 4343's** bi-amplified with **Bryston** amplifiers, also **JBL 4311's** and **Auratone 5C's**. **MMC Incorporated** of St. Louis, Missouri, has just purchased a complete 4-Track Multi-Image production facility from **Antech Labs** of St. Louis, Missouri.

Audio-Video Resources, at 60 Broadway in San Francisco, celebrated its announcement of new expansion plans with a champagne Open House in May, which was attended by representatives of the Bay Area video, audio, and advertising industry. A.V.R., with newly remodeled facilities, including a new 24 track audio sweetening facility, opened its doors for voice overs and mix-downs.

Artisan Recorders formerly in Fort Lauderdale, Fla. has moved its offices to 1421 Southwest 12th Ave., Pompano Beach, FL. 33060. The new telephone number is (305) 786-0660. Remodeling is underway to double the size of the existing studio. An electronic music studio and rehearsal facilities are also planned.

Digital Services of Houston, Texas has taken delivery on the **Sony DAE 1100** digital editor.

John Stachowiak, veteran recording engineer and specialist in the cutting of master disks, has opened **Disk Master Studio** Hollywood, CA. **Stachowiak** has 15 years of professional experience as a recording engineer, including six years specializing in disk mastering, which began during his four-and-a-half-year employment as a staff engineer at **Sound Recorders Studio** in Hollywood.

Ogilvy and Mather Advertising has commissioned **Scharff Communications, Inc. (SCI)** of New York City to design and build the agency's new audio control room and dubbing studio. A 12 x 4 **Neotek Series II** console will provide level and EQ control for a full complement of open-reel and cassette tape machines, turntables and microphones. **SCI** is also designing and installing monitor systems in the two studios.

Minot Sound in White Plains, New York has recently installed a fully automated 36 input **Harrison** console and the new **Sony Digital Reverberator**. This was the first **Sony** delivered in the Eastern U.S.

Westwood Recording Studios, Tucson, Arizona is pleased to announce the installation of another **MCI JH-114** 16-track Recorder with **Auto-locator II** and **TVI**, a **BTX 4500 SMPTE** Time Code Synchronizer, and a **BTX 4100** Time Code Generator. The new **MCI JH-114** 16-track is currently being used in sync with **Westwood's** existing **MCI-JH-114** 24-track Recorder.

Third Coast Sound in Austin, Texas has recently hired **Bruce Truitt** as **Business Manager/Engineer**. **Bruce** joins with **Michael Block**, **Vince McGarry**, **Andy Murphy**, **Patterson Barrett**, and **Dennis Davis** in inviting America to the **Third Coast**.

Solid Sound in Ann Arbor, Michigan, would like to announce its recent acquisition of two 9' concert grand pianos, a 1897 **Steinway** and a 1905 **Baldwin**. They have also acquired several new microphones which include some old tube varieties and **PZM's**.

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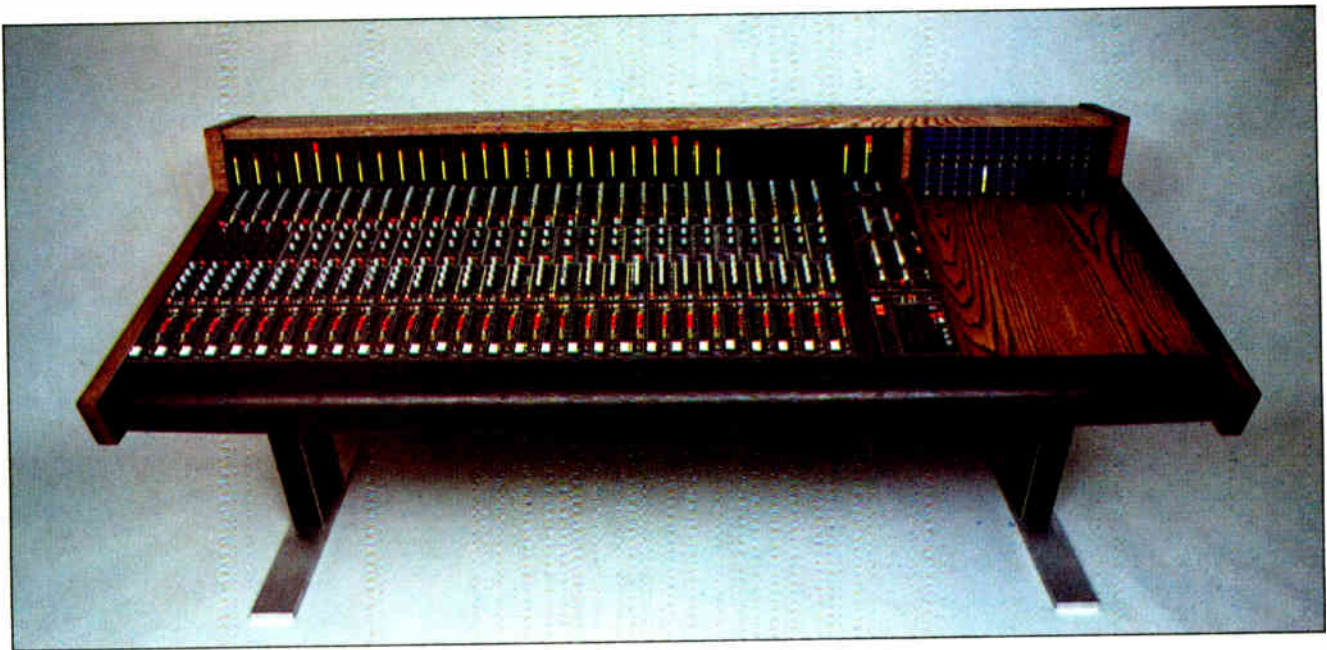
Gold/ "Luxury Liner," "Blue Kentucky Girl," "Profile," "Roses in the Snow" — **Emmylou Harris**. "You Had to Be There" — **Jimmy Buffet**. "San Antonio Rose" — **Willie Nelson** with **Ray Price**.

Platinum/ "Honeysuckle Rose," "Willie & Family Live" — **Willie Nelson**. **Double**

Platinum/ "Stardust" — **Willie Nelson**. **1980 Grammy Awards/** Best Country Group — **Emmylou Harris & Roy Orbison**. Best Female Pop Artist for "The Rose" — **Bette Midler**.

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UPDATE

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 - Transformerless balanced outputs.
 - Transformerless microphone preamp featuring the **TRANS-AMP™, LZ™**
 - Updated summing configurations and lossless panning which yield superior noise and crosstalk performance.
 - Unique Mixx switching which enables each input module to accept a line-level return in addition to its primary signal source, thus doubling the number of line level inputs. Essential when employing a multitude of effects. Also permits mixdown of two synched-together multitrack machines.
 - Handcrafted, solid oak cabinetry.
- In addition, the Sound Workshop Series 40 offers a variety of options —
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cells for state-of-the-art VCA performance.

- Arms Automation—Sound Workshop's proven, computerized mixdown system featuring independent writing of levels and mutes, essential for automated mixing. Fully compatible with MCI JH-50 automation. Arms Automation includes SuperGroup—Sound Workshop's unique VCA grouping feature which allows computer control of all VCA grouping functions. SuperGroup includes "Solo Dim" and negative grouping which enact grouping functions and level changes unavailable on competitive systems.

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- Choice of three EQ formats—switchable, sweepable, parametric—for console customization.

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PROGRESSIONS

MULTI-TRACK for the Masses

by Larry Blakely

In the very early 1970's three individuals came up with a concept: to build inexpensive multi-track tape recorders and mixing consoles within the financial and operational reach of the average musician. Assuming most musicians want to record, they reasoned that inexpensive multi-track recording equipment and accessories would enable these musicians to have their own low cost recording facilities. These three individuals were Arnie Berg, Budd Johnson and Yoshiharu Abe, and the company was TEAC, who brought us the Tascam line.

The first of these inexpensive multi-track machines was a 4 track that utilized 1/4" tape and could be purchased for a great deal less than its full-sized professional counterpart. The signal-to-noise ratio was not as good as the larger multi-track tape recorders and the Tascam machines worked at lower operating levels, were un-balanced, used phono connectors, were high impedance and would not drive 600 ohm loads.

You should have heard the remarks when TEAC first came to exhibit at the AES (Audio Engineering Society) Convention. "You can't be serious! What part do they have in a professional recording equipment show!" At each subsequent show the manufacturers of low cost recording equipment increased. Other manufacturers followed the TEAC lead by offering low cost mixing consoles that would interface with these economy multi-track tape recorders. In addition, a whole raft of "goodies" began to appear: low cost compressor/limiters, equalizers, monitor speaker

systems, microphones, etc. These economy equipment manufacturers also adapted the lower operating levels with high impedance and unbalanced inputs and outputs. After a few short years the industry seemed to be divided into "Pro" and "Semi-Pro."

While many in the professional recording and related industries were arguing the merits of Pro and Semi-Pro, many performing musicians found out that they could afford their own personal multi-track recording facility. It was too expensive to work out their musical parts in professional recording studios at \$100 to \$150 per hour, and the inexpensive home studio gave them this opportunity at a very reasonable cost. They also had the ability to work when ever they wanted and were not restricted by the booking schedule of a commercial recording studio. Musicians and artists who were newer to recording found the economy recording facility a very practical way to learn the complex multi-track recording procedures. This could save them hundreds or even thousands of dollars in professional recording studio time because they could learn, make their mistakes and work out their parts at home. Advertising agencies and other business enterprises set up their own private recording facilities with this economy recording gear, and it was not long until commercial quality master tapes were produced and released utilizing this "Semi-Pro" recording equipment.

Until recently there were two principal manufacturers of economy multi-track tape recorders; Tascam and Otari. At the recent AES Convention in

Los Angeles a new company appeared: Fostex, a Japanese based firm that is a division of Japan's Foster Electric. An American Corporation was formed, called Fostex of America, and its president is none other than Yoshiharu Abe (one of the original founders of the economy recording concept with TEAC.) It is also interesting to note that Abe enlisted the assistance of Arnie Berg and other individuals who were involved in the start up of Tascam. A number of the long lost pioneers have re-appeared waving new colors. This new company claims to be dedicated to the economy multi-track recording segment of our industry and one look at their new product line does indeed prove this claim. Fostex has introduced an 8 track multi-track tape recorder that utilizes 1/4" tape. It has built in Dolby "C" and claims a 73 dB signal-to-noise ratio. In addition, there is a large LED digital counter with a memory that will allow the tape to be rewound to a pre-designated spot. The machine utilizes only 7" reels and a tape speed of 15 ips, the transport features all DC motors, servo speed control of $\pm 10\%$, motion sensing, footswitch jack for punch in/punch out and an optional remote control. The machine weighs only 29 lbs. and is approximately one half the size of a conventional economy 4 track machine. The best part is that it costs only \$2,500.00.

The introduction of this machine is significant. It is a new multi-track recording format that brings the technology to the people, and it satisfies a growing consumer hunger for multi-track recording. ■

SOUND ADVICE

Spring Cleaning

by Ben W. Harris

At the time of this writing, my wife and I are in the midst of spring cleaning. With that in mind, I thought this might be a good time for our Mix readers to do a little spring cleaning as well. I realize it will be about mid-summer before you actually read this. However, belated as it may be, I feel it is still timely. We will be discussing a few odds and ends very useful in themselves, yet not worthy of an entire article on their own.

TAPE MACHINE ALIGNMENT

There has been much ado about tape machine alignment in times past, yet there are still some loose ends we need to review. Probably the most criminal act I see time and time again is the condition of the reproduce alignment tapes used in most studios. (Drop-out, wrinkled edges, stretched section, you name it.) When that alignment tape begins to show drop-out sections, it is time to order a new tape. Also, just as a reminder, those tones other than 1kHz, 10kHz and 15kHz are actually on the tape for more reasons than to take up time on the reel. Use those tones as that boring voice tells you to! Your tape machine will align much easier and you will have a better idea of the machine's frequency response.

ADJUSTING BIAS

Bias levels have always been a bit confusing. Should you over bias by

3dB at 10kHz or 4dB? Is it accurate to bias both tape speeds at the same frequency? Well, most often the tape manufacturer's specifications are real close and plenty good enough, although, make sure that the specs given are for the same head gap as your machines. This is important.

Another approach is to use what I call 10Hz bias. This method works but is dangerous! First, you must feed at zero level a 10Hz tone to the tape machine. Then you should listen to the output of the tape as loud as possible through the control room monitors. (A 40Hz cut off on the monitor amps is advisable!) While recording the tone, adjust the bias and listen for the tape hiss and modulation noise. The bias is considered adjusted when the tape hiss and modulation noise are at a low ebb. You may now check your bias at 10kHz to use for future reference. Remember, this is a dangerous procedure. Your monitors could be blown or permanently damaged and/or fatigued.

Also, another approach is to use a distortion analyzer and adjust the bias for a minimum 3rd harmonic distortion content. This is an accurate method but a luxury not afforded most smaller facilities due to the high cost of the analyzer.

AZIMUTH ADJUSTING

Azimuth on tape machines is very critical, but here is an easy method for adjustment. With the reproduce tape, play 2 channels into the console and

reverse the phase of one channel. Assign both channels to one output buss and adjust the azimuth until the meter nulls out completely. Play successive higher tones from the repro tape until the 15 or 16kHz tone is nulled out on the meters. When the reproduce has been adjusted, the record circuit can be adjusted in the same manner, recording a 16kHz tone and monitoring the reproduce.

MICROPHONE POLARITY

Another good job to do during slow, lazy days is check microphone and direct box polarities. Most microphones of late are wired pin 2 high, pin 3 low and pin 1 shield. However, there are a few around still wired pin 3 high. At any rate, all your microphones should be wired the same.

An easy check is to set up an oscillator in the studio feeding into a guitar amplifier. Set one microphone about six inches in front of the amp and consider this mike to be your standard. Adjust the generator for a 1kHz output and assign the microphone to two buss meters. Bring in all your microphones and bring up each microphone on the console one at a time, assigning each microphone to one of the busses assigned to the "reference" mike and also to one other buss. (Be careful to set the microphone to be checked in the same 6" plane as the reference.) The two isolated meters should read approximately -10dB while the buss meter common to both microphones should

add as the level is matched between the two. If the meter nulls, the microphones are 180 degrees out of polarity. Check all of your microphones in this way as well as all of your mike cables. All of the microphones should add rather than null when combined to one buss. Your direct boxes can be checked with high Z single ended microphones, if available, in the same manner.

LINE LEVEL POLARITY

Line level polarity is also very important and sometimes confusing. The problem lies with the manufacturers because some use pin 3 high and some use pin 2 high. If, in the inner sanctums of your equipment manuals, you cannot find the polarity as wired, there are methods for determining whether everything is returning in an in-phase manner.

Placing a diode in series with one leg of a balanced line will clip one side of a sine wave. All you now have to do is check this clipped sine wave at all points through the audio chain. When viewing this on an oscilloscope, the clipped portion should stay on the same side of the scope all the way through the signal chain.

Another procedure is to feed a square wave through all points in the audio chain making sure the wave form remains consistent on the scope at all inputs and outputs. Either of these methods will tell the tale.

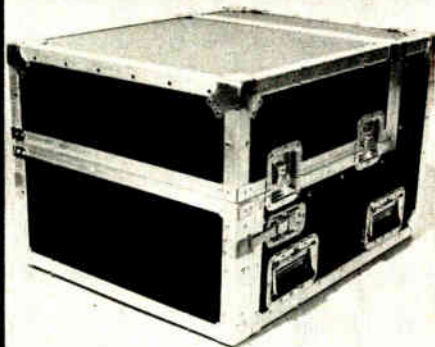
However, tape machine phase is a different matter. It is possible for a tape channel to return in phase with its input and still be "printing" the tape out of phase with every other tape machine in your studio.

An easy check is to record on tape the diode clipped sine wave and then to play that tape on another tape machine of similar head format. The diode clip should appear on the same side of the scope. If it has reversed, one of the two tape decks is printing out of phase. At this point, one must start calling manufacturers, or, if you are really adept at reading circuit diagrams, you may dig into those for the answers.

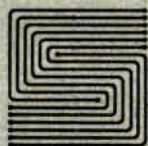
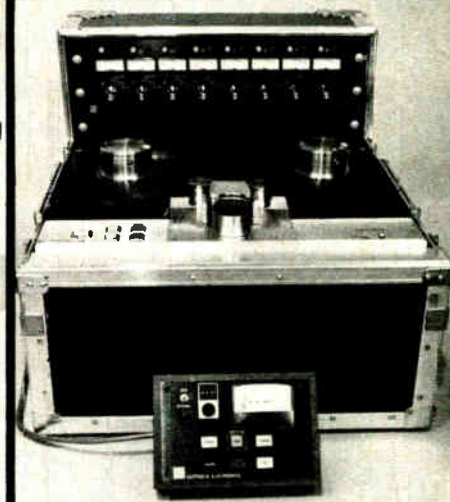
This may all sound too involved and not worth the trouble, but I assure you, it is. To prove this point, take a couple of patch cables and reverse the polarities of the cables at one end. Insert these in the patch points between your console and the control room monitor amplifiers. All you do now is A-B the in-phase/out-of-phase sound on a source that you are familiar with. Enough said, the test will be my witness.

At any rate, the spring cleaning could answer questions you have had for years. If these are things you do as a regular maintenance program, you can pat yourself on the back and say, "That's nothing new, we've been doing that for years."

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STUDIOSCOPE

by Chris Haseleu and Dennis Buss

With production budgets tight, operating costs up, and competition fierce, the studio manager/owner must make the best possible use of resources and opportunities. This may mean offering services not usually connected with studio operations, or making money from areas not usually considered profit centers. A careful and thorough examination of available resources and market demand may suggest a number of ways to better serve studio clients.

When considering resources be sure to include available space, studio

location, studio workload, personnel workload, personnel talent, available equipment, and, of course, financial backing. When looking at the market demand, look at type of clients, strength of local music industry, the competition and the demand for your special service. Try to apply the studio's resources to areas outside of the normal studio operation, and consider services either not available or with limited and, perhaps, high priced availability.

For instance, the studio has a regular clientele and/or is involved in long term projects, the accounting staff may provide additional and valuable services. With small production budgets, the careful producer and his record company would appreciate a daily expense accounting, or a breakdown of the cost of a day's service. It would also show the total cost on a given project and what is owed to the studio on all projects. It might even list future bookings with an estimated cost. Such a daily accounting would not only help the producer but would keep the studio manager up to date on the cash flow.

Daily accounting is not too difficult if the engineers keep accurate records and if the studio uses one of the many small business computers. (See May Studioscope.)

There are other areas of paper work that the studio might offer to handle for the regular client. While the producer is responsible for paying session musicians, the studio may take care of the paper work involved. The cost of studio musicians would be another item that could be included on a daily expense report.

If space and workload permit, a more permanent business relationship between clients and the studio may be

order to fully protect a song, the copyright should be registered with the U.S. Government. If a songwriter does not have a publisher to do this, the studio might do the job for him so the writer can pitch his song to publishers or producers without fear of being ripped off. Taking care of copyright registration is also a first step in developing a publishing company.

An area not usually considered a profit center is studio maintenance. Here a substantial amount of capital is invested in test equipment. This test equipment and the talent of your maintenance engineers might be offered to other users of professional audio gear.

Serving Your Clients

developed. For example, an office and the services of a receptionist and/or secretary might be offered to a producer in exchange for a long term backing commitment. If the studio has a promoter, their services might be offered to both producers and artists. A good P.R. specialist can give an artist a needed boost. And there is nothing like the business of a successful artist to help at the studio.

Another type of paper work that a studio might get into is copyright registration. If a lot of songwriters use the studio for demo production, there is a ready market for this service. A copyright is created as soon as a work is fixed (written or recorded). But, in

It might even be possible to work as a manufacturer's service center. A step beyond this is to become a manufacturer. Many studios build and market small audio products such as cables, direct boxes, headphone systems, timers, etc. Naturally it is important that the necessary time, space, and money be available before embarking on this type of service.

If the studio is effectively marketing its services, consider expanding into equipment sales. Many of the smaller equipment manufacturers need the services of local sales representatives. If effectively pursued, this area can be very rewarding.

Equipment rental can also be rewarding. This can be done in a very limited way, by making available that equipment not in constant studio use. Or it may be advantageous to develop a full blown rental business.

These are many more ways to expand studio services and make money where money was not made before. The challenge can lead to fun and profit. ■

Correction: In April's Studioscope we stated "there are no females on staff at any major Nashville studio." We are glad to correct that statement. Ms. Sarah Stine, Publicity Manager for the Sound Emporium informs us that Ms. Cathy Potts had been working as an assistant there since August.



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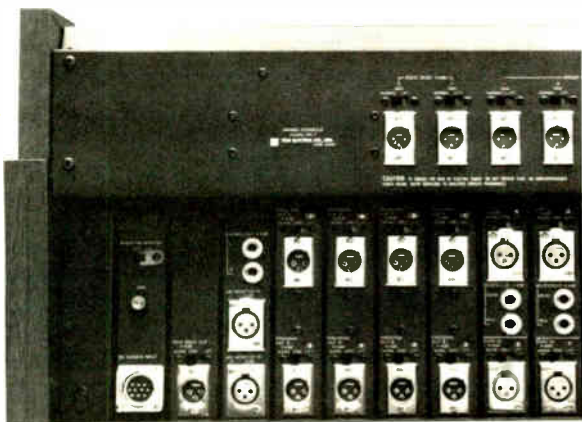
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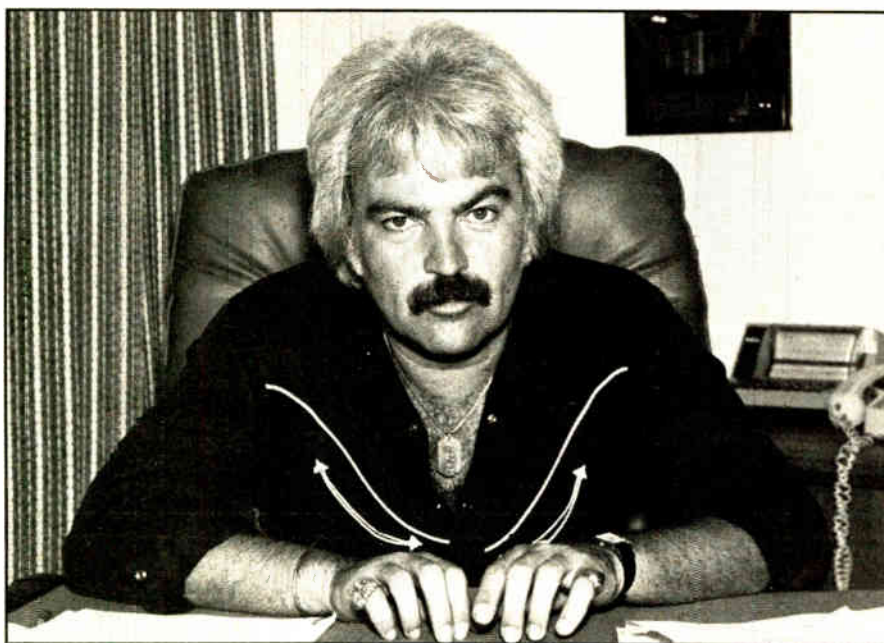


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PRODUCERS DESK



=GEORGE TOBIN=

by James Riordan

George Tobin is one of the hottest producers in the business right now with a good string of hits including the Smokey Robinson smash "Being With You," one of this year's biggest records.

"I got into this business when I was fifteen, so that was 23 years ago. I was always in a band, making demos, writing songs. In the sixties I finally got lucky and had a couple of hits. I wrote and produced a bubble-gum record called "Cinnamon" for an artist named Derek. After that I had a lot of small label regional hits because, in the Sixties, you could sell a whole lot of records just in New York, Philadelphia, Baltimore, or Washington and you never cared too much about getting airplay anywhere else. That was a lot of fun. You'd go into the studio and make a record and four days later you actually had a piece of vinyl in your hands. I'd press up a lot of records and sell them to one stop."

After this period Tobin got into building studios and stopped producing records for about five years. "I came back in about two years ago and had a number one record with Robert

John ("Sad Eyes") and then I did a couple of albums with him. After that I did Kim Carnes ("More Love"), Smokey Robinson, Thelma Houston, and now I'm finishing an album for Natalie Cole."

The way in which Tobin began producing Smokey Robinson is a classical example of the free form style that an independent producer should be open to. "I called Smokey up to see my studio (Studio Sound Recorders in North Hollywood) and I had just recorded one of his songs, "More Love" with Kim Carnes. He liked the record a lot and played me a song for another artist. I told him that I thought it would make a really good song for him to record and we wound up cutting it ("Being With You") that same night. We both liked it so well that we proceeded to do an album. It was a very spontaneous and mutually exciting thing. Smokey is enormously talented and he's a very nice person as well."

Independent producers don't have the security of a staff position at a record label but they still have to deal with pleasing those people. More than that, they have to have a sort of sixth sense about what is going to work on

every level. Tobin elaborates. "The key to survival is to figure out what people are going to want. I don't necessarily mean the public. You can satisfy the public, but be four years too early. The people you have to satisfy initially are the record company people because if they don't make a deal with you nothing else will happen. If I've just made a record and I play it for five or six key program directors and I can't spark any light from any of them on it, I'll probably go to another song. Generally, I'll record a whole bunch of things on an artist and play them for people in radio that I respect. I would rather trust them because I may have lost some of my objectivity.

As a record producer by the time I get done with a song I may have heard it five hundred times. You get shell shocked. I rarely do an act that I have not sold to a record company because I record a lot of stuff and spend a lot of time and money with the act. I have the luxury of doing that and you get better product that way. I don't remember when I haven't gotten a deal on an act. I may not get it with the song I originally walked in with, but I'll get the deal because I listen to what people say and I've got the opportunity to keep going."

Tobin's frustrations at pleasing the record companies and dealing with their endless amount of red tape has led him to seriously work on forming his own label. This, of course would eliminate some of the problems he faces as an independent in dealing with artists as well. "As an independent producer you face a lot of things that people don't think you face. You see an act that you like and they get defensive because someone is showing an interest even though that's what they've supposedly been working for. You tell them you want to sign them, so they go find an attorney. But the only attorneys who will see them are ones who need the money. So the attorney figures he might be able to get a better deal and get something from the group for it. Now, there is not a music course in law and the group doesn't know who to believe, but they think they're supposed to believe their attorney and they may wind up signing away their publishing or something. Attorneys should stay attorneys and music people should stay music people."

Tobin stresses that he is always looking for new talent and invites acts to submit tapes to him. "I'm perfectly open

to new talent because if I don't find new talent I won't survive. I prefer a singer/songwriter to a group but I'll always take somebody with a great vocal. I'm always looking for acts and if the record companies don't do that they're silly. People grow up with a myth about this business. They've heard a lot of horror stories and they get real funny about things like publishing. One out of three entertainers hasn't got the slightest idea what giving away the publishing really means. They believe that if they give up their publishing they don't get any money. In one sense they're sophisticated because they're well read, but they don't really understand what they've read."

Tobin believes very strongly that one of the keys to a successful recording project is a good relationship between the artist and producer. "The artist and producer have to work together and believe in each other. The producer has to believe in the act to go to the wall for them, and if he goes the whole distance the artist should believe in him enough to let him do what he thinks is right."

Because he is so open to new artists Tobin receives a tremendous amount of material. "It's hard to listen to so much material. Some of it is really poor and you get publishers who play you songs that have no redeeming value whatsoever. No title, no story content, but worst of all no melody and they send you reams of the stuff. I couldn't listen to all of the tapes that come in and still make records so I have someone do that for me. I feel I have good people listening to tapes for me but, like the record companies, the problem is that the people listening to most of the material don't have the option to say yes. I'm pretty selective about acts that I can physically produce. Like when I'm working with someone like Thelma Houston, I wouldn't produce another girl who sounded like Thelma or who could do the same material. If I turn someone like that down it doesn't mean that the person doesn't have any talent."

Tobin admits that he loves the music business but warns that it is not an easy one. "The rewards of this business are incredible. The financial and ego-gratifying awards make it a great business to be in. There are some very nice people in it and it's a fun business, but don't delude yourself. This is a business that doesn't usually award being just "good." The competition is fierce and you have to have the ability to stay in there. It might take years for you to happen. Years of being turned down, of negatives, and of no money. If you really think you can survive all that and without a doubt know you have the talent, then try it! If you're missing any of those things don't give up your day gig."

