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THE RECORDING INDUSTRY MAGAZINE

# Mix

Interview:  
Joe Walsh & Bill Szymczyk

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Cover: Mountain Ears, starting as a four track studio eight years ago, is now Boulder, Colorado's only twenty-four track recording operation.

Photo by: Andy Katz

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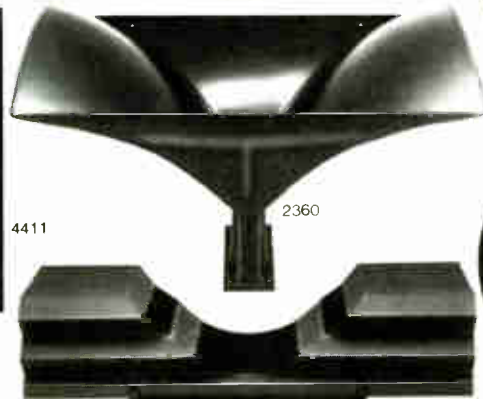
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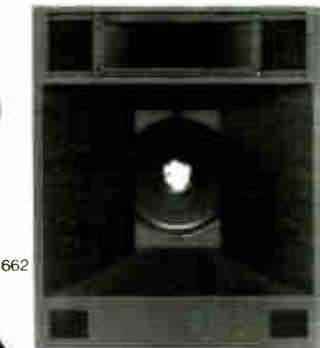
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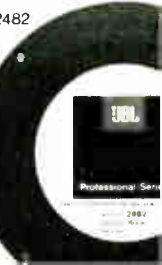
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# feedback

# feedback

Dear Mix,

Thanks much for Michael Lane's fine article on Record Restoration in your December 1982 issue. This is a subject very near and dear to my heart as a collector of early (sometimes very early!) blues and jazz 78 rpm recordings. Many times I find myself settling for records of obscure material, the condition of which is awful at best. Lord knows I remember what I used to do to the 78's my folks had when I was a kid! Thus, a copy of a Memphis Jug Band record found at a flea market will find its way into my collection IN ANY CONDITION! I may never find another.

The re-mastering or re-channeling of rare records is, to me, an interesting and highly subjective challenge. How does one go about extracting the "original" ambience of a performance when there is no other transcription available, in any condition, with which to reference it to? I have found that on many re-issue albums it is only the taste (or lack thereof) of the engineer which sets the criteria.

I personally like to keep the reproduction as clean and uncluttered as I can and find that referring to as many other sides recorded and manufactured around the same time, by the same company helps me to get a "natural" sound. I have also discovered a number of tricks which may be of interest to anybody else sharing in interest along these lines.

Shure manufactures 78 rpm styli plug-in replacements for a number of their high quality cartridges which allow wide-frequency retrieval of any information available on the record and they are monophonic. Rather than use a "state-of-the-art" turntable, most of which do not even *have* a 78 rpm speed setting, I like to use my most ancient Webster-Chicago turntable or a Bogen-Presto variable-speed unit I bought over 20 years ago. These machines were *made* for 78 reproduction and, in my estimation, give superior quality above anything made today. The Bogen is especially nice because, as Mike mentioned, not all 78's were recorded at 78 rpm!

I am not against using "state-of-the-art" signal processing gear, however. The SAE Scratch & Pop Filter and the new Furman "Paragraphic" equalizer are both very helpful. It would seem that a programmable filtering system could be extremely useful in combatting high frequency losses which occur as the groove gets closer to the center of the disk. Since the noise level on badly worn records also increases toward the center, the programmable filter allows the engineer to have his hands free for other ad-

justments. It's not true that recording engineers have three arms, although it sometimes seems like they do!

I have been considering using a small computer which could be programmed to eliminate major recurring clicks (or off-center disks which sound like an aural roller coaster). By isolating the major frequency and amplitude of a click, as found, say on a broken record which had been "repaired" and is playable, and inverting the signal and applying that signal to the noise on the next revolution, most of the click should be eliminated. The warp, with a computer enhanced delay factor, could be erased entirely.

Again, thanks for the article. I am looking forward to the next one with baited breath!

If there are others interested in sharing information, techniques or ideas on restoration of old records, please feel free to contact me; I'll be happy to share.

Keep up the good work.  
Yours in music,  
T Malcolm Rockwell  
Rainbow Sound Studios  
Hayward, California

Dear Mix,

Your recent series of articles by Ken Pohlmann, "Digital Discussions," has been great.