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DAVID GATES

MAKING BREAD AT HOME



David with Clive Davis, President of Arista Records (left).

by David Goggin

David Gates has been actively recording since the early 60's. Following high school, he journeyed to Los Angeles with fellow Oklahoman Leon Russell and formed a little demo group that included Glen Campbell. From successful demo work as a bass and rhythm guitar player he progressed to serious session work and arranging. As a songwriter/producer, one of his early hits was "Popsicles, Icicles" by the Mermaids. Encouraged by friends to sing his own songs, he founded the group Bread in 1969 and "Make It With You" became the first of many gold records. In 1977, he wrote and sang "Goodbye Girl" from the Neil Simon movie of the same name.

In the late '70's, David built a house on the outskirts of Los Angeles and left space for a future studio. Two factors nudged him into building the recording studio sooner than he had planned. First of all, his record company at the time, Elektra, dismantled the studio he had been recording in. Secondly, the city planning department informed him that he had insufficient first floor footage in his home.

In 1980, David contracted Everything Audio, the Los Angeles-based studio design company. Under the guidance of company president Brian Cornfield, David Gates now has a very functional and attractive

recording studio in his home. With his first album for Arista nearly complete, he chatted in his control room about building his studio, engineering his own records, and the art/ recording interface:

I'm not under any time pressure here, and that's what I wanted. As for the studio design, I had formed some opinions over the years and when I conferred with Brian, he talked to me about this ear level monitor arrangement. I researched it and it seemed to make sense. After we completed the construction I did some demos here and spent days and days experimenting with different instruments and every mike I owned. I would hit a drum, play the piano, and find out what would work. I've been able to get a very good drum sound, good piano, good bass, acoustic guitar, and voice. So the things that are most important to me in making my type of records are working. I have found little spots in the studio that work best for different sounds.

IT MUST BE NICE TO FINALLY HAVE YOUR OWN WORKSHOP TO EXPERIMENT IN...

That's the thing. I can experiment on tape, whereas before, I was conscious of the clock running. If you're a responsible person, it's hard to goof off in a studio, because it will eventually cost you money.

WILL YOUR MUSIC CHANGE NOW THAT YOU HAVE YOUR OWN STUDIO?

I don't think that it's going to be radically different. I like the sound to be clean and present. Most of the time I do ballads and mid-tempo songs and it's important to hear things clearly. I've carried my particular sound from room to room, from my days at Armin Steiner's studio to recording at Elecktra, and now to this studio.

DO YOU DO YOUR OWN ENGINEERING?

I do most of it, but I do get outside help when I need it. The first big record that I ever had, "Make It With You", was begun with just acoustic guitar and drums...just Mike Botts and myself sitting there playing. Then we added the electric guitar and bass and voice. I will probably be able to do most of the engineering out here, except when I can't play and run the board at the same time.

WHAT INSTRUMENTS DO YOU PLAY ON THIS NEW ALBUM?

I play guitar, bass, and piano. For the really pretty solo guitar and piano work I got additional musicians.

HOW DO YOU PLAY PIANO AND ENGINEER AT THE SAME TIME?

First of all, I've experimented and found the right mikes and the right placement. My wife helps me set the recording levels, and I have a remote extension to the multi-track. I can take it anywhere in the studio and it has a foot switch so that I can punch in and out without using my hands.

DO YOU USE MUCH SIGNAL PROCESSING?

I've never relied much on gimmicks, but I do need good limiters and good echo. I have these two UREI 1176's

and these two dbx 161 limiters. The UREI's are excellent for bass and vocals, and the dbx's are excellent for guitars. I would really like to have one of these MXR phaser/flangers, but I haven't been able to find one. Maybe one of your readers will know where to get one. For echo I use the Lexicon 224. I'm pretty well covered, and if there's anything else I need there are good rental services around.

AS FAR AS AN EXPENDITURE AND AN INVESTMENT, HAS YOUR STUDIO BEEN A WISE MOVE?

You'll have to ask me in a couple of years, but I think it has been. It's a natural choice for an artist who is well established in the business and knows he's going to be recording for some time, particularly if he is a songwriter and plays more than one instrument. The big question is whether or not you're going to make masters or just demos. It seemed to me that going a little bit further and getting something you could make masters out of was worth it. My first intention was to get 70% of my recording done here...all of the hours and hours of agonizing overdubs. When I knew that could be done here, I decided to try some basic tracks and it worked fine. So, I'll probably end up doing 80-85% here and I'll go elsewhere for strings, for a live echo chamber, or anything else that I might need.

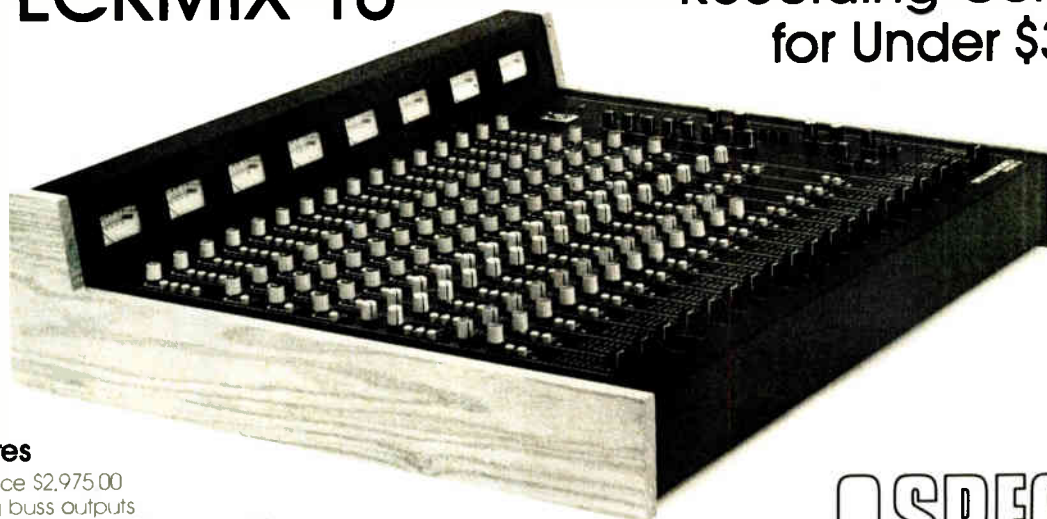
DO YOU PLAN ON PRODUCING OTHER ARTISTS HERE?

I don't at the present time because I am barely able to keep up with my own work. I write and play many of the instruments and engineer. It's a full time job just turning out my own albums. If I could only do one thing it would be songwriting. Everything else I do is trying to get the

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David Gates control room.

song on record in the way that it will be done right and be the most appreciated. You just want to keep control of the song, and I never had any major successes until I started singing my own songs. The singer/songwriter thing has been great for me... I'm glad somebody thought of it.

• • •

David Gates' studio is immaculate, very attractive, and also very versatile. Built into a relatively compact space, it is finished with stained cedar, mirror, and fabric with an oriental design. Soundproof, sliding glass doors provide flexibility for isolation areas and reflective surfaces. Innovative wall louvers provide infinitely variable reflective/trapping wall acoustics. Designer Brian Cornfield spoke of the specific requests that David made and the ways in which the studio was synthesized:

David's facility is the first one to incorporate a new type of trapping. We consulted with U.S. Gypsum and Owens-Corning and came up with an absorbing system that is broadband in the sense that it goes down to 100 cycles. Before this studio, we usually took anywhere from one foot to three feet to take care of active trapping for low band. What we had to do was find a way that you wouldn't get lots of reflection, but enough so that it didn't sound like you were in an unnatural, anechoic chamber. We proceeded to build wall traps that had a great deal of surface absorption. In David's control room we found that in less than five inches, including finish material, we effectively got what we wanted.

HOW DID YOU COME UP WITH THE SHUTTER DESIGN IN THE STUDIO?

One day I was sitting at my house going over some sketches of David's place and my drawing room has shutters. Shutters work very well for letting in variable amounts of light, so why not apply the same principle to acoustics. We had surrounded David's room with very effective surface trapping and we had certain areas figured out for various recording purposes. We took the shutter idea and built custom shutters over the walls, set them off the ground a bit to give a nice radius, and set a bronze mirror around the top of the room to give an illusion of height. The shutters are manually controlled and have three inch blades. When you open them up you see fabric behind that matches the wall panels. If you open them up the area is very absorptive, like you are in a closet full of coats and clothing. With the shutters closed you get a tremendous sonic difference. It's infinitely variable. You can also use any size louver, you can make

them out of wood and stain or paint them, you can make them out of mirror, and you can mount them vertically or horizontally. We have been able to take the customary "2 to 3 foot wall" down to half a foot. You've probably noticed that the rooms that we build do not look the same. We conform to the client's requirements as far as acoustics and appearance, and what is behind the finish is rigidly inflexible.

WHAT IS EXACTLY INSIDE THE WALLS?

It's a very common sandwich situation. It utilizes three basic properties: mass, diaphragmatic absorption, and surface absorption. It's based on active development and changes based on specific requirements. For instance, if a client has an adjacent room, the same wall structure would not work if he had a solitary installation. It's nothing esoteric... it uses sheet rock, wood, resilient channels, plywood, fiberglass, and cloth. How it is put together is the sum and substance of what we do for our clients.

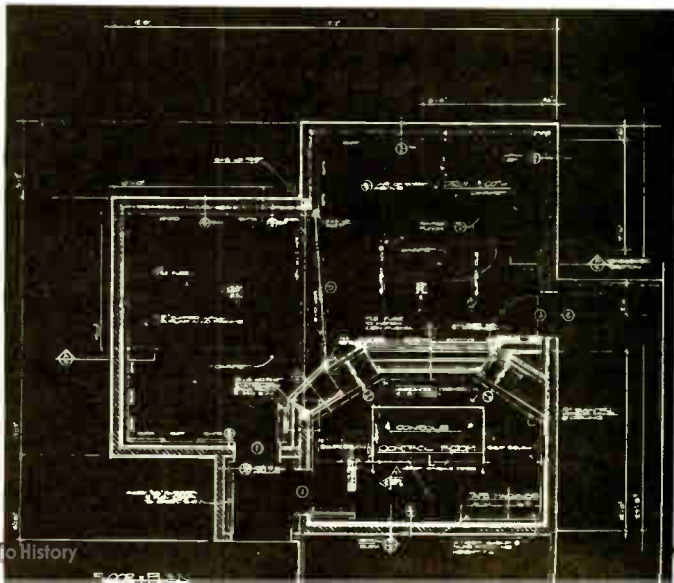
DID DAVID HAVE ANY UNUSUAL REQUESTS?

Everything was simply maximized for best use of the space we had to work with. The doorway is also a soundlock, and provides a voiceover room. The piano area can be completely closed off with the glass sound doors, or completely opened up, or anywhere in between. He asked that the studio be flexible, and that there be lots of storage space.

He also wanted panning to be extremely precise. If you listen to his work you'll see that the guitars are spaced all the way through the stereo spectrum from left to right. We use the glass to focus in all of our rooms and in his room you'll find that you cannot move a pan pot without seeing in your mind the instrument moving over. He wanted absolutely no overlap or muddying of the pan positions. We also provided a complete link-up so that he could record remotely in any portion of the room, in the locks, and in the various booths.

ARE YOU THE ONLY COMPANY THAT DESIGNS CONTROL ROOMS WITH EAR LEVEL MONITORING?

To my knowledge, we are the only professional studio design company that builds monitor systems at ear level. It is more natural and accurate. If you walk into a room where the speakers are at ear level, you stand a pretty good chance that it's an Everything Audio room. If you walk into a room and in addition you see that the console is enclosed in a dash which contains the equipment, and is trapped for acoustic reasons and is air conditioned for common sense reasons, you can be 99% sure that you are in one of our rooms. ■



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The totally unique VCA's at the heart of the Dual Limiter provide an exceptionally wide dynamic range with low levels of distortion. Continuous bass distortion is much lower in level than typical compressor-limiters, allowing more freedom in setting release characteristics.

The Dual Limiter is also a forgiving limiter. Attack and release characteristics dictated by the front panel controls are modified by program dynamics and compression requirements. The slope increases smoothly past the threshold point, allowing a *gradual* transition into compression. Varying the Dual Limiter's threshold region produces a variety of intermediate slopes with the primary slope being that chosen by the slope switch. These features permit apparent dynamics to be maintained even though the dynamic range is being controllably limited.

The Dual Limiter's remarkable versatility is based on the fact that it can be viewed as two independent mono limiters that can be patched together via front panel switches for stereo limiting applications. Each channel has an In/Out switch, Slope switch, Input, Output, Attack and Release controls and an LED display, showing the amount of gain reduction. On the rear are

both XLR and 1/4" phone jack (ring-tip-sleeve) input and output connectors. Each channel's detector is accessible via rear panel phone jacks to permit external tailoring of the detectors' frequency response. This feature allows for de-essing (reduction of vocal sibilance) and a wide variety of frequency dependent limiting needs.

Because virtually every form of musical signal was used to evaluate the Dual Limiter's response during the initial stages of development, its sophisticated internal circuitry enables it to sound musically *natural* — even at extreme compression settings.

Balanced inputs, the ability to drive 600 ohm loads, +19 dBm input and output and standard rack dimensions (1 3/4" high) allow the Dual Limiter to be easily integrated into any professional system. With an extremely rugged case, metal knobs and reliable internal construction, the new MXR Dual Limiter reflects the highest professional standards and has been fully designed and built in the U.S.A.

The Unlimited Limiter — MXR's natural response to the question of performance and versatility in a space-efficient and cost-effective package. See the MXR Dual Limiter at your nearest MXR dealer.

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TAPE COUNTER VS. REAL:TIME

Solutions to the Dilemma of How to Relate the Two.

by Richard R. Fink

If you've done any amount of recording you've probably noticed that the counter on your tape deck doesn't change its reading uniformly with respect to time. Conversely, ever 10 digits of counter reading are not always equivalent to the same span of time throughout a tape's length. The relationship between the two changes from one end of a tape to the other.

The plain truth is that the counter reading is related to revolutions of the takeup (or supply) reel in both cassette and open reel formats. The tape passes the heads at a uniform rate, which is length and time based. At the takeup reel though, this length is wrapped around the perimeter of a circle whose diameter is constantly changing as the layers of tape are building up about the hub of the reel. This condition brings pi (3.1416) into the picture, along with reel hup diameter, tape thickness, and lastly, counter digits per revolution of the takeup. It seems that none of these factors have the value of 1, or even cancel each other. So we're stuck with a complex situation which, fortunately, can be resolved.

One can learn (within seconds) from counter reading alone how much time has passed and how much time remains before the end of the tape is reached. In addition, given two counter readings, we can know the time span between them. Furthermore, given a counter reading and a time span we can know what the counter reading will be at the end of that span. Simply stated, we know where we are, where we've been, and where we're going, in both counter reading and time. None of this is done by guesswork. It's done by reading from a graph or keying a calculator.

The data for drawing the graph or entering into the calculator are obtained by logging counter readings and time for a cassette or open reel of tape, during PLAY mode. From a carefully drawn graph, time and counter reading can be read off to 10 seconds and 4 digits, respectively. The calculator, however gives exact answers and allows for complete, efficient monitoring of tape usage during a session. Usage is extremely important during recording because nothing is worse than running out of tape!

To get started you'll need a few supplies:

1. Pencil and paper

2. A stop watch with "lap" time capability. This means the hand can be stopped for taking a reading, and restarting causes the hand to jump ahead to the ongoing real time. Three-hand watches do this and so do most digitals. You want to read to at least 1/10 sec.

3. A cassette of your favorite length and brand. The author used a Maxell UD C90 in a Nakamichi 500 deck and took times with a Casio fx-8000 calculator/stopwatch. The procedure and math being used here will also work for open reel tapes.

Ready? O.K., let's take the data:

1. Wait until you won't be disturbed (2 o'clock in the morning?) because once you start rolling you should not stop till the end of the cassette or reel of tape. Don't even trust PAUSE because of possible backlash in the counter's dial drive train.

2. Prepare the data sheet, put on headings, mark down the counter dial increment as a reminder, mark down the times at which you'll take bench mark readings. These benchmark readings are useful if you use a calculator later. They are optional for drawing the graph.

3. Rewind the cassette, but finish it off by hand so as not to stretch the tape or leader.

4. Set the counter at zero—load the cassette—set the counter again—key PAUSE and PLAY.

5. Release PAUSE and start the stopwatch at the same time.

6. As each counter reading increment comes up centered in the window, stop the watch and record the time elapsed. (Note that the unit's dial of the counter is the one to have centered in the window. Going from 199 to 200, for instance, will be prolonged in time if you wait for the 2 and both 0's to be completely centered, because of backlash in between the individual's dials. Catch the 200 reading when the unit dial zero is centered.)

7. Restart the watch and continue until all CTR/TIME combinations are recorded.

8. The benchmark readings are time dependent and are taken as close to the time as possible, but always when the full unit's digit is centered in the window. Do not try to estimate a fraction of a dial reading.

9. Let the cassette PLAY through one side to

the very end of motion. The data can now be plotted or used for the calculator program.

Plotting The Graph

The data, once taken, should have the appearance of FIG. 1. It makes no difference in plotting the graph whether the CTR RDGs are along the x-axis or the y-axis. FIG. 2 is a plot of the data from FIG. 1, and has the CTR RDGs along the x-axis with a scale of $\frac{1}{10}$ inch for 10 digits of dial. Time is along the y-axis with a scale of $\frac{1}{10}$ inch for 1 minute. The original size of the graph was 8 $\frac{1}{2}$ " x 11" and a 1000 digit by 60 minute graph easily fits that size paper.

There are some options available in labeling the time axis; i.e., where to put zero time:

1. If zero time is at zero CTR RDG, the time at

MAXELL UD C90
NAKAMICHI 500 Cass. Deck
CTR INCREMENT 50
BENCH TIME 2, 10, 22, 36, 44 Minutes

CTR	TIME m-ss.ss
000	0-00.00
050	1-58.37 Bench
100	4-06.21
150	6-24.32
200	8-52.54
225	10-10.30 Bench
250	11-30.49
300	14-18.46
350	17-16.66
400	20-24.44
425	22-02.08 Bench
450	23-42.68
500	27-10.80
550	30-49.14
600	34-37.56
618	36-02.46 Bench
650	38-36.33
700	42-45.22
715	44-00.70 Bench
750	47-04.51
753+	47-23.92 END

FIG. 1 CTR/TIME DATA

the curve for any CTR RDG is the elapsed time since beginning-of-tape.

2. If zero time is at maximum CTR RDG, the time read off the curve is time remaining to end-of-tape.

3. If zero time is marked at both ends, for any CTR RDG you can read off elapsed and remaining time.

See FIG. 3 for a graph segment marked as described in 3 above. The time below the line is elapsed time, and above the line is remaining

CTR/TIME readings from FIG. 1, the values for K and H are 0.001194697 and 0.675032, respectively, and the math is shown in FIG. 6. Other combinations of benchmarks will yield other values of K and H, but the author found that the above pair at 10 and 36 minutes gave the least error throughout the length of the C90 cassette.

Earlier it was mentioned that benchmarks were time dependent. This is desirable because the CTR RDG will vary for different tape thicknesses or reel hub diameters. But a "best fit" is

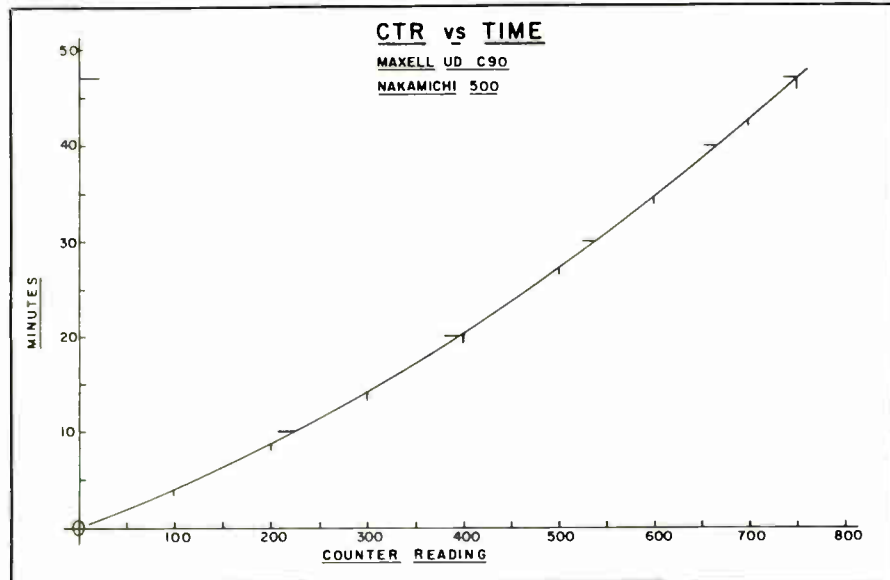


FIG. 2

time. This gets a little crowded but is very useful for monitoring progress.

At the beginning of the discussion it was mentioned that tape thickness and reel hub diameter are factors affecting CTR RDG; therefore, a graph is valid for one cassette of one tape type of one manufacturer, and played on one deck. If you have a variety of lengths and "flavors," you'll need a graph for each, and this is the rub you can eliminate with the calculator.

Mathematical Approach

For each or any cass/mfr/deck combination there is a mathematical relationship between CTR RDG and time. It is contained in the two equations given in FIG. 4. K and H are constants for the cass/mfr/deck combination. Their values are found by choosing one pair of benchmark

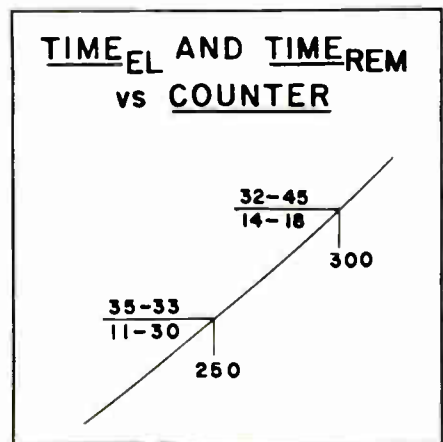


FIG. 3

TIME AND COUNTER EQUATIONS

$$\text{TIME: } T = \frac{2\pi \left[(C \times H) + \left(\frac{K}{2} + C^2 \right) \right]}{S}$$

$$\text{CTR: } C = \sqrt{\left(\frac{TS}{\pi} + \frac{H^2}{K} \right)} - \frac{H}{\sqrt{K}}$$

WHERE T = TIME IN DECIMAL MINUTES

C = COUNTER READING

S = TAPE SPEED IN INCHES PER MINUTE

H = A CONSTANT, see text

K = A CONSTANT, see text

FIG. 4.

needed for K and H; therefore, for all C90 cassettes choose benchmarks near 10 and 36 minutes. This rule also applies when you change from deck to deck. For other cassette lengths, choose benchmarks at about 22% and 80% of nominal (Cxx) PLAY time.

Using the data in FIG. 1, let's go through a set of calculations for Maxell UD C90 in the Nakamichi deck. Apply the benchmark rule and use CTR/TIME of 225/10-10.30 for C1 and T1 and 618/36-02.46 for C2 and T2. To convert minutes and seconds to decimal minutes, divide the seconds by 60 and add that quotient to the whole minutes. Thus:

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$$10m\ 10.30s = 10 + (10.30 + 60) = 10 + 17167 = 10.17167$$

The conversions are shown in FIG. 6 along with the solution to find K and H using the FIG. 5 equations.

These values for K and H may now be used in the equations for T and C in FIG. 4. As a test, let's select a CTR RDG of 100 and solve for T. See FIG. 7 (a). The answer of 4m 6.22s compares to the CTR/TIME data of 4m 6.21s to within 0.01 sec. With the value of C⁹⁰⁰, T works out to 42.7381 min. or 42m 44.29s, an error. The answer is: 0.93s over 42.7381m is 0.0367! Now look at your capstan speed variation spec, if they give it. You can ignore is error because the cassettes contain more than 50⁷ of the nominal time on each side, and if you say the C90 is going to be limited during your monitoring to 45

CONSTANTS -- K and H

$$K = \frac{1}{\pi \times C2} \left[\frac{S(T2 - T1)}{(C2 - C1)} - \frac{S \times T1}{C1} \right]$$

$$H = \frac{\frac{S \times T1}{2\pi} - \frac{K(C1)^2}{2}}{C1}$$

WHERE: -C1, T1 ARE CTR RDG AND
TIME, BENCHMARK 1
-C2, T2 SAME, BENCHMARK 2
-S=TAPE SPEED IN INCHES
PER MINUTE

NOTE: T=TIME IN DECIMAL MIN.

FIG. 5

MATH for K and H

C 90

BENCHMARK 10: C1 = 225, T1 = 10 - 10.30 = 10.17167

BENCHMARK 36: C2 = 618, T2 = 36 - 02.46 = 36.041

SPEED, S = 17 7/8 x 60 = 112.5

$$K = \frac{1}{618 \pi} \times \left[\frac{112.5 \times (36.041 - 10.17167)}{(618 - 225)} - \frac{112.5 \times 10.17167}{225} \right] = 0.001194697$$

$$H = \frac{\frac{112.5 \times 10.17167}{2 \pi} - \frac{0.001194697 \times 225 \times 225}{2}}{225} = 0.675032$$

FIG. 6

minutes per side, there is plenty of room in extra tape to absorb the error. The author uses 46.50 minutes for the length of the Maxell C90 on the Nakamichi.

To continue the test, select a value for T and solve for C. From FIG. 1 choose T⁵ 1m 58.37s and see FIG. 7 (b). The answer cranks out to 50.106. This is accurate compared to the data taken considering the relative difficulty in stopping the stopwatch when the counter dial is perfectly centered in the window. Next, take a time near the end of the tape, say 45m 45.22s, and solve for C. The answer is 700.2 for the CTR RDG, and for all practical purposes, it's right on.

Let's find the time between the two CTR RDGs. From FIG. 1 use C1 of 150, and C2 of 350. The time between them is the difference in time to each:

$$T \frac{350}{150} = T_{350} \text{ @ } T_{150}$$

The number crunching is shown in FIG. 7 (c). The time difference from FIG. 1 data (17.1666 minus 6.24.32) works out to 10m 52.34s and is only 0.24s less than the calculated difference.

Last of all, given a CTR RDG and a time span, we'll calculate the CTR RDG at the end of the time; i.e., if the counter reads 600 and we have a song of 7m 28s length to squeeze onto the tape, will we run out of tape? What's the end-of-the-song CTR RDG? Take these steps:

1. Calculate T for C=600
2. Add T + T_{song} to get T2

3. Calculate C for T2.

The steps are in FIG. 7 (d) and the answer is C2=692, which is a long way from the end of the tape. This completes the set of calculations and we're ready to explore an easier solution.

The Programmable Calculator

The above set of calculations can be done with a regular calculator, but they are very tedious. Note that you solved the TIME Equation four times and the CTR RDG Equation two times to do the full set. Granted, you don't have to do the full set each time, but any of them is lengthy. The length can't be cut, but the number of keystrokes can, when you use a programmable calculator. you feed it the program, then the data, and it will crank out answers over and over by just changing the input data. This becomes a powerful tool for use in monitoring a session, because the answers are available in literally one or two seconds.

There are quite a few programmables on the market today: Hewlett-Packard, Texas Instruments, Sharp, and Casio among them. The author chose the Casio fx502P with its FA-1 adapter. The advantage of this Casio is its large memory (256 steps), which can store all the equations. And once programmed, it won't lose memory even when shut off. Finally, the entire program can be stored on a cassette! yes, the FA-1 adapter allows you to "play" the calculator into the deck as a signal source and have the deck record the "music" of the program. Naturally, the cassette is stored right in the cassette library. What could be handier?