I would like to know if you, or he, could recommend some textbooks or other sources of information on digital electronics (and/or analog electronics) for the "beginner," but a beginner who has a solid math background, sufficient to

appreciate Mr. Pohlmann's articles. In other words, I would like to pursue what he is writing about even further, but am looking for something written from a point of view similar to his, complete, lucid, and readable something for the person who might have been an electrical engineer but found another way to make a living and now wants to make up for lost time, without taking night courses.

I think you are to be commended for publishing such technologically-oriented articles as Ken Pohlmann's - as long as you do I will keep reading.

Very truly yours,  
Jeffrey Yoder  
Fairfield, CT

Dear Jeffrey,

Thanks for your comments. In future installments of Digital Discussions, Ken will be including relevant outside reading for the specific topics being discussed. Keep reading.

—Ed.

Dear Mix,

Just a quick note to say what a superb magazine Mix is! I've been receiving it for over a year and read through all issues. I find Mix very informative and a great aid to the industry. Keep it up.

Jim Kelley  
Johnny Van Zant Band  
Jacksonville, FL

## Calling All Educators

*Of the mail that comes in to our office, much of what we're asked about concerns the subject of education. . . recording schools, seminars and other informative opportunities for the recording arts. In the past we have occasionally run listings of recording programs and reader response to these listings has been very strong. This year we plan to take it a step further and publish a reference guide to all of the educational gatherings that have made themselves known to us.*

*We will publish this special directory in the near future, so if you are involved with such an institution and have not yet heard from us, please drop us a note (Mix, 2608 Ninth St., Berkeley, CA 94710) or give us a call (415/843-7901).*

# CURRENT

## Compact Disk Acceptance Growing

CBS Inc. and Sony Corporation of Japan have announced plans to establish a compact disk (CD) software manufacturing facility in the U.S. in 1984. Currently, CBS/Sony Inc. is now producing compact disks in Japan, and CBS Records plans to market these imported CD's in the United States in the first quarter of 1983.

Meanwhile, Polygram has announced the availability of 250 titles in Europe and Japan on the CD format, and plans to market 30 additional compact disk releases monthly. Other firms who have adopted the CD software format include: Nimbus, Toolex Alpha, Sonopress, CBS/Sony, Matsushita, Nippon-Columbia, Pioneer, Toshiba-EMI, and Sanyo.

The launch of the compact disk hardware system in Japan has been "a great success" according to Mr. Norio Ohga, president of Sony Corporation of Japan, and chairman of CBS/Sony Inc. In preparation for an industry-wide de-

mand for the new format, and to avoid confusion regarding the CD's manufacturing process, Philips and the Sony Corporation have announced the details of a master tape specification which they are recommending for the industry's acceptance. While it is expected that the adoption of these specifications will streamline the CD manufacturing process, Philips and Sony emphasize that their adoption is entirely optional and that it is very important that manufacturing facilities be prepared to handle programs recorded in a wide variety of formats.

The specification refers to a ¾ inch cassette type CD-master tape with synchronized sub-code data to permit easy access to the program data when the master disk is cut.

For a detailed specification report, readers may contact Nick Morris, General Manager Professional Audio Products, Sony Corporation of America, Sony Drive, Park Ridge, NJ 07656.

## EIA/CEG 1983 Engineering Priorities: Stereo and High-Definition Television

The EIA (Electronic Industries Association) Multichannel Sound Subcommittee recently deferred a vote on the selection of a single system for recommendation to the Federal Communications Commission due to objections voiced by one of the proponents. The subcommittee had planned tests in order to complete the technical record on cable and receiver compatibility. A July deadline is anticipated as a result of an FCC proceeding to propose a "marketplace" approach to stereo TV sound.

Interest in High-Definition Television (HDTV) as a means of improving the present television picture has increased as a result of a recent FCC authorization of direct broadcast satellite (DBS) service by eight organizations. New transmission standards will be needed for DBS. Efforts are under way to form an industry committee to develop HDTV and DBS transmission standards.

## notes

*Harrison Systems*, the Nashville based audio console manufacturer, has appointed *Everything Audio* of Encino, CA, as the exclusive sales representative for Harrison's line of music recording consoles for southern California. Harrison Systems will continue to directly support the film production and post production industry, the major television networks, and broadcast companies through its factory west coast office. . . . The Professional Motion Picture Association has developed a computer compilation of stolen, missing and misappropriated motion picture production