Armed with a programmable and note

FIG. 7 USE of K and H

(a) GIVEN C=100

$$T = \frac{2\pi \left[(100 \times .675032) + (.001194697 \div 2 \times 100 \times 100) \right]}{112.5} = 4.1037 = 4m\ 6.22s$$

(b) GIVEN T=1m 58.37s=1.97283

$$C = \frac{\sqrt{\left(\frac{1.97283 \times 112.5}{\pi} + \frac{.675032 \times .675032}{.001194697} \right)} - \frac{.675032}{\sqrt{.001194697}}}{\sqrt{.001194697}} = 50.106 = 50$$

(c) GIVEN C1=150, C2=350; FIND T BETWEEN.

$$T2 = \frac{2\pi \left[(350 \times .675032) + (.001194697 \div 2 \times 350 \times 350) \right]}{112.5} = 17.2822 \text{ min}$$

$$T1 = \frac{2\pi \left[(150 \times .675032) + (.001194697 \div 2 \times 150 \times 150) \right]}{112.5} = 6.4058 \text{ min}$$

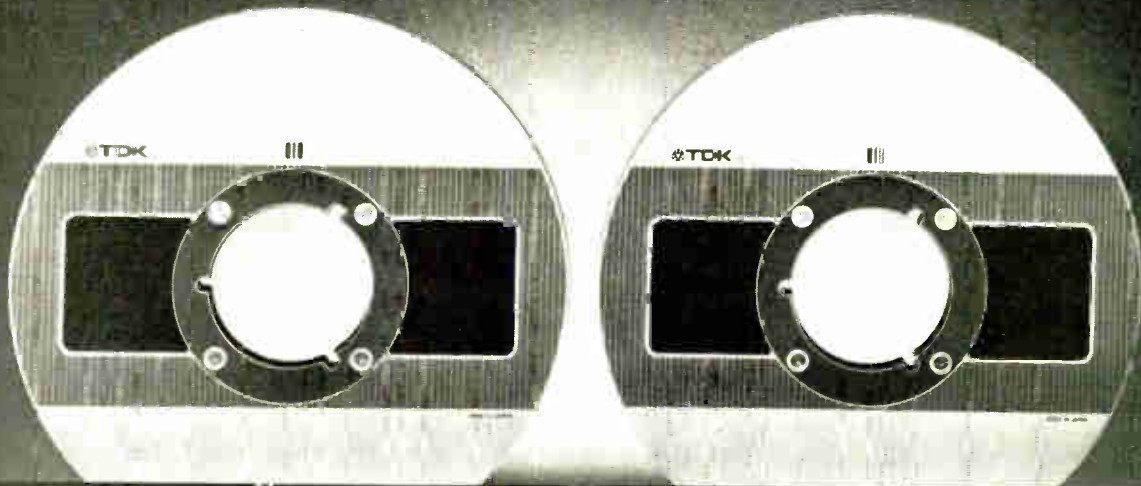
$$T_{\text{BETWEEN}} = 17.2822 - 6.4058 = 10.8764 = 10m\ 52.58s$$

(d) GIVEN C1=600, T=7m 28s; FIND C2

$$T1 = \frac{2\pi \left[(600 \times .675032) + (.001194697 \div 2 \times 600 \times 600) \right]}{112.5} = 34.6309$$

$$T2 = T1 + 7m28s = 34.6309 + 7.4667 = 42.0976$$

$$C2 = \frac{\sqrt{\left(\frac{42.0976 \times 112.5}{\pi} + \frac{.675032 \times .675032}{.001194697} \right)} - \frac{.675032}{\sqrt{.001194697}}}{\sqrt{.001194697}} = 692.3 = 692$$



TDK brings two new standards to open reel.

Raising sound standards is nothing new to TDK. For years, TDK cassettes have set reference standards in metal and high bias. Now TDK announces two breakthroughs in open reel — GX and LX. Both are formulated to be fully compatible with your present system. You don't have to rebias to appreciate them.

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These high standards are carried through to the newly designed 10" metal and 7" plastic reels. Each has a separately molded hub and flange to ensure circularity and high strength. If you think open reel has gone as far as it can go, listen to the finest. TDK GX and LX. They could open up a whole new standard of recording excellence.



PROGRAM for the CASIO fx502P

PO 112.5 Min0 LBL 1 HLT x MRO = Min1
 HLT x MRO) - MR1 = Min3 HLT
 Min4 () 1 + pi + MR4) x ((MR3
 + (MR4 - MR2)) - (MR1 + MR2
)) Min5 HLT (((MR1 + 2 + pi)
 - (MR5 x MR2 INVx² + 2) +
 MR2) Min6 HLT AC GOT01

P1 HLT min. 6 LBL2 HLT Min7 GSB INV P9
 Nub, 7 UBV (dms) HLT (MR.6 + 6
) - MR. 7 = GSB INV P9 Min. 7
 INV (dms) HLT AC GOT02

P2 LBL3 HLT lmin7 GSB INV p9 Min. 8 MR7
 HLT Min 7 GSB INV P9 - MR.8 =
 INV (dms) HLT Ac GOT03

P3 LBL4 HLT Min7 GSB INB P9 Min. 7 MR7
 HLT + 60 = Min. 8 + MR.7 =
 Min. 9 GSB INB P8 GSB INB P7
 HLT AC GOT04

SUBROUTINES for the PROGRAM

P7 x 1 INB 10xMin 9 + .5 INB INT + MR9 =
 P8 ((((MR. 9 X 60 X MRO + pi) + (MR6
 INB x² + MR5)) INV) - (MR6 + (MR5
 INB))) - (MR5 INB))
 P9 ((2 x pi x (MR7 x MR6 + (MR5 + 2 x
 MR7 INB x²))) + MRO + 60)

NOTE: (dms) means the key.

paper, let's go directly to writing the program. First, take each of the four equations and write them in your machine's language. For the Casio fx502P they look like this:

For K: $(1 + \pi + C2) \times ((S(T2 - T1)) + (C2 - C1)) - (SxT + C1)$

For H: $((SxT1 + 2 + \pi) - (K + 2 \times C1 \times C1)) + C1$

For T: $((2 \times \pi \times ((C \times H) + (K \times C \times C + 2))) + S)$

For C: $((((T \times S \times \pi) + (H \times H + K))) - (H + K)) + K$

Next, put H and K together in a separate sub-program since both are needed for any subsequent solutions. FIG. 8 is the keystroke version of the entire program and PO is the sub-program for H and K.

The solutions for the T and C equations should be in sub-routines because they are used repetitively. In FIG. 8 they are P9 for T, and P8 for C. An additional sub-routine, P7, rounds off calculated values of C to 1 decimal place. The other sub-programs, P1, P2, P3, and P4 are used to find answers to specific questions or sets of conditions.

After entering data from your CTR/TIME chart (FIG. 1) and solving for H and K by sub-program PO, you are ready to branch out and find answers as follows:

P1 finds TIME from beginning-of-tape to a GIVEN CTR RDG.

P2 finds TIME between two GIVEN CTR RDGs.

P3 finds a CTR RDG at the end of a known TIME Span which began at a GIVEN CTR RDG.

P4 finds the CTR RDG at the end of a GIVEN TIME from beginning-of-tape.

In the first paragraph it was stated "that the counter on your deck doesn't change its reading uniformly with respect to time." This is quickly proven now with P2: CTR 005 to 006 takes 2.28s, while CTR 748 to 749 takes 5.26s, or 2 1/2 times as long. Conversely, 10 seconds of time starting at CTR 005 takes you to CTR 009.4, a change of 4.4 digits, while 10 sec. starting at CTR 748 only takes you to CTR 749.9 for a change of 1.9 digits. Finally, FIG. 9 is the USER INSTRUCTIONS for the program as run on the Casio fx502P.

DEDICATED PO

entK ent H ent Teot (decimal)

PO 112.5 Min0 HLT ↕ Min5 HLT ↕ Min6 HLT ↕ Min.6 HLT

Note: 112.5 = Cassette Tape Speed in Inches/Minute = 1-7/8 x 60

FIG. 8

FIG. 10

USER INSTRUCTIONS				
STEP	Do or Enter	KEY	DISPLAY	COMMENT
	Load Program			with P0, P1, P2, P3, P4, P7, P8, P9 Loaded
FIND K & H				
1	Initialize	PO	112.5	in./min. @ 1-7/8 ips
2	Ent T1	10(dms)10.30(dms)EXE	1144.3125	in. tape during T1
3	Ent C1	225 EXE	225.	
4	Ent T2	36(dms)2.46(dms)EXE	2910.3	in. tape during T2
5	Ent C2	618 EXE	1.194697444 ⁻⁰³	ANSWER Value of K
6	call H ans.	EXE	.675032052	ANSWER Value of H
7	reset	EXE	0.	GOTO Step 2 for more data entry
FIND TIME ELAPSED AND TIME REMAINING AT A GIVEN CTR RDG				
8	Initialize	P1	0.	
9	Ent Teot	47(dms)4.51(dms) EXE	47.07516666	Decimal min., recordable time
10	Ent Cx	100 EXE	0° 4' 6.22	ANSWER time elapsed to CTR RDG100
11	call Trem	EXE	0° 42' 58.29	ANSWER recordable time remaining
12	reset	EXE	0.	GOTO Step 10 for more data entry
FIND TIME BETWEEN TWO COUNTER READINGS				
13	Initialize	P2	0.	
14	Ent C1	150 EXE	150.	
15	Ent C2	350 EXE	0° 10' 52.58	ANSWER Time from C150 to C350
16	reset	EXE	0.	GOTO Step 14 for more data entry
FIND NEW CTR RDG FROM PRESENT PLUS A GIVEN TIME				
17	Initialize	P3	0.	
18	Ent C1	600 EXE	600.	
19	Ent Tg	7(dms)28(dms) EXE	692.4	ANSWER CTR RDG @ End of Given Time
20	reset	EXE	0.	GOTO Step 18 for more data entry
FIND CTR RDG CORRESPONDING TO A GIVEN TIME FROM B.O.T.				
21	Initialize	P4	0.	
22	Ent Tg	8(dms)52.54(dms) EXE	200.	ANSWER CTR RDG from B.O.T.
23	reset	EXE	0.	GOTO Step 22 for more data entry
ABBREVIATIONS USED ABOVE				
B.O.T. = Beginning-of-tape				
CTR = Counter				
(dms) = the <input type="text"/> key				
Ent = Enter (data)				
eot = End-of-tape				
RDG = Reading				
rem = remaining				

FIG. 9

There are many variations of this basic program and one of the most useful is to make PO the sub-program for entering known (previously determined) values of H, K and Teot (Time-to-end-of-tape) directly into M5, M6, and M6. See FIG. 10. The other sub-programs are then dedicated to PO's input and you're all set to completely monitor one CASS/MFR/DECK combination.

Other variations will suggest themselves or are available from the author.

Conclusion

With the advent of sophisticated cassette and open reel decks, and costly tape, it is to a recordist's advantage to obtain data of CTR RDG versus TIME, and be able to employ it for monitoring a recording session. In this way he'll know where he is, has been, and is going in both CTR RDG and TIME.

While a graph of CTR/TIME data can show a few answers, it's an easy matter to advance the concept and employ a calculator. We have seen how to take data and plot the required graph. In addition, the mathematical approach has been explored through equations which are solved with a calculator. The calculator gives exact answers, and for continual update of the answers during a session, the programmable calculator does the repetitive work and displays the update after a few easy keystrokes and a matter of two or less seconds. We've also covered the setting up of a program along with suggestions for customizing it.

In the final analysis, you'll find it's actually delightful to be able to monitor recording progress. The graphical or mathematical approach will help you get the most out of your equipment and the time you devote to operating it. ■

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Video Marke

by Mia Amato

The video industry has never lacked for optimists, doomsayers, prognosticators, or trendseekers, and the promise of a new art form—video music—has generated some important questions for those in the recording business: Where are the markets for video music? How much money can reasonably be made? And where, in this budding industry, does the recording studio fit in?

Videocassettes

Movies continue to dominate the home video market. The major videocassette "labels" such as Magnetic, Warner (WCI), Home Theatre and Video Tape Network, have each released music product. But sales of musical programs have yet to attain the volume of movie hits like "Nine to Five" or even that of the box-office bomb, "Caddyshack."

"People forget how small this market really is," said Cheryl Benton of the Video Station, a chain of over 300 videocassette retailers. "We're only talking about one percent of the population."

Benton said the Kinks' Warner release, "One For the Road," typifies the retailer's experience with music cassettes. "Our store in Westwood, an L.A. suburb, sold out in a week," she noted. "But the guys in Wichita, Kansas, can't get it off the shelf. People don't know what it is."

Mainstream acts like Streisand, Sinatra and Minelli sell well, bearing out the statistical profile on an "older" VCR owner. Benton claims a VCR youth market, composed largely of the sons and daughters of well-to-do VCR owners, is a mirage. "People will buy Disney tapes for their children or grandchildren," she said, "but these days nobody is going to drop \$40 so their kid can watch Devo."

The tiny, specialized audience for

home video music is being reached, however, by Improvising Artists. This small New York jazz record label began marketing jazz videocassettes in late 1979. The programs are live concert and studio footage mixed with video synthesizer art; the shifting colors and abstract patterns of the video reflect the complexity or contemplative mood of the music. The tapes are produced by



Carol Goss, a painter and former filmmaker, and feature such musicians as Lee Konitz and Sun Ra.

Goss also oversees duplication and distribution, even shrink-wrapping. She says "a few thousand" cassettes were sold last year through Home Theatre and a brisk mail-order business.

"We've just redesigned a full color packaging for our cassettes," she added. "We've found that people need to have some kind of graphic impression of the contents before they buy."

A new wave music cassette, called "Live At Target," is a joint venture of

Subterranean Records and Target Video, both of San Francisco. It sells for \$39.95 and is being marketed mail order, through ads in *New York Rocker* and other music publications.

The video is an hour of performance by four bands signed to the Subterranean Label and was released simultaneously with a soundtrack album. "The tape has essentially the same audio as the record because the two were mixed live at the same time," explained producer Joe Rees.

Rees is a video artist whose documentary tapes on the West Coast music scene have been widely shown internationally. This videocassette is his loss leader, Target's bid for the future. "At \$50 we're practically giving the tape away."

The organization, Target, keeps afloat by renting out its two state-of-the-art video cameras. Camera rental was traded for video editing time which kept the cost of this production, Rees said, at "about \$5,000."

Videodisks

Videodisk companies have long claimed receptivity to music-related programs—with reservations. Perhaps as a result of RCA Selectavision's much-publicized falling out with Todd Rundgren, the company is shying away from financing original disks. "Our strategy now will be to acquire the best possible programming," said programming chief Seth Willenson. In the optical disk camp, Barry Sherick of Pioneer Artists said last fall that his company would be "putting emphasis on music" in original laserdisks for the stereo Pioneer and Magnavox players.

A third disk format, VHD, exists but remains in the wings for a debut in 1982. But for all disk formats, the future remains clouded. Akai and other manufacturers are experimenting with stereo videocassettes in an effort to keep video fans faithful to their VCRs. High-speed duplication promises to lower the cost

ting Update

of videocassettes, while both disk formats remain plagued with high return rates due to faulty pressing.

For the would-be videodisk producer, the most damning factor is the numbers. Even the most optimistic experts don't expect disk sales to reach 800,000 units this year. By contrast, the sales of pre-recorded videocassettes are expected to exceed eight million.

The anticipated small audience means small bucks for program suppliers. Leon Russell spent a year completing his concert disk for Pioneer Artists, with much care lavished on the stereo audio. Yet the optical disk rights were acquired by Pioneer for less than \$50,000.

"It's not the money, it's getting established in the videodisk field," emphasized Tom Kemp, chief engineer for Russell's laserdisk project. "It's ridiculous to think anyone's going to recoup their expenses producing a videodisk." Kemp also said the Pioneer deal was nonexclusive, with potential other outlets for the program in cassette, cable or pay-tv.

Cable & Pay Television

Cable television remains an open field for independents, but it is yet to be a lucrative one.

"If someone comes to me and says they can't produce a program for less than \$500,000, I say 'Fine, sit this one out.'"

The comments of Kay Koplovitz, president of USA Network's satellite programming service, mirror the cable networks as a whole. Many broadcast and film talents have kept away in the face of the cable industry's continued disagreements with the writers' and directors' guilds. What has occurred is underbidding and undercutting among independents trying to break into the cable market. "A typical half-hour program is going for \$20,000," complained one New York producer. "What's happening is a price war."

The current climate is conducive to acquisition but not to co-production. A good example is "Night Flight" a late-night entertainment series assembled

by ATI Equities for USA Network. The first season is composed mainly of old rock movies: "Rust Never Sleeps," "Quadraphenia," and the decade-old "Volunteer Jam."

Premium pay channels like HBO and Showtime lean to Vegas-type acts and concert specials produced inexpensively in-house. According to Home Box Office program boss Iris Dugow, the key to pay television is "tune-in value" across a wide and diverse audience. Good draws on the pay channels have been Barry Manilow, Diana Ross, and country music specials; HBO, Showtime and On-TV are now experimenting with simulcasts.

Chrysalis Records is one of several companies set up to license programs directly to individual cable systems. Chrysalis exec Linda Carhart said the company is interested in screening "high quality" works for distribution but said that original shows will be produced in England, if at all. "Initially we are offering Blondie's "Eat to the Beat," a Jethro Tull Concert, and two films with



Jethro Tull 'Slipstream'
video offered by
Chrysalis Records.



Video Services

Thinking about equipping an audio studio for video production?

"Give yourself twice as much time and three times as much money as you think you're going to need," advised Chris Stone of the Los Angeles Record Plant. Speaking on a panel at last fall's Billboard Video-Music Conference, Stone said his video operation has been marred by pressure from the television unions. Record Plant is now an I.A.T.S.E. signatory.

Leon Russell's Paradise Audio/Video, a state-of-the-art production and mixing studio on wheels, is a million-dollar investment that has yielded mixed results. Aside from work on the laserdisk project, studio manager Tom Kemp said the company has produced promos for James Taylor and a few other artists, but the van is no longer seeking outside work. "We've found there's not that much money in it." Instead, Kemp explained, the company will continue to work on more long-term projects. Other Paradise personnel deny persistent rumours that the video van is up for sale. Admits Kemp, "There's just been some shuffling around of people and equipment."

In New York, Regent Sound Studios has also made a substantial investment in video equipment—but not for production.

"One of the reasons we haven't gone into video, even though we have the equipment, is that we are basically audio people, audio experts," explained chief engineer Bill Marino. "The other reason is that a lot of our top clients are video houses."

A full service audio studio, Regent provides a specific service to the video industry—audio sweetening. Marino says the new interest in video music seems "made to order" for the company.

"Television people are showing more interest in quality audio," he commented. "It used to be, 'Oh, they won't hear much through a three-inch speaker.' Now people come in to mix down to mono for television, but they will request a quality stereo, in case they do a simulcast or sell the program to videodisk."

British Reggae and ska bands," she said.

The acceptance of promotional clips as filler on cable channels has spawned numerous cable programs based on material supplied by the record companies. These range from early experiments in satellite distribution like Video Concert Hall and Pop Clips (both now defunct) to low-budget local access successes like New Wave Theatre in Los Angeles and Video Radio in Teaneck, New Jersey. Now the genre has been legitimized by Warner's entry, a 24-hour satellite promo feed. Called MTV (for Music Television) the advertiser-supported cable channel owes its striking resemblance to Top-40 AM format to program director Bob Pittman, formerly with WABC radio. There will be eight commercials per hour; only one out of every ten video promos played will be that of a new artist or band. The tight "playlist" hardly makes it the mecca for innovative video music, but its existence is expected to further expand the video promo market.

Music Promos & Demos

According to Jeff Ayeroff, creative services VP at A&M Records, promotional videotapes are now as important to a signed band's contract as "a billboard on Sunset Strip." But to both signed and unsigned bands alike, promos are not art but sales tapes.

Explained promo producer Dany Walker, "If a band sends a video demo to a record company, somebody will watch it. If you just send an audio demo, it may sit on a shelf."

Walkers' production company in San Francisco, Mobile Video, is one of

many catering to the music business. Walker has produced video promos for groups like Blue Oyster Cult and Das Block, and supplied video material for the Bay Area Music "Bammy Awards."

Another such producer is Ed Steinberg, owner of Soft Focus Productions in New York, whose recent work includes demos for the bands Bush Tetras and Our Daughter's Wedding.

"The important thing to remember about creating a record promo," said Steinberg, "is that you're not selling the video, you're selling the record." That's why most promos use lip-synched audio, he said, adding, "that doesn't mean it can't be creative."

To help reach the record buying audience, Steinberg created "Rockamerica," a service that provides video tapes to clubs on a rotating basis. Over 35 video-equipped venues around the country are receiving "Rockamerica" tapes. The programs are also used by record stores.

"Wax Trax in Chicago has five monitors in its store, going all the time," reports Steinberg. "In New York, Rock Your Head Off has monitors and sells ice cream. People eat the ice cream and watch the video, and then buy records."

The going rate for video promos and demos varies from \$1,000 to \$10,000 per song, depending on the status of the band and that of the video producer. Steinberg and Walker have their own video gear, and rent other equipment as needed to keep overhead down. The best known promo producers, The London-based Dave Mallet and Paul Flattery of Gowers, Field and Flattery in Los Angeles, own no production equipment at all.



Home Box Office is a frequent client. "They have their own video studio, but they do their audio here," said Marino. His most recent project was a final mix of a video program by the Grateful Dead. Regent's video equipment includes several synchronisers, a small editing setup, one-inch format videotape recorders and a "dialogue replacement module." A small company, making a limited investment in a synchroniser and ¾-inch

recorder, could easily do pre- and post-scoring video work, Marino said.

Location production is the basis for a long-standing relationship between the New York Record Plant and Reeves Teletape, the city's largest video company.

"It's a logical extension that a company with a large video mobile unit would team up with a company with a large mobile audio facility," said Joe Di-Buono of Reeves.

Some of the programs the two companies have worked on together are "Elton John in Central Park" for Mike Mansfield Productions, a Beach Boys concert for Home Box Office, and the taping of an off-broadway musical, "It Had To Be You," also for cable.

Sometimes the two firms bid separately for jobs; sometimes Reeves hires the Record Plant truck to create a package deal for its clients. Says mobile video manager Bob Moscone, "We've had such great luck with Record Plant, whenever we get any job needing multi-track recording, we just automatically recommend them."

In the new video music business, opportunities abound but a bottom-line profit remains hard to come by. Audio recording studios may choose to compete in this market by purchasing video equipment, hiring new personnel, and dedicating time to video projects. Another, perhaps better, alternative is to position the audio studio as a collaborator, not a competitor. In all the noise about music video one clear signal seems to favor adaptive use of existing resources among both audio and video companies. ■

Mia Amato has worked as associate editor for Videography Magazine.

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Other Side of the Tracks

Just the Way I am

by Mr. Bonzai

I sat in the reception area of Ryan Recording with my chin in my hands, wondering what our next client would look like. We were booked to do an album with Joel DiZiro, a hard working lounge singer from Lake Tahoe. We hadn't met in person yet, but his telephone conversation had been peppered with a multitude of "Beautiful, baby!" exclamations. Joel was very excited about recording his new album, "Just The Way I Am," which he planned to distribute personally during his six-nights-a-week stand at La Bamba Lounge. He had been playing there for the last eight years and felt the time had come to expand his career.

A rented Fairmont screeched into the parking lot and pulled to an abrupt stop. A guy with "just a skosh more" around the midriff got out of the car and athletically slammed the door. He was slightly balding, but had masked his scalp with a generous squirt of "Top Cover" hairspray. He wore three gold chains on which hung a diamond-studded crucifix, a star of David, and a yin-yang. Spandex designer jeans and a \$200 cashmere V-neck completed the image. I had a feeling this was Joel.

He breezed into the lobby just as Layla, our receptionist, was about to light a cigarette. He snapped the lighter out of her hands with macho bravado and introduced himself.

"Hi there, beautiful, the name's Joel... DiZiro."

"What disco did you just graduate from?" asked Layla.

"I come from Milano via Lake Tahoe," he informed her.

"Well, you're obviously a man of the world."

"Yes, I was born in Italy," he said. "But my ancestors come from Greece, Leningrad, and Fresno."

"Doesn't that get confusing?" Layla quizzed.

Joel paused dramatically before lighting Layla's cigarette. He put his

arm around her and whispered loudly, "Not when it comes to making love..." He chuckled self-assuredly and looked at the rest of us for a confirmation of his suavity.

Layla rolled her eyes up and sat down at the typewriter to peck away at our second billings.

"Hi, Joel, I'm Mr. Bonzai." I approached him delicately. "I bet you'd like to get right into the studio and get to work..."

"What's the rush? We have a whole week to do the album, don't we?" He grinned broadly.

"Well, it always takes a little longer than you plan. We're ready to roll if you are." I reached out to shake hands with our new client.

"I'm ready to rock *and* roll, baby!" he exclaimed as he tried to give me five.

I hadn't expected the sudden brotherly gesture and pulled my hand back in surprise. Joel followed through with his swing, lost his balance, and fell on the floor.

"Whoopsie!" he hollered.

I helped him to his feet and we proceeded into the control room where our engineers, Cart Ryan and Smilin' Deaf Eddie, were waiting. After some quick introductions and a brief tour of the studio, we went out to the parking lot to get Joel's equipment.

He carried his entire musical package in a U-haul trailer: an old Hammond B-3 marked with barroom dings, a Fender Rhodes, a home-made foot pedal bass, a Rhythm King, a string synthesizer, and a Heath Kit reverb unit.

Once we had set up Joel's instruments, the one-man-band approach to recording made things go very quickly. He played the instruments simultaneously and we had all the basic tracks done in less than two hours, including a lengthy medley of popular beer commercials.

"They just love this medley at the club," he boasted. "I slide from a mellow version of 'Miller Time' into a

bouncy, up-tempo 'Weekends Were Made for Michelob' and then knock 'em out with a hard rock 'Schlitz Malt Liquor Bull'."

Our responsibility in this project was to capture the essence of Joel DiZiro—the songwriter, the singer, the showman. This guy was always 100% himself and all we had to do was set the levels and let him go. The album proceeded smoothly and to his satisfaction. As an inducement to run up a little more time, Cart suggested adding a few background vocals. Joel enthusiastically agreed that it might add some "creative dimension" to his record.

We hired our old friend Norman Priest (the man of a thousand backgrounds) to join Joel in the vocal booth. They got along great and pretty soon it was all "Normie" and "Joelie." The extra vocals fleshed out the material quite well. Joel was so pleased that he stopped during a take, put his arm around Norman, and slapped him affectionately on the stomach while pinching his cheek. He pointed at Norman and with a one-eyed squint he silently mouthed, "I love this guy!"

"It sounds great, Joel," added Cart on the talk-back switch. "Norm's voice is giving just the right ethereal edge to your powerful performance."

Joel loved it. He emphatically testified, "I just can't believe it. I look at Cart, a musical genius, and I feel like I'm looking in a mirror... we're so much alike."

Cart paled at the comparison and quickly rolled the tape machine for another take. Joel was a one-take pro and we finished the vocals in record time.

We sailed through the mix and were soon finishing the final tune. It was Joel's choice for the title track and single from the album. He positively glowed as we cranked up the echo on his soulful rendition of "I Like Me Just the Way I Am."

The album is on DiZiro records and tapes, available exclusively at La Bamba Lounge. ■



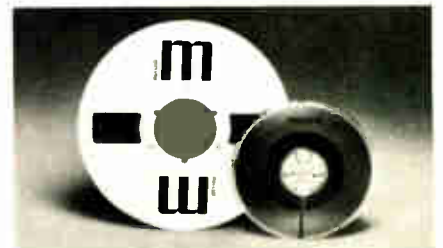
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THE EDUCATION

EXPLOSION

Getting Your Chops Together in the Classroom

by Diane
Sward
Rapaport

For many musicians, being great on their instruments buys them the ticket into the glamour and excitement of the music industry. According to this scenario, musicians should spend their time rehearsing, composing, and performing, and their money on equipping themselves to sound and look good. The someone else, perhaps Aladdin disguised as a lawyer, artists' manager, agent, or producer, will discover their talents and do the rest.

What's wrong with this scenario is that many musicians who follow it are broke. And competent, honest and willing Aladdin's are increasingly harder to find, especially for newer bands. Even musicians lucky enough to have recording deals are finding it hard to keep it together. Laurel Leff, reporting for the *Wall Street Journal* in the Spring of 1981 came up with this rather dismal statistic: "On the average, only 16% of all albums break even, let alone turn the artists into stars." (April 21, 1981)

Break even? That translates as no money for the artists! And what about

those even unluckier musicians who have no record deal and are performing for virtually peanuts? Or, as is often the case, for exposure? These days, the musician who is performing 'for exposure' is starving—financially and psychologically.

Financial and emotional survival for musicians is what music business and audio education is all about. The message behind all the programs now being offered is loud and clear. If musicians are to survive the economically recessive eighties, they have to drop some money on education. Not for courses on theory or harmony, or in learning fifteen new hot licks on the guitar, but for courses in copyright protection, operation and maintenance of p.a. and recording equipment, music management, small business skills. Many educational programs also urge musicians to acquire a secondary vocational skill, like record engineering or concert production, to help them attain financial stability, while rehearsing and composing for the 'big break.'

Five years ago, formal music business and audio education was scarce. Even scarcer was any written information on such subjects as copyright, booking agencies, recording contracts, artist's management, etc. A few

revolutionary organizations or schools, such as Songwriters Registration Services and Songwriters Showcase in Los Angeles, Family Light Music School and the College for Recording Arts in San Francisco were beacons in a lonely sea.

Then, within months it seemed, a good idea spread like wildfire. Magazines featuring audio and music business information suddenly were available to musicians. Books could be found detailing how to make records, how to produce concerts, or what music management was all about. And some 50-60 private schools, music departments or musician advocate organizations suddenly were presenting full-scale music business or audio programs. Amazing!

AUDIO PROGRAMS

All audio programs currently being offered are geared toward preparing students for jobs in audio—not only as recording engineers, but as designers or manufacturers of audio equipment, p.a. or video operators, road managers, etc. Almost all the school catalogues stress the wide variety of jobs in audio—particularly as technology continues to advance in giant proportions.

Both university and private audio education are available. Most university training, administered through the music departments, leads to a degree in audio engineering. These programs usually require training in music—the standard harmony, theory, history, instrument proficiency—as well as grounding in acoustics, physics and engineering and “hands on” training in a recording or video studio.

The University of Miami’s excellent program is a good example of this exhaustive approach. To complete their Bachelor of Music in Music Engineering Technology, the following music courses are required: two years of basic music theory, one year of advanced music theory (including orchestration and arranging), three years of principle instrument study, two semesters of music literature and history, and two years of secondary piano. In addition, these courses in electronics and physics: six semesters of electrical engineering, two semesters of calculus, as well as separate courses in physics, sound synthesis, recording studio acoustics and digital audio electronics. And then there’s the third part: hands-on equipment training: 4 semesters of recording workshops; six semesters of work in the recording studio; a semester of internship in music engineering; a few music business courses (copyright and publishing, marketing foundations), and so on. And all on the latest state-of-the-art equipment.

A second type of training is found in some two dozen or more private schools, some of which are administered by commercial recording studios. These schools are geared towards giving students enough theoretics and ‘hands on’ training on audio equipment to qualify them for apprenticeships in recording studios, sound re-enforcement companies, video studios, etc. For example, Chillicothe, Ohio’s Recording Workshop aims at preparing “the successful graduate as an Apprentice or Assistant Recording Engineer qualified to work in any professional recording studio in the world.”

The private audio programs vary greatly—not only in terms of cost, but in terms of time spent learning. At Hollywood’s Institute of Audio/Video Engineering, for example, completion of their recording engineer program requires some 453 clock hours over a period of four quarters in courses in studio equipment maintenance, audio and recording engineering, record production, electronic and audio theory, etc. In contrast, the Recording Workshop’s program presents a 4-week intensive course (150-160 hours) in many of the same subjects.

How should a student choose? The competition for jobs these days means this: the more experience and educa-

tion students have under their belts, the better their chances for landing jobs—even apprenticeship jobs. Audio education even at its best, is entry level training. Even if a student racks up a degree at the University of Miami, chances are he or she will still start as an apprentice engineer. The sheer hours rolled on tape, the experience working with a variety of music, budget, time and personalities are the real keys towards developing the chops necessary to become a good engineer.

My advice to students is this: look around in the community you’re going to be living in and find out how much education will land you the entry level job you’re after. Talk to some of the

people who hold down the kind of jobs you will eventually be reaching for and ask them what kind of training is necessary. Then find the program that meets those requirements.

For those musicians who are after enough audio education to be able to maintain and operate their own equipment, including a small recording studio, almost any of these programs provide enough training to enable them to choose/buy equipment and start operating. Even the shortest term courses will provide enough training to enable a musician to start making good rehearsal and demo tapes, or even a 45 or EP to put out locally.

Those musicians who simply want

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Best Technical Ears

The best technical ears in Washington probably still belong to the CIA. Langley Studio. They had a “Prime Time” in early March of 1957 when Omega had a Webcor, and an engineer who used to know Les Paul’s sister. But Omega kept their ears open. And they closed the technical gap. Plus Omega’s stuff got a lot more air play. Omega was overdubbing in sync, but the Watergate tapes were still riding the charts . . . until Omega broke through with a richer drum sound.

Best Training Ears

Until recently the pre-eminent “hands-on” crash course in sound recording technology was believed to be offered by the Defense Department’s MOBIL-32 x 24 API QuadraVan. (Still an excellent program for satellite enthusiasts and sonar technicians.) But once again, Bob Yesbek’s Omega School of Applied Recording Arts and Sciences eclipsed the high rolling feds with the same equipment at “Supersession.” According to Bill Brady, Omega’s pop culture engineer, in an unpublished Billboard interview, 93% of all Supersession graduates own 7 or more hit recordings and/or sales literature from MCI. Many are known to be employed.

Washington’s Best Ears, Overall

You’ll hear differing opinions. But if you really listen closely, Omega’s Betty will open a computer dossier on you. We don’t care if it’s a dub or an overdub or a punk barbershop quintet—if it’s important to you, we’ll note it on our Fadex. And we’ll give you the best ears in Washington.*

*Offer void where prohibited by law.



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Recording Services Section

to learn enough to save money in hiring recording services for their bands will find these courses invaluable. In fact, it may well be that by pitching vocation so heavily, these schools are missing out on what may prove to be their most lucrative customer: the musician who wants to learn enough to budget and record wisely. Good tapes can, after all, be made cheaply and well, by the musician or band wise enough to know when four tracks and a good engineer are enough!

MUSIC BUSINESS EDUCATION

Music business education is a little harder to come by. Most of what there is focuses on career training—preparing students for entry or middle management positions in concert management, booking agencies, record companies, retail record stores, etc. Extensive preparation in current industry practices as well as formalized business and communication courses are the core of these programs. And

most offer some kind of internship training as well.

A second, more unusual approach, is aimed at teaching musicians business as a way of increasing their abilities to profit from being musicians. Belmont College, for example, offers a degree called the Bachelor of Music with a major in Commercial Music. Music courses aimed at teaching musicians something about commercial music styles, such as commercial pop songwriting, are offered along with courses in copyright, publishing and record contracts.

The reasoning behind this more unusual approach is summarized by Hewlett Crist, a musician who founded The California Professional Music Business Academy in San Jose, CA:

"The big difference between today and when bands were being signed in the sixties is that record companies no longer take people and groom them. You are expected to groom yourself—and then you are bought and sold as a product. Lots of musicians are still working on the idea that someone is going to reach out and say, 'Hey, come over here, I want to groom you.' Nobody's got time anymore. By the time a record company signs you, you are expected to be worth the million dollars they are going to put into you."

The schools listed in the MIX are

not the only place to search out music business courses. Musician advocate organizations, such as Songwriters Registration Services in Los Angeles, or local songwriter organizations, also offer seminars or lectures. In many cities, NARAS chapters sponsor programs. And so on.

In cities or towns where these courses are still not being offered, musicians might take the initiative and seek out a music store or recording studio to help sponsor such a program.

• • •

Ms. Rapaport is the author of *How To Make And Sell Your Own Record*, available by mail order for \$11.50 from Headlands Press, PO Box 862, Tiburon, CA 94920.

• • •

Following is a briefly annotated list of schools and programs offered in the areas of audio and music education. Although extensive, this is certainly not a complete list as new programs seem to appear every day. 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. ■

AAA/TRIANGLE RECORDING STUDIO
4230 Leary Way, N.W., Seattle, WA 98107
(206) 783-3869
Contact: Wm. Stuber.
Program: Beginning and Advanced Recording Classes; PA Seminar

UNIVERSITY OF NORTH ALABAMA
Weesleyan Ave., Florence, AL 35630
(205) 766-4100
Contact: Dr. James K. Simpson
Program: Commercial music (a comprehensive survey of the music business)

ASPEN AUDIO INSTITUTE
Box AA, Aspen, CO 81611
(303) 925-3254
Contact: Harold Boxer, Alan P. Kelauser
Program: Basic Recording Techniques

AUDIO RECORDING TECHNOLOGY INSTITUTE
756 Main St., Farmingdale, NY 11735
(516) 454-8999
Contact: James J. Bernard
Program: Audio Engineering, Theory & Practical Application

THE AUDIO WORKSHOP SCHOOL OF SOUND
1 River Rd., Carlisle, MA 01741
(617) 369-1711 or 369-2202
Contact: Steve Langstaff
Program: Audio Production—Studio and Space

BELMONT COLLEGE
Music Industry Studies
Nashville, TN 37203
(615) 383-7001, Ext. 315
Contact: Jerry L. Warren, Chairman, Music Dept.; Newton J. Collins, Director, Music Industry Studies
Program: Commercial Music, Music Business

BLUE BEAR SCHOOL OF MUSIC
Bldg. D, Fort Mason Center,
San Francisco, CA 94123
(415) 673-3600
Contact: Steve Savage

Program: Intensive beginning class in Audio Theory and Practice for musicians, audio workers, and audio salespeople. Underlying principles of audio theory are covered, from Wave Theory to amps and sound system components to on-stage set-up, mixing and monitoring.

BLUE POWER RECORDS
1065 E. Fairview Blvd., Inglewood, CA 90302
(213) 672-2349 or 389-3471
Contact: Carl Taylor or Bob Starr

BROWN INSTITUTE
3123 E. Lake St., Minneapolis, MN 55406
(612) 721-2481
Contact: Bill Johnson
Program: Audio Technology and Recording Techniques.

BRIGHAM YOUNG UNIVERSITY
Dept. of Music, Provo, Utah 84602
(801) 378-3083
Contact: Dr. James A. Mason, Music Dept. Chairman.
Program: Sound Recording and Reinforcement or Studio Composition and Production

BUSINESS ACADEMY OF MUSIC
P.O. Box 794 Hollywood, CA 90028
P.O. Box 4026 Woodbridge, CN 06525
(213) 876-2461; (203) 735-5883
Contact: Martin G. Kugeli, Dir
Program: Factual Introductory Music Business Course for both Novice and Pro

CALIFORNIA PROFESSIONAL MUSIC BUSINESS ACADEMY
3175 DeLaCruz Blvd, Santa Clara, CA 95050
(408) 727-3232
Contact: Hewlett Crist, Executive Director
Program: Four music business and recording curriculums
1) Artist Development 2) Songwriter Development 3) Record Engineering 4) Music Business Development

CALIFORNIA STATE UNIVERSITY, LOS ANGELES
5151 STATE University Dr., Los Angeles, CA 90032
(213) 224-3348
Contact: Mickey Fruchter
Program: Beginning/Intern Recording Techniques

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS
1000 East Victoria Street,
Dominguez Hills, CA 90747
(213) 515-3543
Contact: Dr. Frances Steiner
Program: Major in Music with an option in Electronic Music and Recording

CARIBOU RANCH
Box 310, Nederland, COLO 80466
(303) 258-3215 Weekdays 9 am-5 pm.
Contact: Steve Hebrock, Jerry Mahler
Program: Intensive fifteen-day seminars on multi-track recording, including theory and operation of consoles, recorders, microphones, noise-reduction systems, signal-processing equipment, disk mastering, acoustics/psycho-acoustics, and calibration and maintenance. Taught by the Caribou staff with guest speakers from the recording industry, price includes deluxe accommodations on the ranch, all meals, airport transportation, tape, textbook, and use of all ranch facilities. Call for details.

CEDAR VALLEY COLLEGE
3030 N. Dallas Ave., Lancaster, TX 75146
(214) 746-7475
Contact: Dr. Mary Davidson
Program: Multitrack Recording Practices and Applications

CENTER FOR AUDIO STUDIES
12 St. John St., Red Hook, NY 12571
(914) 758-5605
Contact: David Moulton
Program: Recording Engineering Basics, Sound Recording Workshop, Revised Advanced Recording Workshop

CITY COLLEGE OF SAN FRANCISCO BROADCASTING
50 Phelan Ave., San Francisco, CA 94112
(415) 239-3525
Contact: Henry Leff, Dept. Chairman
Program: Broadcasting—Radio & TV Operations and Techniques

THE CLEVELAND INSTITUTE OF MUSIC
11021 East Blvd., Cleveland, OH 44106
(216) 791-5165
Contact: Grant Johannesen, Pres
Program: Composition and Electronic Music

CLOUD BORN RECORDING WORKSHOP
 18000 Mack Ave., Grosse Pointe, MI 48224
 (313) 882-0966
 Contact: Ken Sands, Instructor.
 Program: Studio Sound Recordist, Mixer; 12 week program.

COLLEGE FOR RECORDING ARTS
 665 Harrison St., San Francisco, CA 94107
 (415) 781-6306
 Contact: Leo De Gar Kulka, Dean.
 Program: Audio Engineering and Record/ Music Industry Curriculum. Class Size: 10 to 30. Prerequisite: High school diploma. Accreditation offered: Diploma program is California Approved; accredited by NARAS and NATTS Accrediting Agencies; approved for attendance by Veterans & foreign students, as well. Applications preferred at least one month prior to start of June, October & February Semesters. Tuition: \$5,580 for a full year (three 14-week semesters), totaling 546 training hours.

COLUMBIA COLLEGE OF CHICAGO
 600 South Michigan Ave., Chicago, ILL 60605
 (312) 663-1600
 Contact: H. Thaine Lyman, Chairman Broadcast Communications.
 Program: Classroom/lab studio; 3 semester sequence beginning in Fall 4 c.h.

COLORADO AUDIO INSTITUTE
 680 Indiana St., Golden, CO 80401
 (303) 278-2551
 Contact: David Van Soest, Director.
 Program: One of the largest schools of its kind in the midwest, CAI is a private, part time institute offering beginning and advanced training in Recording Studio Engineering and Live Sound Engineering. Also offered are unique courses in Music Production, Concert Lighting and an Introduction to the Music Business. Courses include considerable hands-on experience. A reference library is available to students. Semesters begin in February, June and September. Complete catalog available.

CRITERIA STUDIOS
 1755 NE 149 St., Miami, FLA 33181
 (305) 947-5611
 Contact: Steve Klein.

EVERGREEN STATE COLLEGE
 Communications Building, Evergreen State College, Olympia, WA 98505
 (206) 866-6096
 Contact: Dave Englert and Ken Wilhelm.
 Program: Combination audio recording technology and music with opportunity for independent work and internships.

FEATHERSTONE RECORDING STUDIO
 8996 Fruitridge Rd., Sacramento, CA 95826
 (916) 381-5243
 Contact: Tom Conrad

FULL SAIL RECORDING WORKSHOP
 1221 Lee Rd. Suite 207, Orlando, FL 32810
 (305) 299-1076
 Contact: Jon Phelps.
 Program: Recording engineering/music production.

GEORGIA STATE UNIVERSITY COMMERCIAL MUSIC/RECORDING
 Georgia State University, University Plaza, Atlanta, GA 30303
 (404) 658-3513
 Contact: Carter Thomas
 Program: Music Business (some studio)

GOLDEN WEST COLLEGE
 15744 Golden West Street, Huntington Beach, CA 92647
 (714) 892-7711 Ext. 680
 Contact: Evan Williams, Instructor; Scott Steidinger, Instructor in Sound Reinforcement
 Program: 2 year vocational education program.

HILLSBORO RECORDING PROGRAM
 Hillsboro High School
 3812 Hillsboro Rd., Nashville, TN 37215
 (615) 383-5511
 Contact: Vic Gabany.
 Program: Basic Recording Techniques: 8 track facility.

HOLDEN HAMILTON & ROBERTS INC.
 2227 N. 56th, Seattle, WA 98103
 (206) 632-8300
 Contact: Lanita DeMers/Coy Owen

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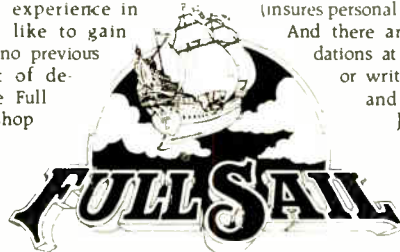
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- Assistance in career planning and direction.
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Recording Services Section

HOLLYWOOD SCHOOL OF RECORDING ARTS
P.O. Box 9575, N. Hollywood, CA 91609
(213) 462-5775
Contact: Doc Siegel.
Program: Recording Engineering.

SCHOOL OF MUSIC
Indiana University, Bloomington, IN 47405
(812) 337-1613
Contact: Ted W. Jones, Director of Technical Studies.
Program: Associate in Science, Audio Technology.

INSTITUTE OF AUDIO RESEARCH
64 University Place, New York, NY 10003
(212) 677-7580
Contact: Albert B. Grundy, Philip Stein.

INSTITUTE OF AUDIO/VIDEO ENGINEERING
1831 Hyperion Ave., Hollywood, CA 90027
(213) 666-3003
Contact: Lydia E. Towner.
Program: Recording Engineering, Video Engineering, Sound Reinforcement/Maintenance. (Each is an 8-month program, including Internship.)

INSTITUTE OF SOUND RECORDING
3420 Camino Del Rio North, Suite 225
San Diego, CA 92108
(714) 281-7744
Contact: Aaron Berg.
Program: San Diego's only Professional Recording Engineering School, offering complete and comprehensive "Hands-on" experience in State-of-the-Art 24-track studios. 7 month Diploma Programs in Recording Engineering, Record Production, and Studio Maintenance. Engineering Program includes classes in Signal Processing, Tape Editing, and Mixdown Techniques. Semesters start every 2 months. Tuition: about \$3500. Mention MIX and receive 15% off first semester. Beginning in July, ISR is presenting a Special Intensive 8 week Summer Program. Over 200 studio hours with Hollywood's Top Engineers and Producers. There's never been a more concentrated Engineering Summer Program like this ever. We'll even pay your airfare!

THE UNIVERSITY OF IOWA RECORDING STUDIOS, SCHOOL OF MUSIC
2057 Music Building, The University of Iowa, Iowa City, Iowa 52242
(319) 353-5976/353-5977
Contact: Prof. Lowell Cross (Director, Recording Studios)
Program: Non-degree, two courses taught within School of Music curriculum, Recording Techniques 25:214, 9 students per semester in academic year; Seminar in Audio Recording 25:230, 18 students (2 sections), Summer session.

JEWEL SCHOOL OF AUDIO ENGINEERING
1594 Kinney Ave., Cincinnati, Ohio 45231
(513) 522-9336
Contact: Rusty York.
Program: Hands-on—24 track Practical Audio Engineering.

KANSAS STATE UNIVERSITY
Music Dept., Manhattan, KS 66506
(913) 532-5740
Contact: Hanley Jackson.
Program: Electronic Music.

LOS ANGELES VALLEY COLLEGE
MUSIC DEPT.
5800 Fulton Ave, Van Nuys, CA 91401
(213) 781-1200 Ex. 346
Contact: Don Nelligan or Dennis Parker.

MELON STUDIO HANDS-ON WORKSHOPS
P.O. Box 2168, San Francisco, CA 94126
(415) 665-6566
Contact: Robin Woodland.
Program: A course that is entirely hands-on! A unique 30-hour program for anyone who wants real experience in audio engineering and music production. Students participate in all aspects of an actual recording of a band—setting up mics and equipment; editing; mixing; overdubs; etc. Class size limited to just five students—plenty of individual instruction. May be taken as a 10-week or 5-week course. Robin Woodland founded Melon Studio in 1971 and has been writing and playing music for over 16 years. Call for free brochure.

MEMPHIS STATE UNIVERSITY
Memphis, TN 38152
Contact: Eugene Rush.
Program: 1. Recording Engineering; 2. Music Business; 3. Studio/Live Performance; 4. Composition/Arranging.

UNIVERSITY OF MIAMI SCHOOL OF MUSIC & MUSIC ENGINEERING TECHNOLOGY PROGRAM
P.O. Box 248165, Coral Gables, FL 33124
(304) 284-2433
Program: 4 year program to train musicians to become sound engineers. This program culminates in the degree: Bachelor of Music with a major in Music Engineering.

MIRA COSTA COLLEGE
1 Bernard Dr., Oceanside, CA 92054
(714) 757-2121, Ext. 248, 269
Contact: David W. Megill.
Program: Basic Studio Recording Techniques

JON MILLER SCHOOL FOR RECORDING ARTS & SCIENCES
2524 East Scenic Dr., Bath, PA 18014
(215) 837-7550
Contact: Jon K. Miller.
Program: Audio Engineering Technology

MUSIC BY THE BAY
Fort Mason Center, Laguna & Marina Sts., Bldg. C. Rm. 200, San Francisco, CA 94123
(415) 474-5600
Contact: Hali Winston, Executive Director.
Program: Monthly music business seminars and quarterly recording studio workshops.

MUSIC RECORDING SCHOOL
229 Shipley St., San Francisco, CA 94107
(415) 546-6464
Contact: Susan Gottlieb
Program: Basic Recording Engineering.

MUSICAL ARTS CENTER
680 West Tennyson Rd, Hayward, CA 94544
(415) 886-8742
Contact: Ms. Patricia Rasmussen.
Program: Musical Skills Training.

NEW SCHOOL FOR SOCIAL RESEARCH
Composers Theatre Program
66 West 12th St., New York, NY 10011
(212) 925-3721
Contact: John Watts.
Program: Electronic Music/Audio Engineering Program.

NEW YORK UNIVERSITY MUSIC BUSINESS & TECHNOLOGY
35 West Fourth St. Rm. 777, New York, NY 10003
(212) 598-3491
Contact: Prof. Richard L. Broumck.
Program: B.S. degree (4 years) in Music Business & Technology.

OHIO STATE UNIVERSITY
1866 College Rd., Columbus, Ohio 43210
(614) 422-6508
Contact: David Meeker, Director.
Program: Audio-Engineering.

OMEGA STUDIO'S SCHOOL OF APPLIED RECORDING ARTS AND SCIENCES
10518 Connecticut Avenue, Kensington, MD 20795
(301) 946-4686
Contact: W. Robert Yesbek.
Program: 2 Programs: Basic and Advanced Practical Recording Engineering.

ORANGE COAST COLLEGE
2701 Fairview Rd., Costa Mesa, CA 92626
(714) 556-5523 or 556-5629
Contact: Howard Judkins.
Program: (Numerous) Careers In Music.

UNIVERSITY OF OREGON SCHOOL OF MUSIC
University of Oregon, Eugene, OR 97402
(503) 686-5679
Contact: Steve Hangebrauk.
Program: Basic Recording Techniques.

Studios of Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, South Dakota, North Dakota

MIX will be doing listings of your studios for the first time in October, 1981.

If you have not received a questionnaire by August 1, 1981, get in touch with us. (415) 843-7901.

PEABODY INSTITUTE OF THE JOHNS HOPKINS UNIVERSITY
1 E. Mt. Vernon Pl., Baltimore, MD 21218
(301) 837-0600, Ext. 36
Contact: Alan P. Kelauger.
Program: Basic Recording course

PURDUE UNIVERSITY
W. Lafayette, IN 47906
(317) 749-2095
Contact: Dave Berg, Chm., Communications Dept., Dale Miller, Chm. Theatre
Program: BA/Communications, MFA Theatrical Sound Design

RECORDING ASSOCIATES RECORDING SEMINAR
5821 S.E. Powell Blvd., Portland OR 97206
(503) 777-4621
Contact: Jay Webster.
Program: Class 1: class and practical; Class 2: apprentice, all practical; Class 3: freelance, earn income

THE RECORDING CENTER, INC.
25 Van Zant, East Norwalk, CT 06855
(203) 853-3433
Contact: Ilene Braunstein, General Mgr., Ethan Winer, Instructor
Program: Recording Engineering and Consultation in related areas

RECORDING CONCEPTS, LTD.
625 Panorama Trail, Rochester, NY 14625
(716) 381-2300
Contact: Roderick J. Williams (Rory).
Program: Part time. 10 weeks, 6 hours per week

RECORDING ENGINEERING WORKSHOP
421 N. Tustin, Orange, CA 92667
(714) 633-8200, (714) 633-8201
Contact: Ted Vegvan
Program: Recording engineering at an incredibly low price in a 6000 square foot state-of-the-art studio (seats a 60 piece orchestra comfortably) Every Sunday, beginning, intermediate and advanced techniques are taught in groups, or private instruction, in a series of 4 workshops, which are concurrent and fully hands on. Internship programs include assistant engineering, wiring, labs, studio maintenance, and procedures, with an emphasis on practical experience. The price for this workshop is \$45.00 for a single session or \$150.00 for 4 workshops at the beginning level.

RECORDING INSTITUTE OF AMERICA
220 Westbury Ave., Carle Place, NY 11514
(516) 334-7750
Contact: Chas Kimbrell.
Program: 10 week Basic (30 hr.) and Advanced (60 hr.) Operational Instruction courses in 16 track or larger Studios in 38 cities in U.S. and Canada

RECORDING INSTITUTE OF DETROIT
Division of Superdisc, Inc.
14611 East Nine Mile, East Detroit, MI 48021
(313) 779-1380
Contact: John Jaszcz.
Program: "In-Studio" classes of (24-track) Recording Techniques I & II. Includes theory and hands-on experience

THE RECORDING WORKSHOP
455 Maesville Rd., Chillicothe, OH 45601
(614) 663-2544; (800) 484-9900
Contact: James Rosebrook.
Program: Recording Engineers Program (we are accredited with the State Board Of School & College Registration, State of Ohio).

RHYTHM SECTION LAB
130 W. 42nd St., New York, NY 10036
(212) 840-0433
Contact: Robert Wallis, Paul Siegel.
Program: Studio Rhythm Section Ensemble

ROCKLAND INSTITUTE OF RECORDING
73 North Main St., Spring Valley, NY 10977
(914) 425-0018
Contact: Jim Henning
Program: Emphasizes hands-on experience.

SAN ANTONIO COLLEGE
1300 San Pedro, San Antonio, TX 78284
(512) 733-2793
Contact: Jean M. Longwith.
Program: Radio, Television, Film Department

SAN FRANCISCO STATE UNIVERSITY
1600 Holloway, San Francisco, CA 94132
(415) 469-1507
Contact: Paul Smith.
Program: Broadcast and Recording.

SHERWOOD OAKS EXPERIMENTAL COLLEGE
1445 N. Las Palmas Blvd., Hollywood, CA 90028
(213) 462-0669
Contact: Director: Gary Shusett
Program: Record Engineering (2 courses—40 weeks and 5 week condensed program)

SOUL ECCENTRIC STUDIOS
211 Central Ave., White Plains, NY 10606
(914) 997-0250
Contact: Mr. Morris Miller
Program: Production Arts, Writers Workshop

SOUND RECORDING TECHNOLOGY, MASON HALL STUDIO
SUNY, Fredonia, NY 14063
(716) 673-3151, 673-3221
Contact: David Moulton

THE SOUND ROOM, INC.
325 Patterson Ave., Fort Oglethorpe, GA 30742
(404) 866-2432
Contact: Steve Mullinax.

SOUND MASTER RECORDING ENGINEER SCHOOLS
10747 Magnolia Blvd., North Hollywood, CA 91601
(213) 650-8000
Contact: Barbara
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SRS RECORDING STUDIOS
536 Huffman Road, Birmingham, AL 35215
(205) 833-6906
Contact: Noah White.
Program: Music Industry

SYN-AUD-CON
P.O. Box 1115, San Juan Capistrano, CA 92693
(714) 469-9599
Contact: Carolyn Davis.
Program: Sound Engineering and Acoustics Seminars.