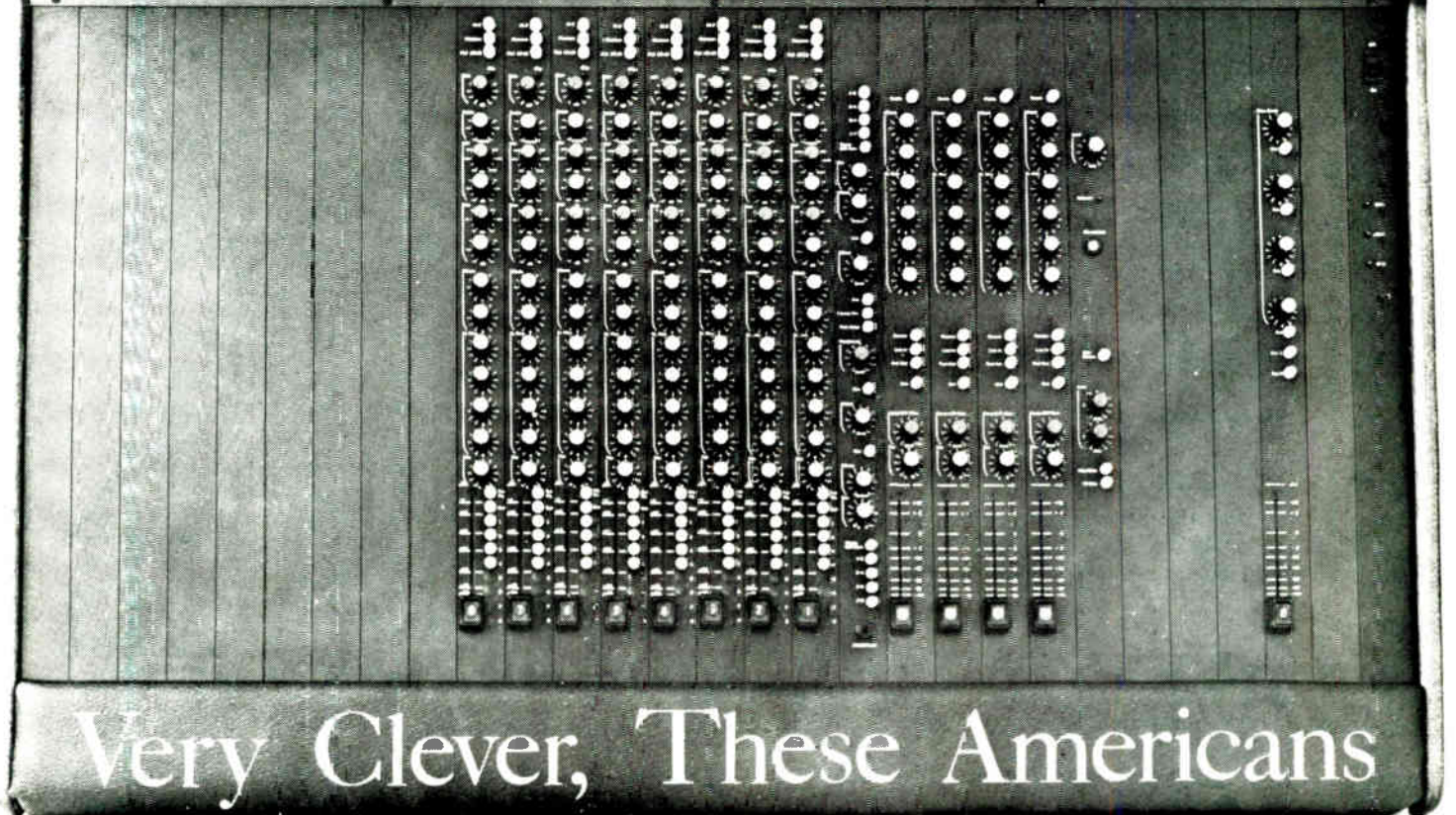
equipment. To receive a free copy of the missing equipment listings or to report lost equipment, contact PMPEA, Ten Thousand Riverside Drive, Suite 6, Toluca Lake, CA 91602 (213) 761-6690. . . . *Tony Satariano* was recently appointed eastern regional sales manager for *Crown International*. . . . *Altec Leasing* recently announced the hiring of *Gordon Hawks* as District Manager for their central eastern territory. . . . *John Strand* has joined *Klipsch & Associates, Inc.*, as Sales Engineer/Professional Products, a new position with the firm. . . . *Steve Armstrong* has been