SYRACUSE UNIVERSITY
Telecommunications/Film Division of the S.I. Newhouse School of Public Communications
Syracuse University, Syracuse, NY 13210
(315) 423-4004
Contact: Dr. Dave Berkman.
Program: Telecommunications Productions Major, in which up to 4 courses (12 credit hours) may be taken in Audio Recording.

SYRACUSE UNIVERSITY SCHOOL OF MUSIC
215 Crouse College, Syracuse, NY 13210
(315) 423-2191
Contact: Professor Stephen Marcone (315) 423-3741
Program: Music Industry

MIDDLE TENNESSEE STATE UNIVERSITY
Box 21, Middle Tennessee State University, Murfreesboro, TN 37132
(615) 898-2813
Contact: Geoffrey Hull, Coordinator.
Program: Comprehensive recording industry and audio.

UNIVERSITY OF TENNESSEE MUSIC DEPT.
1741 Volunteer Blvd., Knoxville, TN 37916
(615) 974-5489 or 974-3241
Contact: Dr. Kenneth Jacobs.
Program: Courses in Recording Techniques, Degree Program in Electronic Music

NORTH TEXAS STATE UNIVERSITY SCHOOL OF MUSIC
P.O. Box 13887, Denton, TX 76203
Contact: Richard DuPre

TEXAS MUSIC ARTS COLLEGE
8375 Westview Dr., Houston, TX
(713) 465-6554
Contact: Dale Mullins.
Program: Instruction in Recording Engineering, Music Education

TREBAS INSTITUTE OF RECORDING ARTS
1 Place Ville Marie, Suite 3235, Montreal, Quebec, Canada H3B 3M7
(514) 842-3815

Contact: David P. Leonard, Executive Director.
Program: Three, Two-year, college level programs of 70 courses in the Recording Arts and Sciences: Record Producing, Sound Engineering, and Management.

TRIANGLE RECORDING
4230 Leary Way N.W. Seattle, WA 98107
(206) 783-3869
Contact: Bill Stuber/Jack Weaver

UCLA FINE ARTS EXTENSION RECORDING ENGINEERING THEORY AND PRACTICE
10995 Le Conte Ave., Westwood, CA 90024
(213) 825-9064
Contact: Van Webster
Program: Certificate Program in Recording Engineering.

UNIVERSITY OF SOUND ARTS
6526 Sunset Blvd. Suite 907 Hollywood, CA 90028
(213) 467-5256
Contact: Traci Duncan.
Program: The University of Sound Arts was established in 1976 and offers programs in five areas: (1) Recording engineering, (2) Maintenance Engineering, (3) Record Production, (4) Sound Reinforcement and (5) Business Management. The courses feature hands-on training in 24 track studios in Hollywood combined with textbook theory classes taught at the facilities at the Sunset Blvd. location in the Berwin Entertainment Complex. The six month program is divided into 3-eight week segments: basic, intermediate and advanced, totaling 24 weeks. All programs are approved by the California State Department of Education and a diploma is issued upon graduation. A free internship program is available to qualified students after graduation.

NORTHERN VIRGINIA COMMUNITY COLLEGE/LOUDOUN CAMPUS
1000 Harry F. Byrd Highway, Sterling, VA 22170
(703) 323-4507 or 323-4527
Contact: Bob Miller.
Program: Series of 7 classes, Basic to Multichannel, Maint., Acoustics and others. Certificate Program applied for, pending State approval.

EASTERN WASHINGTON UNIVERSITY
Radio Television Center, Cheney, WA 99004
(509) 359-2228
Contact: Dr. Rey L. Barnes.
Program: Audio Engineering/Multitrack Recording

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Remote Recording

ROLLING WITH THE CHANGES

by David Schwartz

Mobile recording studios have come a long way since Wally Heider loaded a Concertone tape deck, a Ross Mixer and a few microphones (as many Sony C-37's as he could get his hands on) into his car, traveling the West Coast to document the early 1950's performances of Woody Herman, Stan Kenton, Count Basie, Duke Ellington and other entertainment highlights of the era. Wally's efforts in those days did much to bring about the remarkably skilled force of today's remote recor-

dists, many of whom worked for Wally at some point as Heider Remote Recording's expertise attracted the Stones, Beatles, Streisand, Sinatra and the award shows, Oscar through Grammy.

Today Wally Heider Recording is owned by Janna Feliciano, ex-wife of Jose, who plans to keep the three trucks (that together handle about 200 dates per year) very busy in the remote recording business.

As the rock industry turned on to remote recording in the late sixties, the Record Plant Remote Truck arrived, custom tailored for the rock musician.

The brainchild of Chris Stone and Gary Kellgren, Record Plant took off like a rocket, their very first job being the historic Concert for Bangladesh at Madison Square Garden.

Now with four fully equipped L.A. based trucks, and other vehicles as necessary (they recorded Paul McCartney and Wings on a yacht in the Caribbean,) record Plant has diversified from its once rock superstar reputation.

On the evening we visited with Jack Crymes, director of engineering for Record Plant's remote division, he was at the San Francisco Civic Auditor-

Inside Record Plant's Remote Truck #3.



BEST Audio's Mobile Unit at the Academy Awards.

ium recording Luciano Pavarotti in concert with the San Francisco Opera Orchestra, led by Maestro Kurt Herbert Adler. Danny Wallen was chief mixer on the project, which was Pavarotti's film debut in MGM's 'Yes, Giorgio.' This show also served to raise \$300,000 for the Italian earthquake victims.

Truck #3 was all decked out for the performance with pairs of 3M-79 24 track recorders, Nagra stereo machines and Ampex 440 four tracks. The Nagra machines used a mono program mix on one channel and SMPTE time code on the other; while the Ampex machines had orchestra on track two, Pavarotti on track three, and a 60 cycle crystal sync tone on track four for film sync and resolve playback (speed lock for accuracy in future playback applications.) Track one was left open for overdubs, if necessary. The 24 track machines recorded both the SMPTE and 60 cycle signals.

Pavarotti's electrical signal was treated with dignity, beginning with a Neumann U-67 and traveling through a custom built 44 input API console on its way to the recorders and the magnificent RCD John Meyer monitoring system.

By coincidence, two other Record Plant remote trucks were also in the Bay Area that evening: with hard rocking Van Halen at the Oakland Coliseum, and a gospel music festival at Oakland's Paramount Theatre. The fourth truck, according to Jack, was at Stevie Wonder's L.A. home, where it is on long term assignment.

BEST AUDIO

Both Heiders and Record Plant have established a scale of operation very hard to compete with, unless you happen to be a group like BEST Audio. BEST, an acronym for its founders Dave Brand, Larry and Bob Estrin, Norm Schwartz and Bob Tourkow, is a first cousin to the Heider operation. The above five men were key employees of the Filmways Audio Group, which included Wally Heider Studios, until they left to form BEST in October of 1980.

Their idea was to build a unique audio recording truck that would specialize in television—the television shows with the most strenuous demands, such as the Academy Awards and the Reagan Inaugural from Kennedy Center (both jobs secured in the truck's first few months of operation.) The BEST facility lends itself to massive miking, perhaps better than any other operation in the world. Their Sphere console is wired for 156 microphone inputs, using a 40 input main frame and six rack mounted multi-input sub-



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mixers.

BEST's interest in television involves more than just specials and awards shows. As consultants to several networks and many TV stations on the topics of higher quality audio and control room design, BEST is preparing for the prospect of stereo television. BEST president, Larry Estrin, feels that stereo TV will happen simultaneously (though perhaps with a lower priority in the eyes of the FCC) with bilingual broadcast in this country... within the next couple of years. He notes that for several years Japan has had bilingual broadcast with a stereo standard built in. "Many of their commercials inserted into the bilingual broadcast," says Estrin, "are in stereo—and they do get your attention!"

Next on BEST's agenda, according to Estrin, is the construction of their own fixed location studio capable of accommodating 75 to 100 musicians for motion picture scoring. Although the site is not officially selected, it will most likely be in North Hollywood and will probably incorporate a Live-End Dead-End® control room design. Says Larry, "The experience we've had is that (LEDE) allows you to listen at higher levels for longer periods of time, with less fatigue."

FANTA

Another operation gaining praise for its flexibility and dedication to service is Johnny Rosen's Fanta truck, headquartered in Nashville. Johnny began in the remote business in 1973 when he was commissioned by Elliot Mazur to build His Master's Wheels, a successful truck which was later sold to Neil Young, much of the equipment being absorbed into Elliot's studio in San Francisco. Not long afterwards Johnny built his own truck and in 1976 assembled his current version, a 40' semi employing 48 microphone inputs, Sphere console, two Ampex 1200 24 track recorders, E-V Sentry III monitors and 3 tons of heating and cooling equipment. He installed four wire elec-

trical service running to every outlet, allowing the truck to operate with sources from 85 to 480 volts.

Despite the technical sophistication, Rosen feels that their real strength comes in the service they provide to their clients. "Our attitude is that we are the servants of our master. And our master *de jour* is the one who hires us. We have a reputation of being extremely flexible as far as our crew... and fast learners. And, also, we're a little bit on the perfectionist side, which may be good or bad, but people know that every last drop of audio quality that can be gotten out of a job, we will try to get."

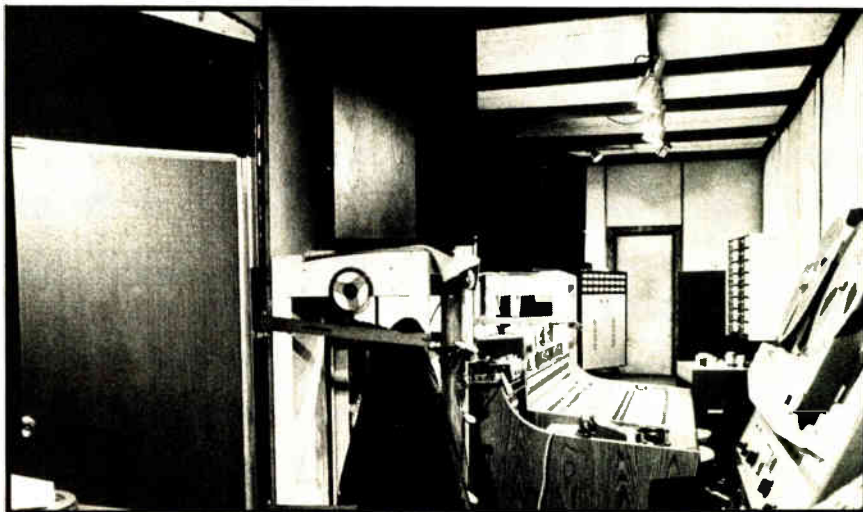
Fanta makes a point of working closely with musicians, and respects their knowledge of how their instruments should sound. Says Rosen, "We'll always try their way first, unless it's just off the wall and a complete error. But usually it isn't—people generally have very good suggestions. Like Jaimo, one of the Allman Brothers, at a show once told us, 'You ought to mike my snare drum over here, from the side of the drum.' I said, 'Gee that's probably not right but have you ever tried it before?' And he said 'No, but I've always wanted to. Why don't you try it and see what it sounds like?' Well, we put the snare drum mike there and, sure enough, it sounded great. It was deeper and fuller."

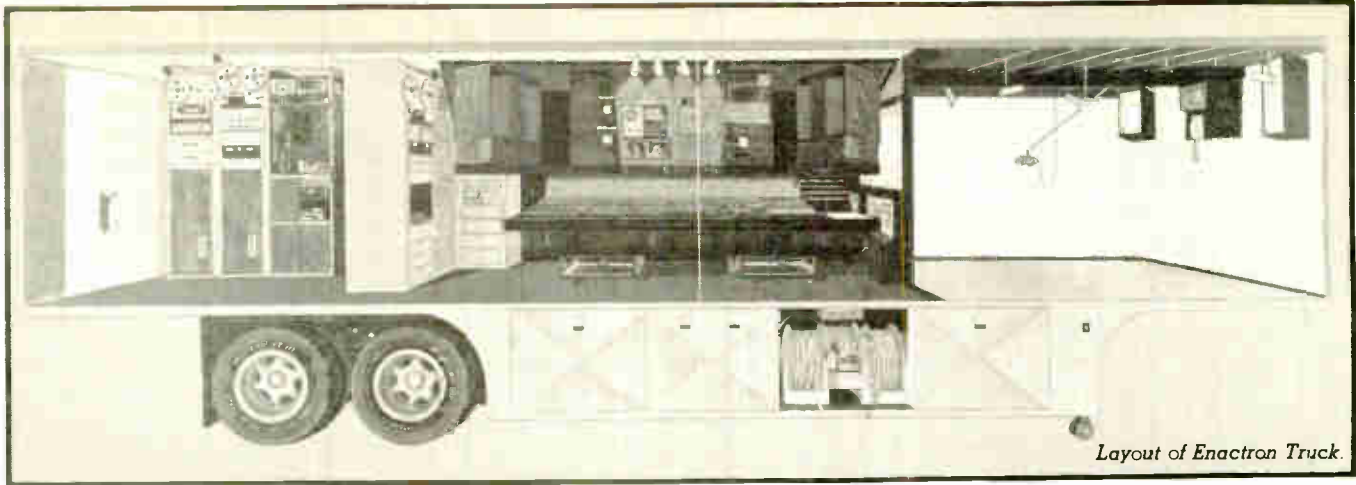
Rosen's Fanta truck has recently been experimenting with digital recording. "We've tried the Mitsubishi system, with a tremendous success rate. We recorded Pure Prairie League with the 3M 32 and 4 track system and were very, very pleased with that. So the odds on us having digital recording equipment in the future is real high."

ENACTRON TRUCK

Though far from Nashville, country music remotes are mining gold for Brian Ahern's L.A. based Enactron

Interior of Fanta's 40 foot tractor trailer rig.





Layout of Enactron Truck.

Truck. According to chief engineer Stewart Taylor, 1981 has already brought the Enactron Truck "nine or ten gold and platinum records, and three Grammys. We did the overdubs and mixing on the current number one country single, Rosanne Cash's 'Seven Year Ache,' and Willie Nelson's 'Stardust' album, which we did, is still on the charts after 162 weeks."

The Enactron Truck also got its start in 1973, while Ahern was living in Toronto and producing Anne Murray. He was in negotiations to produce Emmy Lou Harris (who he would later

marry) at about the time the truck was being finished, and she recorded her first demo for him in the truck's unfinished iso booth.

With an offer to produce David Bromberg in L.A., he and Stewart packed up the 40' truck and left Toronto for what was to be more of a permanent move than they ever anticipated. They rented a forty acre estate in Beverly Hills, which they operated out of until a little over a year ago when a landslide wiped the place out. Since then Enactron has relocated and the company has also recently built a fixed

studio called Magnolia Sound in North Hollywood.

The truck's unique 3 room design has remained relatively unchanged from its original plan: a 11' x 8' machine room with twin Stephens 24 tracks; a 13' x 8' lounge/overdub room called the Comfort Zone; and a 15½' x 8' control room with Neve console placed along the length of the truck, with Belle Klipsch monitor speakers.

Though albums make up the bulk of the Enactron Truck's duties, they have been increasingly in demand for radio and film work, handling such pro-

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Tom Harvey at the controls of the Recording Services truck.

jects as Willie Nelson's 'Honeysuckle Rose,' Bette Midler's 'The Rose' and The Band's 'Last Waltz.'

RECORDING SERVICES COMPANY

While many remote recorders have diversified over the years, Tom Harvey's Recording Services Company has found their mark by specializing in television sound. At the time he built the truck in 1975, Harvey noticed that, "TV was requiring electronic considerations that were not the same in record production. So we built a truck with TV in mind. Because TV engineers are different than audio engineers, we went heavily into communications, visual and audio."

Harvey, whose truck has handled Don Kirshner's Rock Concert since its beginning, makes no mistake about his gratitude to other L.A. remote trucks. "We looked at some other trucks in town and tried to steal all their good ideas... and put in some of our own. I'm sure there are other trucks just as good as ours—but ours is pretty neat."

RSC's position as TV audio specialists is quickly paying off. Says Harvey, "Before TV producers used to say, 'Just give me a mono feed to the VTR's and we'll fix it later. And now they're looking not only for a high quality stereo feed to the VTR's, but they're looking to avoid having to mix it later—because of the costs."

"We are at the turning point," notes Harvey. "For the last 18 months probably 75% of the TV shoots we have done have required stereo, rather than mono audio, in addition to the 24 track recording. We've found in the last few months that most TV producers are now thinking in terms of stereo."

Television, mainly of the cable variety, makes up a large portion of the work being done by Houston Recording, Rich Houston's 5 year old remote service that is in the process of relocating to the San Francisco Bay Area from its previous L.A. home base.

Rich had been receiving a growing percentage of out-of-town business as the L.A. recording scene began to dry up. Much of that business had come from Las Vegas, where Houston often teamed up with video crews to produce high quality audio/video programs for such diverse artists as Roy Clark, Dionne Warwick, The Jordanaires, The Drifters, Foster Brooks and the Edwin Hawkins Singers. Beside cable programming, the projects ranged from live albums to promo shorts to canned product for future stereo TV applications. This lure away from L.A., as well as Rich's desire to move to Northern California, illustrates a special degree of

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feeling, and so do we. Contact Carl Frost of Sanborn Productions. You'll get what you always needed in a recording service. It's a good feeling.



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Houston feels, as do many other remote operators, that the average client is not yet aware of the remarkable quality and convenience available from remote operations. No longer are

HOUSTON RECORDING



Houston Recording's 18' truck.

remote trucks necessarily plagued with abominable acoustics or inadequate equipment, as compared with fixed studios. Client comfort is also being taken very seriously in operations like Houston's. Overcoming the obstacles of interfacing with unpredictable systems, low voltages, questionable power sources, grounding problems and the confinement factor have made for great recent progress in the world of recording on wheels.

• • •

Beside the above mentioned operations, many more top quality remote services exist to serve the needs of location recording. Following is a listing of those remote recording facilities that responded to our query in the last couple of Mix issues. Some of them were nice enough to supply additional information on their operations. ■

ARTISAN RECORDERS, INC.
1421 S.W. 12 Avenue, Pompano Beach, FL
(305) 788-0880
Contact: Scott Strawbridge

AUDIO GRAPHICS
1516 Ferris Ave., Royal Oak, MI 48067
(313) 544-1793
Contact: Edward J. Wolfrum

AUGUSTWOLF, INC.
1250 Pine St. Suite 102, Walnut Creek, CA 94598
(415) 933-2817
Contact: Douglas Reid

Services Available: A pressable master tape made for you about the wages a "TOP 40" band earns in one night. There isn't a more effective, affordable tool for the artist who needs a great recording for a "live" record or career promotion. Besides 2, 8, 16 track mobile capabilities, we offer professional 3/4" color video and a complete production studio, all at un-heard-of rates! The Augustwolf Truck is credited on many "live" albums, just ask Pharoah Sanders, Sons, Wah Wah Watson, Toons, Theresa Rec-

ords, or call the Augustwolf Truck. (415) 798-5062 or (415) 933-2617 for equipment, audio/video packages, rates.

AURA-SONIC LTD.
140-02 Poplar Ave., Flushing, N.Y. 11355
(212) 808-8500
Contact: Steve Remote

AUTHENTIC SOUND
502 Shoreline, Mill Valley, CA 94041
(415) 383-5500
Contact: John Overton.
Services Available: Authentic Sound is a mobile recording service designed to reproduce precisely the sound the musician hears, at an affordable price.
To begin with, a variety of condenser & dynamic microphones are used depending on the application. This includes Neumann 87, 89, 84, Schoeps, Nakamichi, Sennheiser, Beyer, RCA & others. The MCI 1810 console, transformerless 9microvolt/sec. slew rate with switchable VCA automation provides the cleanest possible signal path.
The MCI 110B-8 track recorders are transformerless, using differential amplifier technology. These may be run sequentially for continuous 8 track recording or synched for 14 track capability. The system is maintained by experienced technicians, and is owner operated, to insure personal satisfaction of every client.

BEST AUDIO
5422 Fair Ave., N. Hollywood, CA 91601
(213) 783-2378
Contact: Larry Estrin

BODACIOUS AUDIO INC.
4114 George Ave. Suite 1, San Mateo, CA 94403
(415) 573-5287
Contact: Herb Pallant, Studio Manager.

Services Available: Bodacious Audio is now available to provide professional remote recording services to Northern California. Our services include on-location recording, and provide everything from first-time promotion packages to post production editing (including an over-dub facility), tape duplication, and disk-mastering assistance. We are pleased to introduce a complete remote audio service for live video package productions. The mobile recording truck features a live-end dead-end™ design, to capture all of the excitement of the "live" performance. We would like to thank Journey, Herbie Hancock, Marty Balin, Ronnie Montrose, Martin Mull, John McEuen, Laub & Cirimelli, and others for their faith in our live recording philosophy.

CATFISH BAY SOUND STUDIOS
133 Franklin Street, Clarksville, TN 37040
(615) 552-2789
Contact: Chuck Emery.

COPPERWOOD RECORDING STUDIOS
2816 Garfield Ave., Carmichael, CA 95608
(916) 485-7999
Contact: Scott Welch.

DIGITAL SERVICES
2001 Kirby Dr., Houston, TX 77018
(713) 520-0201
Contact: John Moran, Jr.
Services Available: Equipment includes: Sony PCM 1600/1610 digital processor, Sony DVU 200 B tape transport, Sony DAE 1100 digital editor and Neve 5442 mixing console. As needs will vary from project to project, we work with the client to ascertain the specific equipment to be used and the time involved to accomplish those ends. Then we will give you a flat rate for the entire project. Call us to discuss any digital needs you may have now or in the future. We assure you no better quality is available anywhere else, and we can prove it.

PHIL EDWARDS RECORDING
1338 Mission St., San Francisco, CA 94103
(415) 881-4439
Contact: Ron Davis, Remote Manager.
Services Available: PER offers a 30' GMC truck featuring a 24 x 24 API console, two 3M79 16 track machines (or any complement of machines), closed circuit stage monitoring, a rolling inventory of 60 select microphones, mic splits, air conditioning, etc. We specialize in album work, film & TV shoots and "live" air dates. Call for rates.

ELECTRONIC MEDIA CORPORATION
14203 N.E. 18th Ave., N. Miami, FL 33181
(305) 940-7971 or (305) 751-9050
Contact: Rick Cole, Bob Ingria.
Services Available: "STUDIO-GO" is EMC's new audio/video mobile production vehicle with a large (8' x 14') control room, heavy-duty air conditioning and an on-board 10 KW AC generator which allows advanced SMPTE Time-Code editing, 10 RCA color cameras, 4 RCA one inch VTR's, 1-10 input Riker

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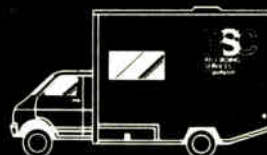
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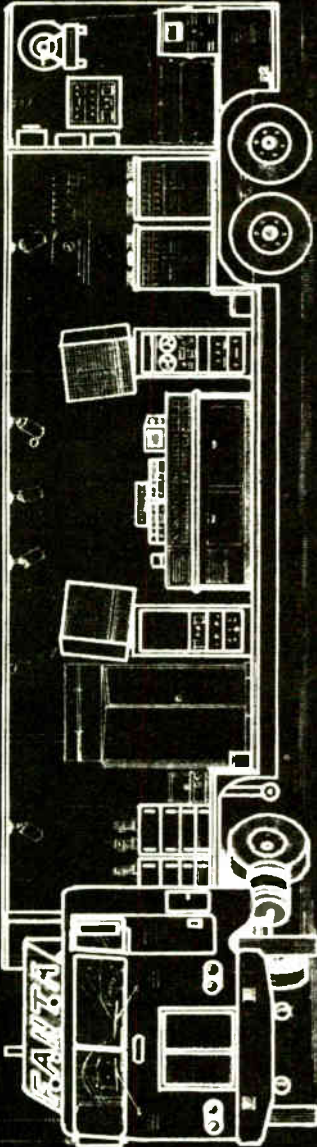
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THE ENACTRON TRUCK
5102 Vineland Ave., N. Hollywood, CA 91601
(213) 781-0511
Contact: Stewart Taylor.

FANTA PROFESSIONAL SERVICES
1213 18th Ave. South, Nashville, TN 37212
(615) 327-1731
Contact: Johnny Rosen
Services Available: Fanta is a 40-input, dual 24-track mobile recording facility with an emphasis on mobile. The Fanta truck and its crews have worked on shows ranging from the Rolling Stones to the New York Philharmonic. The company has recorded live albums for artists including Kenny Loggins, Barbara Mandrell, and Teddy Pendergrass. Film credits include the "Blues Brothers," Robert Altman's "Nashville," and "Coal Miner's Daughter." Television projects range from the Great Performance Series for PBS to the Mike Douglas Shows filmed on the Mississippi Queen Steamboat. Our most ambitious audio project was a 46-track opera for producer Curtis Davis.

FEDCO AUDIO LABS
90 Manning St., Providence, R.I. 02906
(401) 272-3157
Contact: Jeff Eustis.

WALLY HEIDER REMOTE RECORDING
1804 N. Cahuenga, Hollywood, CA 90028
(213) 486-5474
Contact: Janna Feliciano

HIGHLAND SOUND COMPANY
PO Box 4870, Austin, TX 78785
(512) 892-3485
Contact: Cheryl Theophilus

HOUSTON RECORDING
9340 Foothill #32
Cucamonga, CA 91730
(714) 987-0379
Contact: Rich Houston.

JAM STUDIOS, INC.
801 N. Central Avenue, Hapeville, GA 30354
(404) 788-1777
Contact: John K. Adams.

MOBILE RECORDERS LTD.
Southbury, CT 06488
(203) 284-2659
Contact: George Rothar.

OMEGA AUDIO, INC.
8036 Aviation Place, Dallas, TX 75043
(214) 228-7179 or (214) 350-9066
Contact: Paul A. Christensen.

P.F.S. RECORDING
P.O. Box 8840, San Jose, CA 95150
(408) 275-8322
Contact: Mike Halloran.
Services Available: Complete 4 track and stereo recording. We specialize in live stereo acoustic recording (Choral groups, chamber music, orchestra, etc.) but can handle almost anything. Small Studio featuring Bosendorfer grand. Record pressing and graphics available. Block rates \$10 and up.

TIM PINCH RECORDING
8201 1/2 Van Nuys Blvd., Van Nuys CA 91401
(213) 988-1180
Contact: Tim Pinch, Rex Olson.

QL MOBILE RECORDING
(office) 314 Romano Ave., Coral Gables, FL 33134
(305) 448-2477, 685-3487
Contact: Rob Burr.
Services Available: The QL Mobile unit was designed to perform well in a variety of production situations including live radio broadcast, Multi-Track recording on location or in QL's Hide-Away Studio, and our speciality of mixing sound for live video production. QL believes versatility is the name of the game in doing quality remote recordings. We have recorded everything from

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8456 West 3rd St., L.A. CA 90048
(213) 853-0240
Contact: Gale Sacks

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RECORD PLANT (NY) REMOTE
321 W. 44th St., New York, NY 10036
(212) 581-8505
Contact: Lila Wassenaar

THE RECORDING CONNECTION
23330 Commerce Park Rd., Beachwood, OH 44122
(216) 484-4141
Contact: Arnie Rosenberg

Services Available: The Recording Connection's Roadmaster II is a mobile, 24 track, total state of the art facility, housed in a 40' Silver Eagle bus. We exclusively record all NBC Source National Network programs and WMMS/Cleveland concert events and have also recorded for Westwood One Productions. Recently we received a gold album for recording The Kinks "One for the Road." Roadmaster II has become recognized not only for the finest live recordings available but for economic viability. Roadmaster II features a Soundcraft series 3B console, MCI JH-24, 2" 24-track and MCI 2-track tape machines, JBL 4313 monitor and much more.

RECORDING SERVICES CO.
10824 Ventura Blvd., Studio City, CA 91604
(213) 788-7191
Contact: Tom Harvey

THE REEL THING, INC.
3133 Cheater Ave., Cleveland, OH 44114
(216) 698-3133
Contact: James L. Silver, Pres.

REELSOUND RECORDING CO.
P.O. Box 280 Manchaca, TX 78852
(Located outside Austin, Texas)
(512) 472-5325 or 282-0713
Contact: Malcolm H. Harper, Jr.

SANBORN PRODUCTIONS INC.
Rt. 3 Box 120, Ashland City, TN 37015
(615) 254-8538
Contact: Carl Frost

Services Available: Mobile One completed May 1979 is a dual 24 design with near field monitoring of exceptional accuracy. Control room (18x8x8') seats six comfortably. 35 inputs with Sound Workshop 1600 and Yamaha PM 180. Outboard gear from UREI, Orban, dbx, Scamp, Orange County and MICMIX. Microphones by Neumann, AKG, Sennheiser, EV, Sony, Shure, and Countryman. Jensen splitter. Two stereo cue systems, intercom, two channel CCTV system. Studio foldback with EV monitors. Record anywhere from a beach front home or a mountain retreat, to large auditoriums. Artists: Merle Haggard, Charlie Daniels, Mel Tillis, England Dan Seals, and Hank Williams Jr.

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Contact: Tom Mechin

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Contact: Richard Casares.



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(203) 348-2121

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by Stan Axelrod

Suppose you have a 2" 16 track recording studio. One day someone calls up and says he'd like to lay some tracks on a 1/2" 8 track tape at your place. Since you don't have a 1/2" 8 track deck, he agrees to bring his if you can hook it into your system. You tell him, "No problem, come on down."

Next thing you know, he comes in lugging a Tascam 80-8 with dbx attached. Whoops—first problem—the connectors are wrong. He's got RCA's you've got cannons. Fortunately, it's either day light and someone can run off to the local electronics supply and get adaptors, or you are really swift at soldering and have lots of connectors in the workshop—no need to panic...yet.

You know that your system is balanced (whatever that means) and that pins 2 & 3 on the cannons are hot. The RCA's can only have 2 wires, so you solder those to pins 2 & 3 like this. Maybe you also wired pin 2 to pin 1 just to be sure.

Wiping the sweat from your brow, you return to the control room, attach

MAKING ENDS MEET IN THE AUDIO WORLD

*Some tips on interfacing equipment

and semi-pro equipment are just not designed to work with each other. With care you can pull it off, but you must understand the areas of conflict. These areas are level matching, balancing and impedance matching.

Level matching is probably the simplest problem to deal with, so let's start with it. Just about all studio equipment (pro and semi pro) is designed to

run at unity gain. This means that if you feed a signal into a device it will come out at the same level (mic pre-amps are an exception of course).

The problem occurs with the signal level the device normally expects to see. VU meters are usually set to "0" at this reference level. Professional equipment expects to see a +4dBm signal (about 1.23 volts; 0dBm comes out at about .775 volts). Since it costs less money to construct a device that expects to see and put out a weaker signal, semi-pro gear usually, although there is no real standard, sets its reference at -10dBV, or about .3 volts. (We'll get to the difference between dBm and dBV in the wonderful world of impedance matching).

What all this means is that profes-

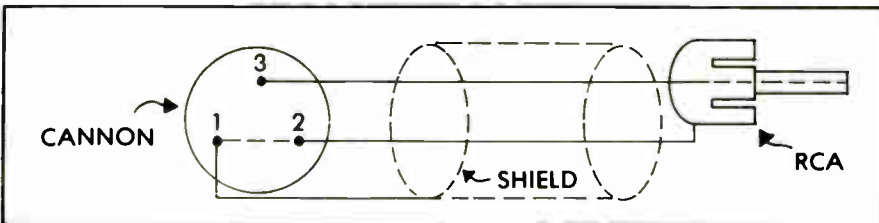


FIGURE 1

all the cables, and roll tape. At last...it's time to panic!! Signals going into the Tascam are wrapping the deck's meters' around the pegs, signals coming out of the Tascam are in the mud, and everything is pure distortion—What's going on? Obviously, you've run into a compatibility problem.

Although the advent of semi-pro gear (such as the Tascam series) has enabled more people than ever before to get their music recorded, it has also opened a can of worms. Professional

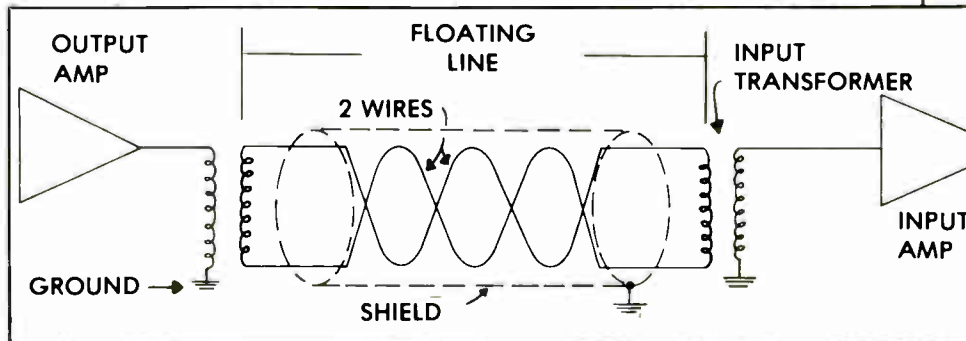


FIGURE 2

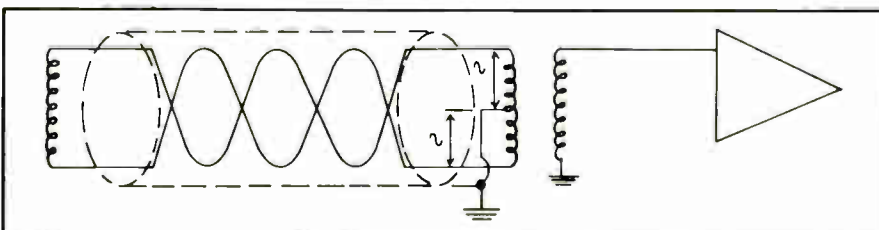


FIGURE 3

sional gear considers semi pro 14dB too weak and semi pro considers pro gear 14dB too strong—and there goes headroom and signal to noise ratio out the window.

About all we could do in our beginning example would be to throw away 14dB of signal coming out of the board with either a pad at the input to the Tascam's dbx unit or by reducing the

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Recording Services Section

enough reserve gain in the tape or line input circuitry for you to reboost the signal coming out of the Tascam.

O.K.—that solves one problem, but we're not done yet. Remember that the system is balanced, but the 80-8 is unbalanced. Again, the two systems don't

the input of another. This requires two wires. The "signal" is any voltage *difference* between the two wires. If both wires carry exactly the same information at the same time, electrically you can't tell the two wires apart. If neither wire is tied or referenced to earth

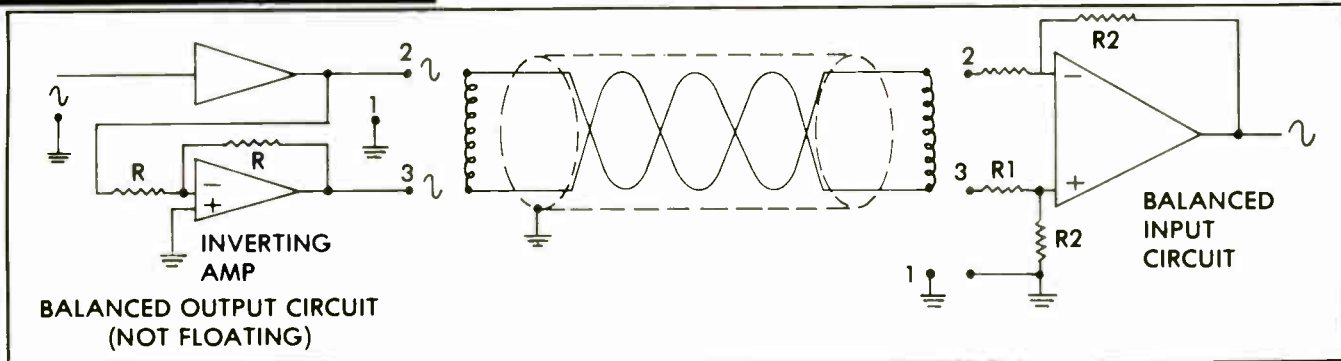


FIGURE 4

board output buss level. I'd prefer the first alternative because I wouldn't want to recalibrate the meters on the board; and, if the studio is properly wired, I'd want as strong a signal on the lines as possible (better signal to noise ratio.)

Reducing the record level pot on the 80-8 would work, but I'd rather have the dbx working in the signal range it was designed and calibrated for.

Fortunately, most boards have

mix well, but why not? Let's first look at what system wiring is supposed to do. Basically, the wiring is there to transmit signal from the output of one device to

ground in any way, they are termed "floating". About the only way to obtain a practical floating system is through the use of transformers:

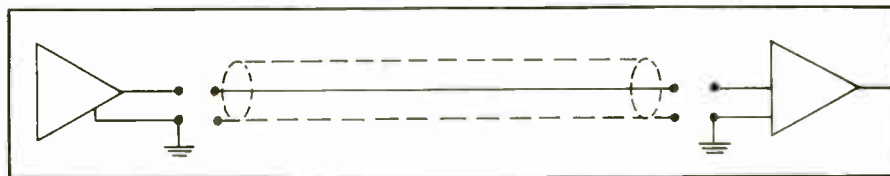


FIGURE 5

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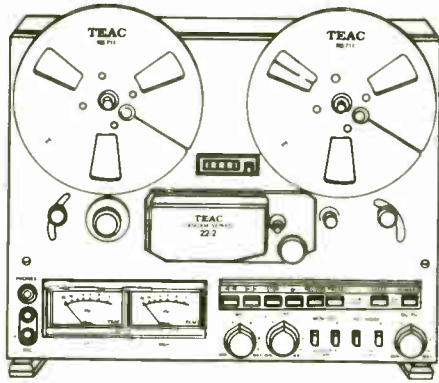
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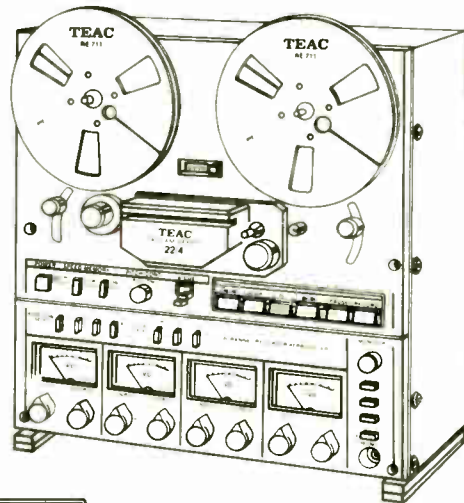
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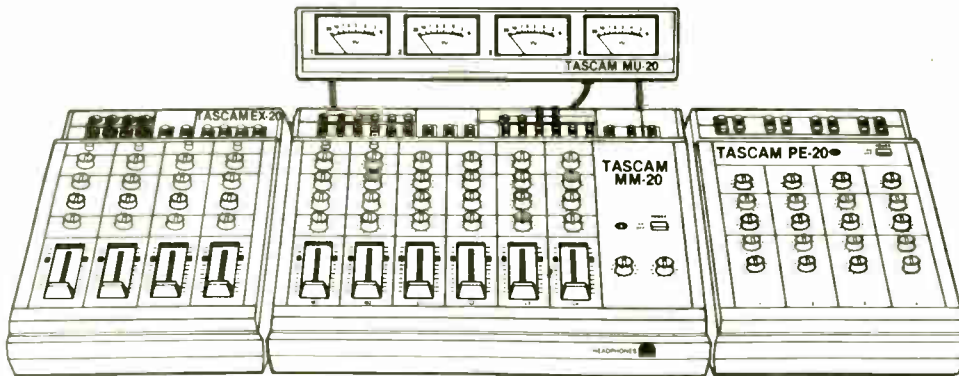
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Recording Services Section

The advantage of a floating system (especially with a grounded shield) is its high immunity to external interference. The reason for this is that anything external that effects one wire will effect the other also, thus not creating any difference signal.

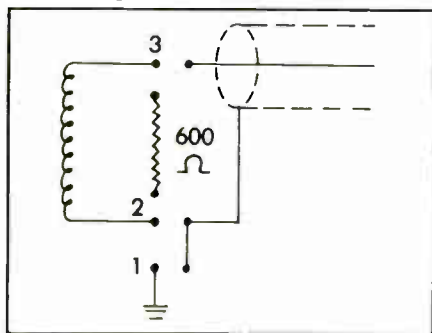


FIGURE 7

A balanced system differs from a floating system in that both signal lines are referenced to ground so that one goes positive with respect to ground if the other goes negative.

What we have done here is reference the signal lines to ground by attaching the center of the transformer winding to ground. The signal is now balanced around ground. We could do exactly the same thing to the output transformer, but most transformer equipped systems use a floating output tied to a balanced input.

Unfortunately, transformers have several disadvantages. They are prone to saturate (or overload) easily, they tend to create distortion, they are sensitive to external electromagnetic fields, have poor low frequency response, and good ones are expensive. Therefore, many manufacturers are turning to balanced transformerless designs:

Circuits like these have the basic advantages of balanced and floating designs, and none of the drawbacks of

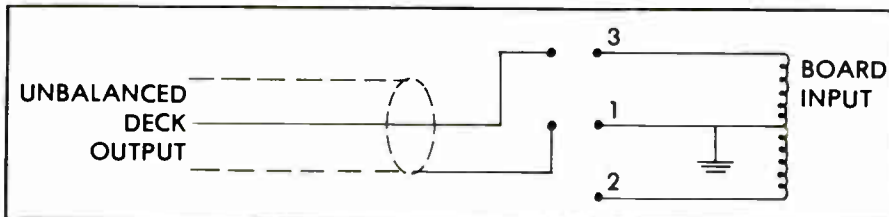


FIGURE 8

transformers.

Finally, we come to the system used in most semi pro gear—unbalanced lines. In an unbalanced system, one of the 2 signal lines is grounded, and is usually the shield:

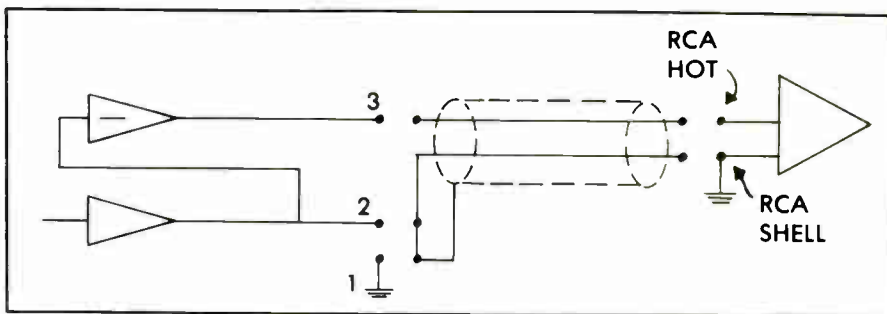


FIGURE 6

Unbalanced systems have the advantage of low cost (less electronics, cheaper connectors, but are more likely to pick up hum and other forms of interference. The two lines no longer will treat external interference identically.

Let's get back to our original problem to see what went wrong. Remember the system is balanced, and the deck is unbalanced.

ration, but reverses signal phase.

The third area we need to deal with when interfacing professional and semi pro equipment is impedance matching.

Impedance is the measure of how much a device restricts the flow of electricity. It's measured in ohms. A high impedance is analagous to a narrow water pipe. A high impedance output (semi pro) cannot properly drive a low

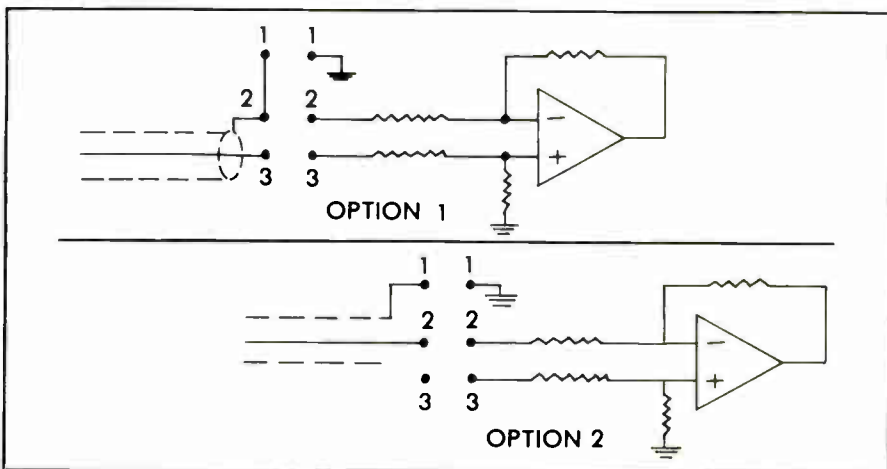


FIGURE 9

Notice what's happened here? Pin 2 of the buss output has been shorted to ground! In this case, the best solution would be to run shield to pin 1 *only* and hot to pin 3. Don't connect pin 2. If the board had a floating output this solution wouldn't work, but the original hookup would.

We also need to know if the board input is electronically or transformer coupled. If it is transformer coupled, the proper hookup is pin 3 hot, pin 2 open, pin 1 shield.

impedance input (*some* pro gear). It's like trying to fill a bathtub through a straw. A short circuit is an extreme impedance mismatch. The reverse case is better—it's easy to fill a straw from a bathtub. In fact, it's becoming a common practice to drive a high impedance input with a low impedance output. The technique is called bridging (not to be confused with power amplifier bridging—a very different topic...maybe some other time).

Exact impedance matching (output matches input) becomes critical only when transformers are used. Impedance mismatches cause ringing and transformer saturation—both of which can be very noticeable.

If your board has 600 ohms transformer coupled outputs, and you want to drive semi pro gear, hang a 600 ohms resistor across the board output hots. (see figure 7)

Remember way back near the beginning, I talked about the difference between dBm and dBV? The reason I held off explaining it then was that we need some understanding of impedance to explain it properly. First,

let's define dB. When we talk about dB's we are talking about a ratio. For example, if we take a signal to noise *ratio* of 60 dB, we are dealing with a signal to noise ratio of 1000:1 volts. The formula is:

$$\text{db Volts} = 20x \text{ Log } \frac{\text{signal voltage}}{\text{noise voltage}}$$

As in all ratios, both values must be measured in the same terms; in the above example—volts. You can't divide volts by ohms and get a ratio. You get current instead. What you can do though, is choose the components you wish to compare. You can compare 2 voltages, or 2 resistances, or 2 currents, or 2 powers, or 2 quantities of bananas. You can also take 1 value and use that as a reference against which you can measure all others.

dBm is a power measurement that dates back to the early days of broadcasting and telephone line transmissions when impedance matching was universally critical. The formula for power measurement is:

$$\text{db Power} = 10x \text{ Log } \frac{\text{power A}}{\text{power B}}$$

dBm sets a value of 1 milliwatt to power B, so 0dBm = 1mW of power dissipated. If that 1mW is dissipated through a 600 ohm resistor, the voltage across that resistor is .775 volts. The thing to remember is that when we talk about dBm, we are talking about power.

Semi professional equipment's output generally cannot drive a 600 ohm impedance, so manufacturers assume that their equipment will only drive bridging loads. This enables them to disregard signal power, and concern themselves with signal voltage only. dBV takes 1 volt as the reference, and so 0dBV = 1 volt.

O.K., where does all this mass of information leave us? Well, if we know how our studio is configured *at all points*, and we know what signal any given piece of equipment expects to send or receive, we can now interface all of it as needed.

What do you do if you don't know? The best answer is—**FIND OUT!** Read the equipment spec sheets and service manuals. If that doesn't help, or there are no specs available, there are troubleshooting techniques which can be used to get you on the air, but that's a subject for another entire article or three.

If you have any technical questions on the operation and maintainance of studio equipment, please address them to me *c/o* the **MIX**, I'll do my best to answer them. In the meantime, don't get excessively loaded and loose your balance. ■

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Recording Services Section

The following listings of various recording services were compiled from response to published announcements and do not indicate a complete survey of these areas. In some

cases those services have chosen to further describe their operations. Mix cannot take responsibility for the accuracy of the information supplied to us.



NORTHWEST

STAN AGOL
Independent Engineering
 3606 Lupton, Palo Alto, CA 94303
 (415) 858-3600, (415) 857-0709
 Contact: Stan Agol.

AUDIO TRANSFER RECORDERS
Production Services
 3327 Mt. Diablo Blvd., Lafayette, CA 94549
 (415) 283-4094
 Contact: Duncan, John, or Peter Rowe.

Services Available: We are full service 8-track 1" recording and video facility, located in Contra Costa County. A spacious control room and studio for feeling at home in. The studio was designed by Dr. Richie Moore to give a super sound. In addition to Richie's design, he also brings his years of expertise to us a mixer. This combined with other musician/engineers and a great assortment of instruments makes ATR very nice.

AUDIO VIDEO RESOURCES
Equipment/Instrument Rental
 80 Broadway, San Francisco, CA 94111
 (415) 781-2803

Contact: Jeff Mestler, John Zukowski.
Services Available: AVR rents the most complete and best-maintained line of video and audio equipment in Northern California. Audio recorders: 3M 32-track digital recorder, 1/4" to 24-track 2" analog recorders. Signal processing: Eventide "Time Squeeze" and Harmonizers, EQ, digital delay, Dolby and dbx noise reduction. Microphones: Neumann, Sennheiser, AKG. Also: Specialty items, accessories. Video recorders: Beta, VHS, 3/4"-VO-4800, Vo-2600, BVU-110. Video cameras: C.E.I. 310, RCA TK-76, Sony 1640. Also available: Sony BVU-200 editing system, monitors, video projectors, video duplication. Delivery available.

AUDIO VIDEO RESOURCES
Production Services
 80 Broadway, San Francisco, CA 94111
 (415) 781-2803

Contact: Jeff Mestler, John Zukowski.
Services Available: AVR has opened a new 24 track mixdown facility in San Francisco Financial District with complete audio sweetening for video and slide show audio mixing. AVR has available signal processing, including state-of-the-art digital systems, such as the Eventide "Time Squeeze." AVR owns the only 3M 32-track digital recorder with editing in Northern California. Also available: complete video production featuring TK-76 and C.E.I. 310 cameras, and Sony BVU 200 3/4" editing. Specializing in video-for-music and production for corporate clients. Credits: Airstrip Records, Natomas, Ford, American President Lines, Del Monte, and most leading ad agencies.

AUDIOWORKS
Maintenance Services
 854 Irwin, San Rafael, CA 94901
 (415) 457-1722

Contact: Stan Axelrod.
Services Available: Audioworks specializes in maintenance of all recording studios and M.I. electronics—in our shop or in the field. We provide custom design, rebuilding, and upgrading of any equipment, and offer studio maintenance contracts with 24 hour service available.

AUGUSTWOLF, INC.
Production Services
 1250 Pine St., Suite 102, Walnut Creek, CA 94598
 (415) 933-2817
 Contact: Douglas Reid.

AURACOUSTIC RESEARCH & ENGINEERING
Consulting Services
 540 Canal Street #7, San Rafael, CA 94901
 (415) 458-1783
 Contact: Richie Moore Ph.D., or Annie Moss.
Services Available: Auracoustic means the interaction of sound and acoustics. We offer a full range of services designed for peo-

ple who need the very best in sound advice and audio systems interface. We offer complete computer acoustic and audio analysis coupled with personal attention to details. We do not sell any equipment so we can design and install the items that are best suited to the client and the budget. Systems from 4 to 24 track get the same attention.

BAY AREA STUDIO ENGINEERING (BASE)
Maintenance Services
 54 Ney Street, San Francisco, CA 94112
 (415) 469-0138

Contact: Michael Gore—Chief Engineer
Services Available: BASE provides expert repair, maintenance, installation, calibration, and modification of recording and support equipment. We have possibly Northern California's finest collection of test equipment, (AMBER 4400A, Tektronics, B+K, Ferrograph, etc.), which is brought to each location. BASE offers full electronic mechanical and acoustic services, by people with years of major 24 track studio experience. BASE has installed 5 local 16-24 track studios, and provides maintenance and repair for 25 area studios. Rates are reasonable.

GERALD L. BRAZZIL
Independent Engineering
 2510 Live Oak Blvd. #4 & #5, Yuba City, CA 95991
 (916) 874-0800
 Contact: BoogieMan Productions.

CM COMMUNICATIONS
Production Services
 PO Box 335, Elmhurst, CA 95825
 (707) 448-2588 or 429-9485
 Contact: Craig J. Meros.

TIMOTHY JOHN CHARLES
Independent Engineering
 PO Box 1081, Aspen, CO 81612
 (303) 923-5813
 Contact: The Aspen Studios.

CORY SOUND CO.
Tape Duplication
310 Townsend, San Francisco, CA 94107
(415) 343-0440
Contact: Phil Markinson.

PHIL CRESCENZO/CRESCENZO PROD.
Production Services
505 Cone St. #7, Larkspur, CA
(415) 924-1350
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CROW RECORDING
Production Services
4000 Walling Ford N., Seattle, WA 98103
(206) 634-3088
Contact: John Nelson, Judy Werle.

WARREN DENNIS
Independent Engineering
7736 Elphick Rd., Sebastopol, CA 95472
(707) 823-7185
Contact: Beggars Banquet Studios.

DIFFERENT FUR RECORDING
Tape Duplication
3470 19th St., San Francisco, CA 94110
(415) 884-1967
Contact: Susan Skaggs.

PETER DRAKE/CLOSE ENOUGH MUSIC
Independent Engineering
1836 McAllister St. #8, San Francisco, CA 94115
(415) 929-8725
Contact: Peter Drake.
Services Available: Whether you're spending \$30 or \$200 an hour in the studio, the most expensive recording you can make is the one that doesn't work. We provide the composition, arranging and production services to help you get the most for your studio-time dollar. Experienced in both record projects, (rock, jazz, etc.), and media/advertising accounts. No hype or promises of stardom, just the concern to make your music the best it can be.

DYNO-MY-PIANO
Equipment/Instrument Rental
2940 Folsom St., San Francisco, CA 94111
(415) 467-8035
Contact: Chuck Monte.
Services Available: Rental of highly modified custom keyboards for studio use. Equipment available includes the new Dyno-My Studio Model 4000 and other modified Rhodes keyboards and electric pianos. Also available are Oberheim, Prophet and Yamaha synthesizers and keyboards.

H.R. PRODUCTIONS
Production Services
3089 Diablo View Rd., Lafayette, CA 94549
(415) 930-7575
Contact: H. Reiner.

Services Available: H.R. Productions provides complete production services for LP record projects. In addition to production of your master tape, we provide first-rate mastering, pressing and printing of labels and jackets, all at very competitive prices. Our credits include: all albums by Steve Seskin and Friends as well as Carla Piper, Andrew Stern, Claron, Francyl Streano, Glenda Roberts & Timm Meyers, Billy Roberts, Zoogz Rift, many others.

MICHAEL HERSH
Independent Engineering
4112 Ravenwood Pl.
Castro Valley CA 94546
(415) 582-7845
Contact: Michael Hersh.

BOB HODAS
Independent Engineering
Fairfax, CA
(415) 459-8941
Contact: Bob Hodas.
Services Available: Recording and Concert Engineering. Credits include: Doobie Brothers, Marty Balin Band, Rick James and the Stone City Band, Dick St. Nicklaus, Jap's Gap's. I also have a selection of Neumann mics and Pultec EQ's which I use on my projects or rent out for other album projects.

HOLDEN HAMILTON & ROBERTS, INC.
Production Services & Tape Duplication
2227 N. 58th, Seattle, WA 98103
(206) 832-8300
Contact: Candace Chinn.

JINGLES OF AMERICA
Production Services
521 Chestnut St., Santa Cruz, CA 95060
(408) 425-3728
Contact: Glen R. Rosecrans.

K & K MUSIC SOUND ENGINEERING
Equipment/Instrument Rental
1904 W. San Carlos St., San Jose, CA 95128
(408) 998-4850
Contact: Any Sales person.

RICK KEEFER PRODUCTIONS
Independent Engineering
P.O. Box 30186, Honolulu, HI 96820
(808) 293-1800/ Cable: 'HITSHAWAII'
Contact: Rick Asher Keefer.

BOB KOVACH
Independent Engineering
146 Langton Street, San Francisco, CA 94103
(415) 840-5180
Contact: Bob Kovach.