named Western Regional Sales Manager for *JBL Incorporated's* Professional Products Division. . . . *Peter Kehoe* has been chosen to fill the position of Field Service Engineer at *Studer Revox America's* New York office. . . . *Connectronics* (formerly Canford Audio) has been appointed exclusive distributor in the United States for *Accessit*, the range of audio signal procession units manufactured in England by Bandive, Ltd. . . . *Casey Kurylo* has been named plant manager for *Media International, Inc.*, 247 E. Ontario St., Chicago. . . . *Shure Brothers Inc.* and *HM Electronics Inc.* are sponsoring a special Microphone Applications Workshop to be held at the *Syn-Aud-Con Seminar Center* in San Juan Capistrano, CA, February 15-17, 1983. Other upcoming activities at Syn-Aud-Con include: a Concert Hall Acoustics and TEF® Workshop, with the cooperation of V.M.A. Peutz, on March 3-6, and a Live End-Dead End (LEDE) control room design conference on March 14. For further information, contact Don Davis, P.O. Box 669, San Juan Capistrano, CA 92693 (USA). Phone (714) 496-9599. . . . *3M* has recently developed *Confirm Film*, a high security authentication system developed to reduce counterfeit records and prerecorded tapes by reflecting a normally invisible code that appears in the presence of a light beam. For more information, contact 3M's Safety and Security Systems Division, 223-3N, 3M Center, St. Paul, MN 55144.

These listings are coming soon to Mix:

- Studios of the Northeast
- Sound Reinforcement Companies
- Remote Recorders
- Recording Schools
- Southwest Studios

If you work in one of these areas and have not yet heard from us, please give us a call (415/843-7901) or drop us a line (Mix Magazine, 2608 Ninth St., Berkeley, CA 94710) so that you won't be inadvertently omitted from these important listings.



## Very Clever, These Americans

A classic rule of advertising is "don't knock the competition." Fine. We really don't have anything bad to say about our largest competitor, anyway. They are smart engineers, and their new Series 30 TASCAM recorders and mixers are very good products. We make only mixers, not tape recorders, so if you plan on purchasing a recorder, we think you really can't go wrong with a Series 30 TASCAM machine. But we're mentioning the other guys because we would like to call your attention to how *our Studiomixer II* professional recording console compares to their top-of-the-series M-35 mixer. We have put some very clever engineering into our console, too, giving *Studiomixer II* many more vitally useful features than theirs. (See the chart.) And we have an exciting *Studiomixer II* offer for you.

What the chart at the right does not reveal is that our *Totally Modular* single-chassis mainframe method of construction, our use of industry standard connectors, and the balanced outputs throughout *Studiomixer II* make it as roadworthy and applicable to sound reinforcement as for studio use. This comes in pretty handy for those who cannot afford the luxury of a separate console for each. Sound like Yankee ingenuity?

Because *Studiomixer II*'s outputs are expandable, we can keep all the tracks of any tape recorder up to 16-track very busy, all at once, if you choose to expand this much in the future. We have not forgotten Otari users, either. *Studiomixer II* operates at +4 or -10dB, in and out, and will happily send a balanced signal to an Otari deck.

	TASCAM M 35	STUDIOMIXER II
INPUT CHANNELS	8 Standard, expandable to 20 w/ additional chassis	8, expandable to 21 on mainframe shown, up to 38 on larger MF
OUTPUT CHANNELS	4	4, expandable to 8 in mainframe shown, up to 16 on larger MF
SENDS PER INPUT CH	2 1 effect, 1 cue	6 2 effects, 4 aux
INPUT CHANNEL CIRCUITRY	transformer, padding & trim controls	transformerlessly balanced, 70dB of gain
EQUALIZATION	quasi parametric	quasi parametric
CONNECTORS	XLR mic inputs, remainder RCA jacks	XLR mic inputs and balanced outs, gold-plated "X" jacks/all other
SOLO FACILITY	yes	yes
TALKBACK, SLATE	yes	yes
CUE TO PHONES (ONLY)	no	yes
PHANTOM POWER	no	yes
EQ BYPASS TO MON'S	no	yes
VU METERS/ALL BUSSES	no	yes
LONG TRAVEL FADERS	no	yes
BALANCED OUTPUTS	no	yes
4-WAY MUSICIAN HEADPHONE MIX FOR OVERDUB	no	yes
LINE-UP OSCILLATOR	no	yes
EFFECTS SEND/RETURN	no	yes

But we could be very clever all day long and, until now, you still may not have bought our mixer because all the extra features and ingenuity have *normally* cost \$1,200 dollars more than TASCAM. So here's the exciting news. For a limited time, through participating *Studiomixer II* dealers, the 8X4X4X2X2 mixer shown above will be offered at the same suggested retail price of the standard 8X4 M-35 (talkback module extra). Now you can compare our professional console to theirs in *every* way. So go ahead and get their recorder. But, with a deal like this, you'd be very clever to step up to a *Studiomixer II*!