RICHARD (TACO) MADRID
Independent Engineering
115 N. Quince, Olympia, WA 98508
(206) 357-5958 or 754-8329
Contact: Richard Madrid.

MELON STUDIO REAL-TIME DUPLICATING
Tape Duplication
PO Box 2188, San Francisco, CA 94128
(415) 665-8588
Contact: Robin Woodland.
Services Available: Melon Studio offers real-time cassette duplicating at affordable prices! Our high quality copies will sound just as they should—like the masters you spent so much time and money on. We primarily do runs of less than 100 units, usually for demos, but some clients have found it desirable to order larger quantities for self-produced albums. Most orders are complete in 2-3 days, larger orders in 5-10 days. Prices are formulated based on the running time of your program, so please call for an exact quote. For free brochure call: (415) 665-6566.

FRED MEYERS
Independent Engineering
543 Elizabeth Street, San Francisco, CA 94114
(415) 648-3465
Contact: Fred, Linda.

RICK MILLER
Independent Engineering
301 Brockhurst Dr., Santa Rosa, CA 95401
(707) 525-8934
Contact: Rick Miller.

RICHIE MOORE, P.H.D.
Independent Engineering
540 Canal St. #7, San Rafael, CA 94901
(415) 459-1783
Contact: Dr. Richie Moore, Annie Moss.

NOVA RECORDING SERVICES
Production Services
Suite 3818, 1001 4th Ave. (mailing), Seattle, WA 98154
(206) 447-1898
Contact: Paul Speer/The Nova Music Group.
Services Available: To augment our activities in independent production, we now have available a complete, portable eight track studio featuring a one-inch MCI recorder and SMPTE time code. In addition to offering the film/video community cost-effective multi-track audio, future Nova Music Group album projects can be done by interlocking the eight track with 16 or 24 track and overdubbing outside the major studios and, therefore, reducing production costs as much as 50% without compromising quality. Rates: \$30/hr. and up. Please call for specifics.

PRO AUDIO COMMERCIAL
Tape Duplication
383-40th St., Oakland, CA 94609
Contact: K.T. Patterson.

REEL TIME DUPLICATING
Tape Duplication
2563 S. El Camino Real, San Mateo, CA 94403
(415) 345-REEL
Contact: John Wiget or Japji Singh.
Services Available: Reel Time specializes in high fidelity, high quality, audio cassette duplication. Using a custom "one to one" process, our copies provide high frequency response, low wow and flutter and high dynamic range. We are equipped to handle orders for 1 to 1,000 copies while still providing fast service and competitive prices. Also, our art department can provide you with complete service on printed labels and inserts. We care about your project and are committed to providing the best in service and the highest in fidelity.

DAVID RUBINSON
Production Services
c/o The Automatt, 827 Folsom St.,
San Francisco, CA 94107
(415) 777-2830
Contact: Shelly Kaplan.

SAUSALITO RECORD PLANT, INC.
Production Services
2200 Bridgeway, Sausalito, CA 94965
(415) 332-8100
Contact: Michelle Zarin.
Services Available: Sausalito Record Plant is a complete, state of the art recording environment. Our two fully equipped 24 track rooms feature custom automated A.P.I. 32 x 24 x 4 consoles, with 3M 79 and Ampex ATR-100 recorders. The studios measure 36' x 24', plus drum booth and iso. room. Our pre-production room (18' x 33') allows you to rehearse or write with monitor/playback facilities. We offer a wide choice of equipment: 150 microphones: from old (M-49, U-47 tube) to new (PZM); 30 limiters: from Fairchild to dbx; 9 chambers: live, plate, digital; 9 monitor types: from Auratones to Westlake to Meyers; Instruments: Yamaha and Steinway grands, B-3/Leslie; Goodies: Pultecs, Eventide, EXR, Orban, Marshall, etc.; Amenities: kitchen, jacuzzi, games, and two private hillside homes for out of town clients.

SECRET SOUND PRODUCTIONS
Production Services
PO Box 88433, Scotts Valley, CA 95068
(408) 438-2320
Contact: John Reynolds, Producer.
Services Available: Independent record production (The Secrets). Our staff has the training, experience, and facilities to assist your project at any stage from the point of conception through arranging, rehearsal, recording, and promotion. Services include: sound engineering, songwriting, arranging, musician referral, graphic design studio, and A.S.C.A.P. Publishing. Also a pre-production room with four-track recording, P.A., and instruments: Yamaha, Tascam, Sennheiser, Tapco, I.B.L., UREI, Bi-amp, C.L.&S., Korg synthesizer, Rogers drums, and much more. Easy access from Monterey and San Francisco Bay Areas. Call for availability and low rates.

THE SHOE STORE RECORDING
Production Services
#1 Shattuck Square, Berkeley, CA 94710
(415) 540-8055
Contact: Hank Ciegler, Calvin McElroy, Dr. Richie Moore.

SING FOR YOUR SUPPER
RECORDING SESSION CATERERS
Production Services
138 Carl St., San Francisco, CA 94117
(415) 731-3388
Contact: Linda, Cora, or Paula.

SONIC ARTS CORPORATION, "THE MASTERING ROOM" MASTERING & PRESSING
Production Services
665 Harrison St., San Francisco, CA 94107
(415) 781-8308, 857-9470
Contact: Leo Kulka, President Chief Engineer.

LUCY SHERAK
Independent Engineering
19 Locke Lane, Mill Valley, CA 94041
(415) 381-3137
Contact: Lucy Sherak.

WAYNE S. SHISHIDO
Independent Engineering
2419 Hibino Place, Honolulu, HI 96819
(808) 841-8377
Contact: Wayne S. Shishido.

Recording Services Section

TIKI SOUND STUDIO

Production Services

792 E. Julian St., San Jose, CA 95112
(408) 286-9840 or (408) 286-9845

Contact: Gracie J. O'Neal.

Services Available: At Tiki Sound Studio we believe that we have the very best engineers in the Bay Area. Bob Berry, Tom Tomasello, Jeannine Osborn, Gracie J. O'Neal. Also, the best in house musicians. Therefore, you will receive the most updated demo or master for your session. Ask about our package deal on your next album project. Also, ask about our 16 or 24 track block time.

TIMING

Production Services

2520 Hillebrand St. #202
Berkeley, CA 94704
(415) 843-2717

Contact: B.T. Washington.

TOURMALINE PRODUCTIONS

Production Services

P.O. Box 438, San Mateo, CA 94401
(415) 359-4589

Contact: James E. Henry.

Services Available: Tourmaline offers a wide range of engineering, production, and consultation services, including start to finish album and album demo production/engineering in Northern and Southern California, consultation on in-house and mobile P.A. systems, media room installations and audio-video installations on jet aircraft. We also provide comprehensive studio business services: accounting, bookkeeping, funding proposal and management consulting, as well as custom software packages. Please call for rates.

THE WINERY RECORDING STUDIO

Equipment/Instrument Rental

R.R. 2 Box 837, Kaupakulua Road,
Haiku, Maui, HI 96708
(808) 572-1580

Contact: Dorothy Betz or Tom Milner.

Services Available: Available: Drum set, 3 sets congas, bongos, assorted percussion, string ensemble, ARP, misc. synthesizers, Prophet 5 and Hammond B3 organs, Fender twin reverb, boogie amp, Princeton amp, Alembic bass bottoms, Yamaha electric grand, Fender Rhodes electric, Crumar, Clavinet, various basses including stand up and electric. Also, studio musicians and charter pilot on staff. (larger PA systems available for location; custom).

ROBERT ZAT RECORDING

Independent Engineering

East 415 Ermline, Spokang, WA 99207
(509) 489-4838

Contact: Robert Zat.



SOUTHERN CALIF.

A&R RECORDING SERVICES

Production Services

71906 Highway 111, Rancho Mirage,
CA 92270

(714) 348-0075

Contact: Scott Seely.

ALEX CIMA

Independent Engineering

P.O. Box 1584, Hollywood CA 90028
(213) 962-8588

Contact: Alex Cima.

Services Available: Freelance recording and production. Fee negotiable. Recorded and/or produced: Projects on Deutsche Grammophon Polydor International, Chromosome, Crescendo labels. CBS and PBS TV Specials. Radio and TV commercials. Scores for film, film trailers, and audio logos. Specialty: Electronic music, synthesizers, special audio effects, vocoders, instrument and voice signal processing.

DON M. DORSEY

Independent Engineering

2079 June Place, Anaheim, CA 92802
(714) 971-2828

Contact: Don.

ELEKTRIQUE PRODUCTIONS INC.

Production Services

23342 South Pointe Drive, Suite L
Laguna Hills, CA 92653

(714) 951-5052

Contact: Mr. Kermit Moore.

RON FAIR

Independent Engineering

2121 Rodney Drive, Los Felis, CA 90027
(213) 883-4517

Contact: Ron Fair.

BILL GLASSER/BRIAN VESSA

Independent Engineering

21405 Collina Drive, Topanga, CA 90290

(213) 455-3328

Contact: Hot Lix Productions.

WILLIAM F. FERSON

Independent Engineering

7779 Ivanhoe Ave., La Jolla CA 92037
(714) 458-0879

Contact: International Alliance Local, 122
San Diego, CA 92104.

KOALA STUDIO

Production Services

18 Meridian Ave., Alhambra, CA 91801
(213) 308-0823

Contact: Jack Adams.

GEORGE MARTIN

Street Level Productions

Independent Engineering

5741 Carlton Way, Suite 305
Hollywood, CA 90028

(213) 488-8918

Contact: George Martin.

GENE McMANUS

Independent Engineering

740 Canyon Crest Dr., Sierra Madre, CA 91024
(213) 355-2082

Contact: Gene or Spatzel McManus.

NEOTERIC MUSIC

Production Services

P.O. Box 41438, Los Angeles, CA 90041
(213) 957-1088

Contact: Jason Martz.

ROMAN A. OLEARCZUK

Independent Engineering

c/o Ruak Sound Studios, 1558 N. La Brea Ave.,
Hollywood, CA 90028

(213) 482-8477

Contact: Roman A. Olearczuk.

DENNIS PARKER

Maintenance Services

P.O. Box 4102, North Hollywood, CA 91607
(213) 501-2750

Contact: Dennis Parker.

PIPER RECORDING STUDIOS

Production Services

305 Torrance Blvd., Carson CA 90745
(213) 518-1288

Contact: Benjamin Piper or Allen Kaufman.

PLATINUM SOUND PRODUCTIONS

Production Services

538 N. San Vicente Blvd., Suite 210,
West Hollywood, CA 90048

(213) 851-9418

Contact: Kenneth H. Smith.

SHELBY QUINTANA, M.A.

Consulting Services

Audiologist

1340 Hillside Drive, Glendale, CA 91208

Contact: Shelby Quintana

THE REEL RECORDING CO.

Tape Duplication

P.O. Box 2181, West Covina, CA 91793
(213) 967-0264

Contact: Tony Demme

STEVEN RICHARDSON/SKYLIGHT EXCHANGE

Production Services

P.O. Box 3173, Grand Hills, CA 91344
(213) 383-8151

Contact: Steven Richardson.

Services Available: Production, engineering, recording studio, and record packaging. Skylight Exchange is dedicated to the magic in music—it takes enthusiasm, inspiration, a supportive environment, and a commitment to the best possible performance. And it takes an easy blend of art, technology, and people. We have provided services for all types of projects and musical styles including rock, jazz, gospel, classical, electronic avant-garde, and new wave. Credits include: Sonic Arts Corporation, Unity Records, Top Hat Records, Ralph Records, Concord Jazz, ATM Publishing, Meadowlark Publishing, U.S. Berkeley, Rory O'Brien, Rudy and the Cruisers, and others.

ROCKMORE MUSIC BMI

Production Services

1733 Carmona Ave., Los Angeles, CA 90019

(213) 833-8521

Contact: Willie H. Rocquemore, or Jennifer Jayson.

ROX AND ROSS

Independent Engineering

3234 Barham #A, Los Angeles, CA 90068

(213) 851-1582

Contact: S. Ross, Mike Rox

IRA RUBNITZ

Independent Engineering

8871 Wonderland Ave., Los Angeles, CA 90048
(213) 850-4907

Contact: Ira Rubnitz

Services Available: 24-Track Studio rates are \$50 @ hour including engineer & 2nd, Automated MCI 528, Ampex UREI monitors, tube Neumann, AKG, etc. Lexicon Digital reverb & tons of outboard gear, 4 year degree in Music Engineering Technology. Worked with: Ted Nugent, James Brown, Pat Metheny Group, Pat Travers, Melanie, Frederick Fennell, etc. Pre/Post Production & Arranging available at no charge \$17 @ hour for engineering/production elsewhere.

SPECTRUM STUDIO

Production Services

684 Camline Campana, Santa Barbara, CA 93111

(805) 967-9494

Contact: Don Ollis or Brad Royer.

STONE FOX STAGES

Equipment/Instrument Rental

11100 Cumpston #25, North Hollywood, CA 91601
(213) 781-3975

Contact: Andy Chappel/Laura O'Mara.

SUN-DWYER RECORDERS

Production Services

28483A Baseline, Highland, CA 92348

(714) 884-3333

Contact: Steve Sun, or Terry Dwyer.

SUPERSOUND STUDIOS

Production Services

9948 Ellis Ave., Los Angeles, CA 90034

(213) 838-4028

Contact: Frank Gillette, Morris Golodner.

BILL THOMAS

Independent Engineering

12851 Admiral Ave., Los Angeles, CA 90068

(213) 306-2815 at home & ans. service.

Contact: Bill Thomas.

Services Available: I am an experienced, creative engineer with many album credits and solid references. I'm also doing co-production with various unsigned act. Credits include: Manhattan Transfer, Richie Fagan, Al Jarreau, Eric Carmen, Marva King, Player, The Tubes, Peter Noone, Vernon Burch, Mark Tanner, Amy Wooley and various other artists.

HAROLD L. TRENIER
Independent Engineering
30630 Janelor Dr., Agoura, CA 91301
(818) 891-4032
Contact: "Slick".

Services Available: Experience: I have had over 500 hours in the studio. I have done over 50 demos. I have worked with such people as The Atkins Family, Ric Wyatt Jr. (producer) I have worked mostly for Freddie Perren. I was trained at his studio Mom & Pop's Co. Store by Lewis Peters. Direction: I am probably one of the only quadrapalegic engineers around. I am trying to gain as much studio time as possible. I need to learn more. Eventually I plan to have my own studio so I can teach other handicapped people the recording field.

JEFFREY WEBER (EN POINTE PRODUCTIONS)

Production Services
P.O. Box 1451, Beverly Hills, CA 90213
(805) 497-1584

Contact: Jeff Weber.

Services Available: Specializing in Digital, Direct to Disk, live to the two track and other audiophile recording. We offer complete album guidance and supervision including music direction, specialized recordings, graphic and package design, all legal and bookkeeping needs, supervision of high quality album and record manufacturing—all efforts geared towards the audiophile product—our goal is to produce the finest records currently available anywhere. Labels include: JVC, Discwasher, Nautilus, Audio Source, Varese Serabande. Artists produced include: The Orchestra, Louis Bellson, Ray Brown, Kenny Burrell, Tim Weisberg, Paul Smith, Night Plane, Free Flight, Roger Kellaway, Don Menza, Barney Kessel, Mike Melvoin, Kenny Moore.

GREG YOUNGMAN

Independent Engineering
P.O. Box 8102, Long Beach, CA 90808
(213) 435-9597

Contact: Greg Youngman, Jamie Luck.

BUCHANAN—SHANNON INC. (881)
Production Services
7855 Meadow Park, Suite A, Dallas, TX 75230
(214) 750-8490
Contact: Greg Shannon.

CHATON RECORDINGS

Production Services
5825 Manual Valley Dr., Scottsdale, AZ 85255
(602) 991-2802

Contact: Marie Ravenscroft.

CBS RECORDING STUDIOS

Production Services
2010 E. Charleston Blvd., Las Vegas, NV 89104
(702) 384-1212

Contact: Jon M. Parks, Debbie Parks or Robin Freeman, Chief Engineer.

Services Available: We are the only "State-Of-The-Art" recording studio in Las Vegas. Our equipment includes: MCI JH 528 w/automation, MCI 24-16-2 track, Dolby, dbx, Lexicon Digital, Eventide Delay, Harmonizer, Omnipressor, flanger, phaser, Kepex, Gain Brains, Aphex, EMT Plate, many other extras and instruments at no extra charge. Current album projects include those by: Kenny Rogers, Tammy Wynette, Mel Tillis, Gladys Knight, Wayne Newton, and TV projects for "Great American Hero", The Osmonds, Lynda Carter Special, "Vegas", Bill Cosby, etc. Other features include: Jingle production company, recording engineering courses, audio maintenance, tape duplication, video production and music contracting.

FAME & FORTUNE PRODUCTIONS

Production Services
1209 Rio Grande, Suite 106, Austin, TX 78701
(512) 472-0988

Contact: Ed Fagenson.

INDIAN CREEK RECORDING

Production Services
PO Box 487, Uvalde, TX 78801
(512) 278-7343

Contact: Blaine Bennett, Studio Manager.

I.V.J. RECORDING STUDIO

Production Services
23 Ridge Crest Dr., Flagstaff, AZ 86001
(602) 774-8113

Contact: Julian Diaz, Owner/engineer.

Services Available: I.V.J. Recording Studio, Flagstaff, Arizona has just completed its new 8-track facility, which features a TEAC/Tascam 80-8 with dbx noise reduction, a TEAC A-7300 2-track, a TEAC/Tascam Model 5-A mixing console, dbx compressor/limiters, MXR flanger/doubler, Tapco EQ and reverb, Omni Craft noise gates, monitors by Altec Lansing, powered by BGW power amps. Microphones are by Shure, Audio-Technica, and Kelsey direct boxes. Services include record pressing and tape duplication. Julian Diaz, Owner/engineer. For more information call (602) 774-8113.

KLUDGIT SOUND

Production Services
Box 171, Cerrillos, N.M. 87010
(505) 471-0051

Contact: Baird Banner, Chief Engineer.

RON S. LAGERLOF

Independent Engineering
c/o TM Productions, 1348 Regal Row, Dallas, TX 75247
(214) 834-8511

Contact: Ron Lagerlof.

LUXURY AUDIO WORKSHOP

Production Services
2570 E. Tropicana Ave., Las Vegas, NV 89121
(702) 451-8787

Contact: Lee Waters.

Services Available: We are a 24 track recording studio with a MCI 24 track tape machine, Tangent 32 in x 24 out console, UREI 1176 LN limiters, Lexicon 224 digital reverb, Lexicon Prime Time DDL, Eventide harmonizer, and JBL 4333A monitors. \$80/hr. for 24 track.

MUSIC ETCETERA

Consulting Services
PO Box 4870, Austin, TX 78785
(512) 444-0183

Contact: Peter Butcher.

Services Available: Music Etcetera is a professional international demo placement agency serving recording studios, producers, managers and independent musicians. We have twenty years experience in the music business, mostly in the European market. This has enabled us to place demo material with the major record companies in eighteen foreign markets. Rather than submitting demos on a random basis, allow us to utilize our expertise in the

selection of appropriate markets. If you have not looked into the foreign markets, let Music Etcetera provide you with maximum exposure. Write for details.

PHANTOM PRODUCTIONS

Production Services
PO Box 4870, Austin, TX 78785
(512) 892-3465

Contact: Martin Theophilus.

PRECISION AUDIO, INC.

Tape Duplication
11171 Harry Hines, Suite 118, Dallas, TX 75228
(214) 243-2997

Contact: Rick Sheppard, Manager/engineer.

Services Available: Reel Duplication: Dubs are available at 15, 7½, 3¾ and 1½ ips ½ track mono or stereo; 15 and 7½ ips full track mono; and 15 and 7½ ips ½ stereo. Master reels can be 15, 7½, 3¾, or 1½ ips ½ track stereo or full track mono. Cassette Duplication: Cassette dubs are available in stereo or mono. Masters can be in the form of cassettes or reels. Reel-to-reel masters can be 7½, 3¾, or 1½ ips, ½ track mono or stereo. Editing, leadenng, tuning, equalization, noise reduction, encoding or decoding, and playback available at \$45/hr.

PRECISION AUDIO, INC.

Production Services
11171 Harry Hines, Suite 118, Dallas, TX 75228
(214) 243-2997

Contact: Rick Sheppard, Manager/engineer.

Services Available: Custom music composition & arranging, record production, commercial jingles & station ID's, electronic music productions, motion picture scores & soundtracks, radio & TV audio production, sound effects, educational & marketing program production, music & soundtracks for all applications. Complete engineering available. Facilities include our modern, full service 24 track studio & tape duplication facility. Whether you want to embellish a traditional campaign or create a totally new approach, we have the equipment and personnel to give you exactly what you're after. Rates quoted on a per project basis.

PRECISION AUDIO SERVICES

Maintenance Services
947 S. 48th St. #127, Tempe, AZ 85281
(602) 968-8878

Contact: Alan J. Dahl.

PRODUCTION BLOCK STUDIOS

Tape Duplication
2222 Rio Grande, Austin, TX 78705
(512) 472-8975

Contact: Joel Block, Bill Harwell, Tim Stanton.

SOUND ARTS RECORDING STUDIO

Production Services
2038 Paquet, Houston, TX 77082
(713) 888-8067

Contact: Jeff Wells or Barbara Pennington.

SUPERDUPE OF OKLAHOMA

Tape Duplication
1022 W. Gemini Rd., Edmond, OK 73034
(405) 348-2319

Contact: Drew Barlow.

TIMBERLINE PRODUCTIONS

Production Services
114 E. Union, Prescott, AZ 86301
(602) 778-0010

Contact: Roger Pearsall, Ron Swartz.

UNDERGROUND STUDIOS

Production Services
4420 E. Thomas Rd., Phoenix, AZ 85018
(602) 959-2007

Contact: Charlie Eyanson.

WOODEN STUDIOS

Production Services
7334 Rampart, Suite 102, Houston, TX 77081
(713) 888-9872

Contact: Gus Buzbee.

PHIL YORK

Independent Engineering
705 E. Pioneer Dr., Irving, TX 75061
(214) 438-8248

Services Available: Works the best studios in North Texas. Studio pays for engineering costs, no charge to you. Has recorded the majority of actual chart records cut in Texas including a Grammy, a platinum and several gold LPs. Knows North Texas studios well. Easy and skilled to work with.



SOUTHWEST

ACA RECORDING STUDIOS

Production Services
8208 Westpark Dr., Houston TX 77063
(713) 783-1771

Contact: William D. Holford, Studio Manager.

THE ANNOUNCER BOOTH

Tape Duplication
1300 East Arapaho, Richardson, TX 75081
(214) 234-0301

Contact: Roland Hill.

ASSOCIATED SOUND PRODUCTIONS

Production Services
11280 Goodnight Lane, Dallas, TX 75229
(214) 350-5488 & (214) 241-5182

Contact: Rick or Greg.

DREW F. BARLOW

Independent Engineering
1023 West Gemini Rd., Edmond, OK 73034
(405) 348-2319

Contact: Drew Barlow.

BONNEVILLE PRODUCTIONS

Tape Duplication
130 Social Hall Ave., Salt Lake City, UT 84111
(801) 237-2400

Contact: Dave Michelson.

Services Available: Bonneville is one of the leading independent duplicators in the West. All of our equipment represents the latest state-of-the-art technology. We operate 24-hours a day and process from five to seven million feet per day. Bonneville prides itself on its in-house technology and the quality of its product. We have nine technicians that maintain our tape duplication facility and recording studios.

Recording Services Section



SOUTHEAST

RICHARD ADLER
Independent Engineering
 358 Old Bellevue Road, Nashville, TN 37221
 (615) 648-4900
 Contact: Richard or his Code a phone.

ALIVE RECORDINGS
Production Services
 P.O. Box 1252, Harrisonburg, VA 22801
 (703) 434-8701
 Contact: Abe Rittenhouse, Manager/Engineer.

ALPHA AUDIO
Tape Duplication
 2048 W. Broad St., Richmond, VA 23229
 (804) 358-3852
 Contact: Eric Johnson.

ARCHER PRODUCTIONS, INC.
Production Services
 1820 South Federal Highway, Second Floor,
 Pompano Beach, FL 33062
 (305) 785-9242
 Contact: Peter Archer.

AUDIO RENTALS (formerly S.I.R. Audio)
Equipment/Instrument Rental
 2 Music Circle East, Nashville, TN 37203
 (615) 242-0045
 Contact: Larry Hart.
Services Available: Nashville's only complete full service audio rental company. Concert sound systems, lighting, individual p.a. components, small p.a. systems, monitor systems, rehearsal systems, equipment sales and service, studio electronic rentals. Full production services, cases, 24 hour delivery and set-up. Stereo systems and components for hotel and studio use. Engineers and crew available. Specializing in concerts, fairs, trade shows, conventions and business meetings. Rentals on mikes, amps, consoles, rack electronics & full systems.

AUDIOFONICS, INC.
Production Services
 1101 Downtown Blvd., Raleigh, NC 27603
 (919) 821-5614
 Contact: Randy Schumacher, Bebe Davison.

THE BERKLEY MUSIC GROUP
Production Services
 108 Berkley Drive, Madison, TN 37115
 (615) 888-3407
 Contact: Bill Anderson Jr./Donald D. Morris.

BLAS RECORDING CO., INC.
Production Services
 5400 Carolina Place, Springfield, VA 22151
 (703) 941-3333
 Contact: Gloria Daniels.

Services Available: An experienced recording company operating in state-of-the-art studios designed by Sierra Audio (Tom Hidley) with the intention of providing Washington, D.C. areas with world class recording.

BRIGADIER SOUND STUDIOS
Production Services
 1119 Bell Street, Montgomery, AL 36104
 (205) 834-8881 or 289-3957
 Contact: Harold Bearden

RICK COLE PRODUCTIONS
Independent Engineering
 14203 NorthEast 18th Avenue, Miami, FL 33181
 (305) 940-7971 Res. (305) 751-8059
 Contact: Rick Cole.
Services Available: Producer/Engineer specializing in Rock and Reggae music and video productions. Complete production services for your next hit record... Video-Disk album or TV special. Recent credits include work with Inner Circle Band, Jimmy Cliff, Bobby Dukoff, Johnny Nash, Peter Tosh, Mundane Willis, Jack Marek, Stan Webb. Special studio access in L.A., Miami, NYC, and Kingston, Jamaica with preferred rate status. Mobile recording facilities available for multitrack audio and broadcast video. Imagine your next album recorded entirely outdoors. Video-taped during production and released as a videocassette. Call Rick Cole.

CRITERIA RECORDING STUDIOS
Production Services
 1755 NE 149th Street, Miami, FL 33181
 (305) 947-5811
 Contact: Marsha Latta.
Services Available: Our complete one stop facility handles your every need. Complete instrument rental thru Rent-A-Sound. Separate and private living rooms for privacy. Full compliment of out board gear-Lexicon 224, EMT 251, echo plates, 3 live chambers, DDL, Pitch, Flangers, Kepex, Gain Brain, etc.. You name it. All MCI 500 consoles with automation, studio E has 556, A.C.D. 532. 24 track with SMPTE Lock up to anything including 3/4" VCR. Mix to 1/2" two track and master on our automated Scully Lathes with the Ortofon Cutting System. Please call and let us show you.

DOMINO RECORDING STUDIO, INC.
Production Services
 P.O. Box 816, 33 South Green St., Grenada, MS 38901
 (601) 228-8729
 Contact: Bert Bays.

GCS/PRODUCTIONS
Production Services
 1508 Harlem, Suite 202, Memphis, TN 38114
 (901) 274-2728
 Contact: Reginald Eskridge.

BEN HALL
Independent Engineering
 3305 Leondale Terrace, Nashville, TN 37207
 (615) 227-7871-(615) 383-4887
 Contact: Dena Mendenhall.

J.D. HAMRICK
"Future Wave Recording"
Independent Engineering
 813 Hwy. 72 E. Corinth MS 38834
 Contact: J.D. Hamrick.

ISLAND RECORDERS
Equipment/Instrument Rental
 49 Music Square W. Nashville, TN 37203
 (615) 327-2580
 Contact: Fred Vail.

JALEX RECORDINGS
Production Services
 319 Clematis Street, West Palm Beach, FL 33401
 (305) 832-1538
 Contact: Jon A. Lind.

LAMON SOUND STUDIOS
Production Services
 5732 Susan Drive, Charlotte NC 28212
 (704) 588-8110-537-0133
 Contact: Dwight L. Moody Jr. (owner).

MASTER SOUND STUDIOS, INC.
Tape Duplication
 1227 Spring Street, N.W. Atlanta, GA 30309
 (404) 873-8425
 Contact: Bob Richardson.

MELODY RECORDING SERVICE, INC.
Production Services
 2095 Faulkner Rd., N.E. Atlanta, GA 30324
 (404) 321-3888
 Contact: Tom Wright.

ARCHER MONZON ASSOCIATES
Consulting Services
 1820 South Federal Highway, Pompano Beach, FL 33082
 (305) 785-9242
 Contact: Rey Monzon.
Services Available: As marketing consultants to the music industry, we offer our clients the resources to successfully promote and market their products and services. Our clients include recording studios, record labels, production companies and recording artists. Our in-house services include public relations, telemarketing, advertising, artist management, eight track demo recordings and a full range of audio/video production services. Through our association with Artisan Recorders, MCI equipped 24 track mobile unit, we offer live album recording, live broadcast mixing, television specials, film soundtracks and stationary album production. Our work is custom tailored to our clients' individual needs.

ROXY RECORDING THEATRE
Audio-Video-Film
Production Services
 827 Meridian Street, Nashville, TN 37207
 (615) 227-0920
 Contact: Aubrey Mayhew or Tom Brown.

SIDETRACK DUPLICATING
Tape Duplication
 1810 Atkinson Road, Lawrenceville, GA 30245
 (404) 963-3124
 Contact: Avery Lester.

SOUTHERN RECORDING & VIDEO PRODUCTIONS, INC.
Production Services
 1123 Jackson Street, Alexandria, LA 71301
 (318) 473-0779
 Contact: Bill Gabour

T.H.E. CO. "JOHN W. GARDNER, INC."
Consulting Services
 28 Music Square East, Nashville, TN 37203
 (615) 320-0807
 Contact: John Wesley Gardner

TRACK RECORDING
Production Services
 P.O. Box 857, Summerville, SC 29483
 (803) 873-0607
 Contact: Tommy Flack, mgr

TRIAD RECORDING STUDIOS, INC.
Production Services
 5075 N.E., 13th Avenue, Ft. Lauderdale, FL 33334
 (305) 771-1431
 Contact: Michael Laskow/Douglas Weyrnck.

TRUSTY TUNESHOP
Production Services
 Rt. 1, Box 100 Hwy #1034, Nebo KY 42441
 (502) 248-3194
 Contact: Elsie Childers, owner.

THE WAREHOUSE RECORDING STUDIOS
Production Services
 2071 Emerson Street, Unit #21, Jacksonville, FL 32207
 (904) 399-0424
 Contact: Tom Markham or Skip Osmundsen.

WILLOW CREEK STUDIOS
Tape Duplication
 2228 Redmond Circle, Rome, GA 30161
 (404) 232-8954
 Contact: Morgan Ayers.



NORTHEAST

ACOUSTILOG, INC.
Consulting Services & Equipment/Instrument Rental
 18 Mercer Street, New York NY 10013
 (212) 925-1365
 Contact: Alan Fierstein.

DIMENSION SOUND STUDIOS, INC.
Production Services
368 Centre Street, Jamaica Plain, MA 02130
(617) 522-3100
Contact: Thom Foley, Gail Perry, Brian Ales

MICHAEL J. DOMINICI
Production Services
2067 Broadway, Suite #27, New York, NY 10023
(516) 568-7288
Contact: Stardust Management.
Services Available: Stardust Mgmt. is a division of Music Systems International (M.S.I.) The company is involved with many areas of the entertainment industry. We specialize in promotion, management and Record production. We have just finished the debut single by the "Ecstasies" which will be followed by a major U.S. and European Promotional tour. We are currently working on the new L.P. for the "Berrys", a newly signed act to Stardust Mgmt. We take a sincere, honest approach when producing a record for a client. If we feel we can add a new dimension to the song, we'll work with you. If we can't, we won't.

DYNAMIC RECORDING
Production Services
2846 Dewey Ave., Rochester, NY 14616
(716) 621-8270
Contact: Dave Casperson, Engineer.

Services Available: Scully 16-track, Tascam 8-track; Tangent Console 3216, Lexicon Delay, Ashly limiter/compressor; dbx compressor/limiter; MXR-Delay; Technics/parametric equalizer; Tapco Reverb; MXR-Phaser; MXR Flanger; JBL monitors; Crown Amplifiers; Mics Electro-Voice; Sennheiser; Shure; AKG; Audio Tech & Beyer etc. Video-M & 1/2" facilities. Extras: Coffee, Lounge with electronic games, mood lighting.

EARTH AUDIO TECHNIQUES, INC.
Production Services
The Barn, North Ferrisburg, VT 05473
(802) 425-2111
Contact: Mike Couture, Chas Eller, Jim Swift.

GREG FURGASON
Independent Engineering
645 Clifton Ave., Newark NJ 07104
(201) 481-0972, Home: (201) 485-3313
Contact: Greg Furgason.

MICHAEL GILBERT
Independent Engineering
73 Spaulding Street, Amherst, MA 01002
(413) 253-2788

HALLMARK FILMS & RECORDINGS
Production Services
51-53 New Plant Ct., Owings Mills MD 21117
Sales: (301) 727-7280; Studios: (301) 363-4500
Contact: Phil Brecher, Larry Adler.

DAVE IMMER
Independent Engineering
305 W. 45th St., #2E, New York, NY 10036
(212) 765-8263

GARY INDIANA
Production Services
183 La France Ave., Bloomfield, NY 07003
(201) 743-0356
Contact: Gary Indiana

JERRY'S GARAGE-TOY BOX RECORDS
Production Services
930 N. Duke St., York, PA 17404
(717) 854-2542
Contact: Jerry Duncan.

GRENADIER
Production Services
1814 Critchenden Rd., Rochester, NY 14623
(716) 275-3821 or (716) 424-8768
Contact: Tom Greene.

DAVID M. HYNES
Independent Engineering
SNAFU Prod. Inc., 300 Putnam Ave.,
Cambridge MA 02139
Contact: David M. Hynes

PHILLIP KAWA PRODUCTIONS
Production Services
43 Off Lake St., East Weymouth, MA 02189
(617) 331-1828
Contact: Phillip Kawa.

KEWALL PRODUCTIONS RECORDING STUDIO
Production Services
77 Bayshore Road, Bayshore NY 11708
(516) 588-2888 or (516) 588-8438
Contact: Keith A. Gutschwager Pres.

PAUL D. LEHRMAN
Independent Engineering
c/o The Boston Phoenix, 100 Massachusetts Ave.,
Boston, MA 02115
(617) 536-5390 or (617) 424-1253
Contact: Paul D. Lehrman.

LONG VIEW FARM
Production Services
Stoddard Road, N. Brookfield MA 01535
(617) 887-7682
Contact: Kathleen Holden.

THE MEZZANINE SOUND STUDIO
Production Services
20 Marbledale Rd., (Box 427) Tuckahoe, NY 10707
(914) 779-3310
Contact: Greg Federbush

NORTH SHORE MUSIC GROUP
Production Services
c/o MCH Productions, 8801 Jericho Turnpike,
Syosset, NY 11791
(516) 384-8688

P & P STUDIOS INC.
Tape Duplication
17 Viaduct Rd., Stamford, CT 06907
(203) 327-8204
Contact: Terry L. Puffer.
Services Available: Low price, high quality tape, blank cassettes in lengths from 1 to 120 minutes in 3 second increments. High speed custom cassette duplication of voice and music. Non-Dolby & Dolby B Labeling, shrink wrap, packaging & drop shipping. All A/V pulse formats: DuKane, Kodak, Besseler, RCS, LaBelle, etc. Compelle 16 track recording studio. Rates are extremely competitive. Call for quotes.

DOUG POMEROY
Independent Engineering
193 Baltic St. Brooklyn, NY 11201
(212) 852-3673
Contact: Doug Pomeroy

PRODUCTIONS ALPHA, LTD.
Production Services
708 Mystic Ave., Somerville, MA 02145
(617) 778-8888; Ann. service: (671) 262-5860
Contact: Lyman Underwood, director.

RDG ENTERPRISES, INC.
Independent Engineer
155 West 81st St., New York, NY 10024
(212) 877-4829
Contact: Darroll Gustamachio—Recording Engineer.

SELECT SOUND STUDIO
Production Services
1585 Kenmore Ave., Buffalo, NY 14217
(716) 873-2717
Contact: William A. Kohen.

SHOWCASE STUDIO'S
Production Services
3 Wall St., Norwalk CT 06851
(203) 838-0120
Contact: Don Stroh or John Dorsey.

SKYLINE STUDIOS INC.
Production Services
98 W. 37th St., New York NY 10018
(212) 594-7484
Contact: Lloyd P. Donnelly (Studio Manager).

ART SNAY
Independent Engineering
654 Band Creek Rd., Albany, NY 12205
(518) 868-5835
Contact: Arabellum Studios.

ZALMO SOUNDS
Production Services
1455 East 10th St., Brooklyn NY 11230
(212) 336-1857
Contact: Shomer Shabbos.



NORTH CENTRAL

ATOM SMASHERS UNLIMITED STUDIO
Ferndale, MI

Production Services
c/o S.S.-A. Prod. P.O. Box 21054 Detroit, MI 48221
(313) 584-8111 John Annesser: 11-8 M.T.W.F.Sa
Contact: Barb Rohr, obtain number from John Annesser.
Services Available: Atom Smashers Unlimited Studio has the reasonable rates that every musician needs in order to get the best quality sound for the best price. We specialize in producing quality tape demos and also provide recording fidelity recovery services. We also offer complete production facilities and personnel, as well as studio musicians, composers, and lyric writers. 2 & 4 trk./\$15 hr. 8 trk./\$25 hr. inc. elec. instruments: \$150/8 hrs. 8 trk./\$20 hr. flat rate: \$125/8 hrs.

AUDIO CLOSET
Tape Duplication
2820 North 48th Street, Lincoln, Nebraska 68504
(402) 484-8110
Contact: James Rupert.

D.L. CORBET LTD. RECORDING
Tape Duplication
P.O. Box 281, Miamisburg, OH 45342
(513) 659-3150
Contact: Don Corbet.

MAL DAVIS
Independent Engineering
730 S. Harvey, Oak Park, IL 60304
(312) 386-7355
Contact: Mal Davis

Services Available: Fourteen years professional experience; includes training at Universal Recording Studios, apprenticing under Murry Allen, Doug Brand, and Bruce Swedien. Chief music mixing engineer at d.b. and Hedden West Studios. Instructor for Center of the Recording Arts and Columbia College. Credits include: Phil Keaggy "The Master & The Musician", Warren Kime "Brass Impact #2", James Ward "Mourning to Dancing", Northern Illinois University & North Western Jazz Bands, Deep River Band, Roger Pemberton, Resurrection Band, ODUM String Ensemble, Stephen Alexanderson, Many radio and TV commercials, industrial show and film sound tracks. Emphasis on excellence in every phase of your recording project.

JEFF JONES
Independent Engineering
Jeff Jones Productions
2012 Crestland Dr., Ann Arbor, MI 48104
Contact: Jeff Jones

JOR-DAN RECORDING INC.
Tape Duplication
1807 E. Roosevelt Road, Wheaton, IL 60187
(312) 853-1918
Contact: Dan Zimbelman.

Services Available: Complete master editing and processing services. Audiophile quality cassette duplication from 7 1/2 or 15 ips, 320 nwb peak, 1/2 or 1/4 tr. stereo studio quality masters. NAB, Dolby B, Dolby C, or dbx 11 formats. Chrome and ferrochrome tapes. Magnetic Media and Data-Pack Pathfinder shells. Wow and flutter: less than .1%; frequency response: 63hz—16000hz, within 2dB. 30hz-18000hz, ±3dB; processing noise added: 2dB. Complete labeling, packaging and shrink wrap to customer requirements. Specializing in 1000 or less orders with a 48 hours turnaround. Mailing and drop shipping services available. All masters and materials submitted accepted by registered mail or air express only.

KBK/EARTH CITY SOUND STUDIOS, INC.
Production Services
4288 Rider Trail, Earth City, MO 63045
(314) 291-4840
Contact: Marilyn or Kent Keesteron.

Recording Services Section

LAB RECORDING STUDIO/NEOPHON PRODUCTIONS
Production Services
 2908 Parkway Dr., Highland, IN 46322
 (219) 838-0747
 Contact: Larry A. Brechner, Studio Owner and Engineer.

E.D. (DAVID) LEE
Production Services
 12 Sprucebank Cr., S.W., Calgary, Alberta, T3C 3B4
 (403) 242-5224
 Contact: David Lee.

LOST RIVER RCDG. STUDIO
Production Services
 931 No. 9th Street, Paducah, KY 42001
 (502) 444-7594
 Contact: Laddie, Clyde & Andy Wood.
Services Available: Lost River Recording located a few blocks from the Ohio River in downtown Paducah (just a short distance from beautiful Kentucky Lake) is a full service organization from Lost River recording & record company to retail music sales. We have been at the same location for 6 years & are now working on plans to enlarge the studio to incorporate our growth in the near future. Booking information & any questions, please call Lost River Recording at (502) 444-7594. Ask for Clyde, Laddie or Andy Wood.

GEORGE M. MARAKAS
Independent Engineering
 2228 E. Marakas, Kankakee, IL 60901
 (815) 933-7090
 Contact: Artist Workshop Recording.

DAVID C. SHEWARD
Independent Engineering
 4275 Morsetown Court, Columbus, OH 43224
 (614) 475-1923
 Contact: David C. Sheward.

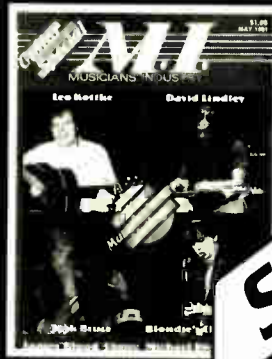
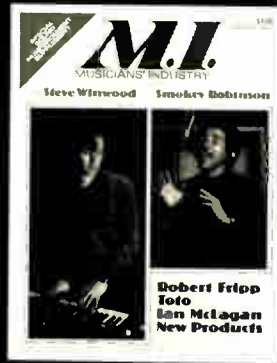
STUDIO A RECORDING
Production Services
 5829 North Beech Daly, Dearborn Heights, MI 48127
 (313) 581-7489
 Contact: Eric Morgeson.
Services Available: High Speed Stereo Cassette Tape Duplication, Independent Recording and Production Services, Audio and Video Advertisers, Hourly and Block Rates, 16 track recording—\$50.00 per hour, T.V., Record, and Production deals generated from projects recorded at Studio A.

THUNDER ROAD STUDIOS
Production Services
 2748 37th Ave., N.E. Calgary, Alberta, CAN
 (403) 285-7825
Services Available: We are a full service recording and production studio with a film mix studio and motion picture designed by Tom Hidley and built by Lakeside Associates.

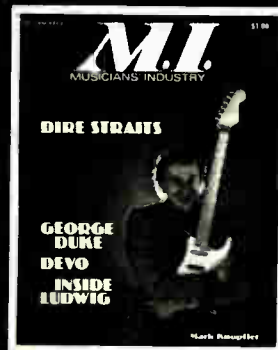
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Our new Scotch[®] 226 is compatible with Ampex 456. But that's about the only way the two tapes are equal. Scotch 226 gives you much lower modulation noise and 2 to 3dB less print-through. Yet there's no compromise in headroom, signal-to-noise, biased tape noise, distortion levels or frequency response.

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We help the doctor operate.



Dr. Chen is a sound wizard.

We have a friend in Stockton. His name is Dr. Chen, but he's not your everyday neurosurgeon. His heart is in sound, and he wanted to build the best recording studio in the Valley.

A high-quality, totally-automated recording studio. With album, commercial and demo production capability.

Equipped with the finest instruments, specially miced and wired for consistent audio quality.

State-of-the-art synthesizers that could create the sounds that previously existed only in one's mind.

A computerized mixing console that had as many applications as one had ideas.

And a mastering/production recorder that would bring the sounds together for the rest of the world to enjoy.

You see, Sound Genesis and the Doc go way back. We worked together when the dreams were smaller. So Doc knew we could help him design the system he had

in mind. And give him the best technical back-up in the business.

Dr. Chen prescribed it. Sound Genesis outfitted it. And the name of it is Studio C. We think it's a system worth hearing for yourself.

Dr. Chen invites you to check out his operating room. On Sunday, July 26, from noon to six.

Get to North Stockton. Take the Hammer Lane exit; go left to the fourth light. Then left on Thornton. It's about two miles to Broadridge Way, where you take a right to the big white house on the circle. (2220 Broadridge Way). The neighbor's dachshund will be catching rays in the road. Don't run him over.

By the way, Stockton's hot in the summer. But when the breeze blows off the Delta, it's a mighty pleasant place to make great sounds.



Iowa-bred, San Francisco-trained Engineer/producer Drew Palmer.

Sound Seminars. Coming up from Sound Genesis.

July 15, Wed., 7:00pm
Roland Studio Systems introduces the CPE-800 Compo-editor and will discuss microprocessor applications in professional audio.

July 29, Wed., 7:00pm
Otari Corp. engineers will demonstrate the new MTR-10 series of production-mastering recorders.

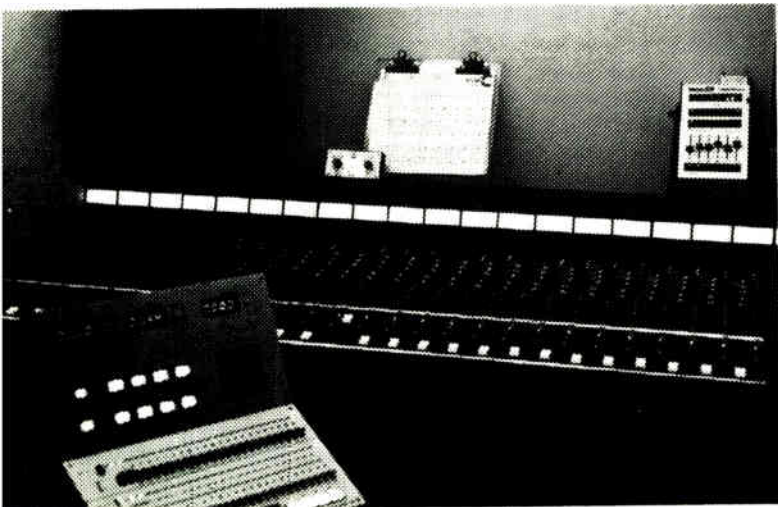
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The Sound Workshop Series 30 Recording Console.

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0300	VOCODER 14 Matched Band Rack-mount Unit	799.00	299.00	7451	DRM-15 E-H Digital Rhythm units with	\$229.00	\$139.00
0400	MINISYNTHESIZER 2 lbs. 5 octave range, full performance capabilities in a battery operated keyboard	249.00	169.00	7460	DRM-32 15 and 32 beats respectively. Programmed by the slickest, most soulful Motown and NYC R&B studio musicians in hundreds of session hours	299.00	174.00
0410	MINISYNTHESIZER WITH ECHO Same unit as Mini but has battery operated echo and pitch-glide bar	399.00	299.00	7660	MINI MIXER Four mixable inputs	99.00	69.50
2001	LPB-1 Power Booster Can boost your amp power up to 10 times. Make your small amp sound like a Marshall Stack	25.00	18.50	7700	POLYCHORUS With flanging, chorus, slapback echo modes and companding	215.95	139.00
1001	LPB-2 Power Booster Same as LPB-1 but in a foot operated unit	33.50	24.50	7811	MEMORY MAN Stereo Echo/Chorus/Ambitron	269.00	159.00
1005	SCREAMING TREE Treble Booster Adds razor sharp bite that cuts	33.50	24.50	7850	DELUXE MEMORY MAN Echo with Chorus, Vibrato and Companding	349.00	219.00
1010	SWITCHBLADE Channel Selector Instant switching between accessories or amp channels	21.50	16.50	7860	ECHO 600 600 millisecond delay—Echo/Chorus/Vibrato	399.00	339.00
1300	RTG Random Tone Generator Mellow random scientific music. Particularly effective with Memory Man echoes	89.00	36.00	7900	MICROSYNTHESIZER A sensational multiprocessor for guitar. Outsells all brands of guitar synthesizers in the world combined	299.00	189.00
2008	MUFF FUZZ Distortion Fuzz with edge	34.00	23.50	7950	BASS MICROSYNTHESIZER Designed specifically for bass guitar	299.00	189.00
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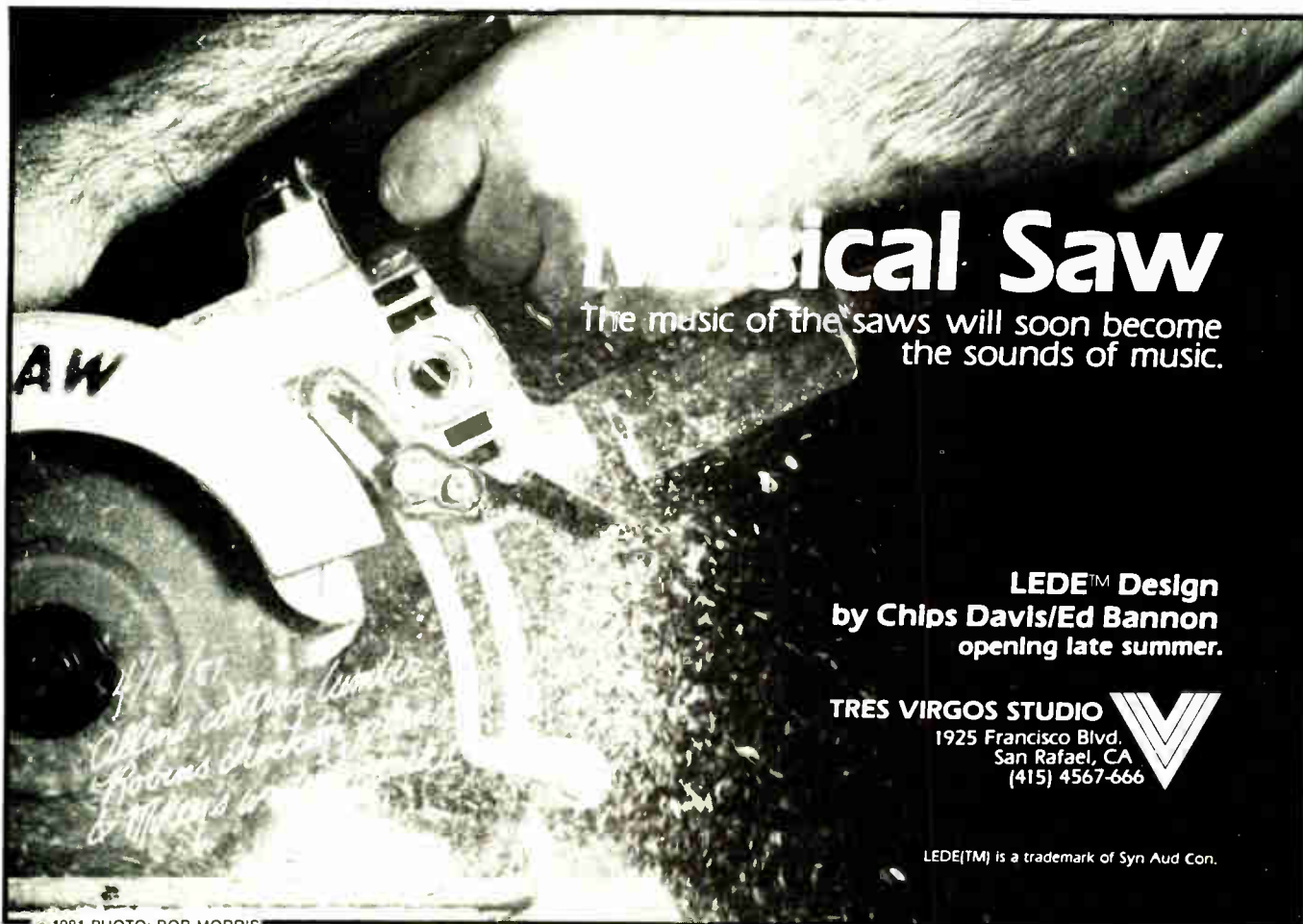
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Dear Mix,

Regarding your Sound Advice column (May, 1981) I would like to make some points to, hopefully, clarify the article.

While the "A" weighting curve does include a high frequency rolloff, you did not mention the much more severe attenuation it provided at low frequencies. Hum and other low frequency noise prevalent in inferior designs is virtually ignored with "A" weighting.

Two signals, including noise, of equal phase and amplitude, will normally electrically sum by 6dB. The 3dB figure given for noise addition is due to phase cancellations inherent in the random nature of two independent noise sources (channels). Readers should not be led to believe that summing two in-phase signals results in only a 3dB increase; nor should they confuse this voltage increase of 2:1 with a doubling of power, which increases as the square of the voltage.

On the subject of console S/N ratios, readers should be advised that it is possible to make meaningful comparisons without knowing the gain of the device measured (i.e., what input level is required for rated output). Unfortunately, no standard exists in this industry to allow noise comparisons at a specific gain level. (As was adopted in the new IHF standards for hi-fi preamps, a few years ago.)

In the section on noise contributions from other components in the system, it is the efficiency of most studio monitors, not inefficiency, which results in audible noise; less efficient speakers would make the noise floor less audible. Likewise for the loss through speaker cables, which should be negligible anyway.

Finally, there are some errors in the dB ratios given. A voltage gain of 33 works out to be

30.37 dB; in order to obtain 35dB gain the voltage gain would be over 56, or almost double. And the difference between 50 watts and 500 watts is 10dB, not 20 dB as stated.

Thank you
Bill Spungin
Maintenance Engineer
Paramount Recording Studios

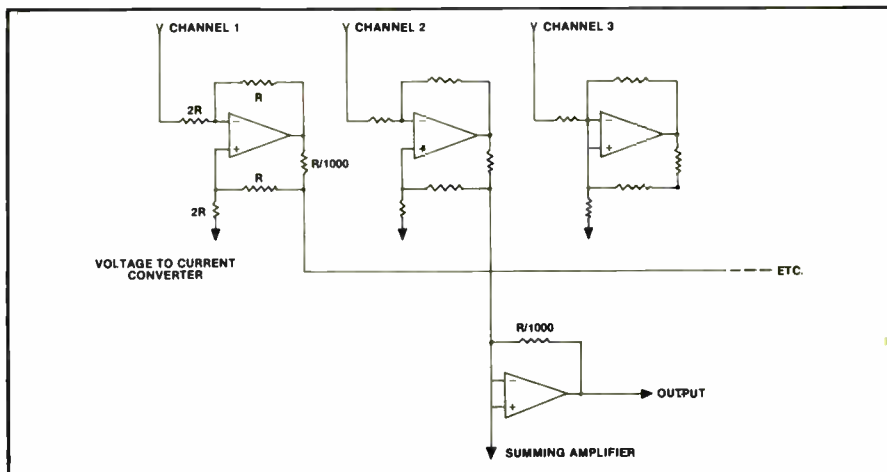
Dear Mix,

Though Ben Harris claims it's impossible (May, 1981 Mix), I am enclosing a circuit that will noiselessly sum as many channels as you'd like at unity gain. The only noise that adds is the residual noise of each source channel, but you would have that in a conventional summing amp anyway as well as the ground buss noise gain from the summing amp that Ben refers to.

The elimination of noise gain is realized by the extremely high output impedance of the voltage to current converter. Even better noise performance can be achieved by using current output VCA's connected to the summing buss since each channel's residual noise will go down as it's level is reduced in the mix.

Interested readers should get their hands on the excellent article on console design by John Roberts in the April, 1980 issue of Recording-Engineer/Producer Magazine where this system is discussed in greater detail. By the way, current mode summing is not some abstract, untried theory; this is a known and proven recipe for low noise mixer design.

Sincerely,
Ethan Winer,
Chief Engineer
The Recording Center, Inc.



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