## NORTHEAST

At *Soundworks* Digital Audio/Video Recording Studios, Ltd., *Robert Palmer* finishing vocals for his upcoming *Island Records* album, produced by Robert Palmer and engineered by *Jack Nuber* assisted by *Michael Morongell* (Digital). . . . At *Plum Studio*, Haverhill, MA, former RCA recording artists, *Shaharazod* are in working on a single, and *Mel Caulton* backed by session guitarist *Kenton Griffin* laid tracks on his upcoming single. . . . At *Trod Nossel Recording Studios*, Wallingford, CT, *Archival* from Springfield, Massachusetts recorded a ten-song self-produced LP of their original material. . . . The 24 track mobile audio truck from *Scharff Communications*, New York City, recorded the *Live From The Met* holiday special of "Hansel & Gretel" on Christmas Day, at the Metropolitan Opera House in New York. . . . At *Secret Sound Studio* in New York City, *Wuf Ticket* has just completed their single "Ya Mama." Produced by *Jack Malken* and *James Mason*, Malken and Mason engineering, *Debbie Rebbun* and *Warren Bruleigh* assisting. . . . In Boston, at *Syncro Sound Studios*, *Ric Ocasek* finished up his album for Geffen records, with *Ian Taylor* engineering, assisted by *Walter Turbitt & David Heglmeier*. . . . *Arabelum Studios*, Albany, NY recently released 45's by *Street Magic*, the *Targets* and an EP by *Ariel*, engineered and produced by owner *Art Snay*. . . . At *Audio Innovators*, Pittsburgh, PA, *Donnie Iris* laying vocals for a Christmas novelty recording with "Hal the Talking Computer." *WDVE* Radio and *Audio Innovators* are co-sponsoring the event. Engineers for the sessions are *Norman Cleary*, *John Struthers*, and *Dan Ferraro*. . . . Activity at *Unique Recording*, New York City, includes *Bobby Orlando* and *Billy Terrell* producing tracks for a new *Frankie Avalon* release. . . . Recently at *Celebration Recording Studios* in N.Y.C., Saturday Night Live star *Brad Hall* was featured on lead vocal tracks of a new holiday single "Riffmaster Reindeer," produced by *Dancin' Productions* and engineered by *Justin Neibank* and *Holly Peterson*. . . . *Comfort Sound*, Ontario, Canada was busy on the pay TV front recently, making a 24 track recording of Australia's *Men At Work* for an upcoming *Warner-Amex MTV* special. . . . At *Room 10 Recording* in Washington, DC, *The R.E.G.'s* were laying tracks for three gospel albums, *Dale O'Warren* and *Vicki Gray* producing, *Ira Leslie* engineering. . . . Recent activities at *Fishtraks Recording Studio*, Portsmouth, NH, includes the release of *Raven's* 45 on the *Fishtraks* label. . . .

## SOUTHEAST

At *Bullet Recording*, in Nashville, *Merle Haggard's* new album is being mixed by *Rick McCollister* with assistance from *Danny Mund-*

*henk* and production by *Ray Baker* for CBS Records. . . . Activity at *Emerald Sound*, Nashville, TN, includes Atlantic recording artist *Sissy Spacek* with *Rodney Crowell* producing. . . . Recent activity at *Doppler Studios*, Atlanta, GA, *Jim Healy* and *Chunky Venable* of *Castleberry Productions* in Studio A producing songs for *Randall & CC*. Musical appearances by Roy Yeager and J. R. Cobb of the Atlanta Rhythm Section. *Brad Jones* engineering. . . . At *Creative Workshops I and II* in Nashville, TN, producer *Joe Huffman* working on individual projects for *Jimmy Swaggart*, *Faye Yates* and *Mr. Wendy Bagwell*. *Brent Maher* and *Randy Goodrum* laying tracks on *Kenny Rogers*. . . . *Music Mill Studio* in Nashville reports *Lou Rawls* working on his new album with *Ron Haffkine* producing, *Jim Cotton* engineering. . . . Canadian singer Ms. *Jessie Burns*, recorded her first album at *Sound Emporium* in Nashville. Scheduled for release by *Churchill* in both the U.S. and Canada, the project is being produced by *Jim Williamson* and *Tony Migliore*. *Mike Poston* engineered. . . . Activity at the *Eddie Offord Studio*, Atlanta, GA, now includes outside projects: Singer *Fiona Flanagan* has finished several tracks backed by members of *The Dregs*, with *Eddy Offord* producing and *Steve Morse* arranging. Also recently finished were several tracks by the group *Operator* for *Landslide Records*. *Mark Richardson* produced, with *Chuck Allen* engineering. . . . At the *Soundshop Recording Studios*, Nashville, a new album is in the works for CBS artist *Ronnie McDowell*, who was in the studio with his producer, *Buddy Killen*, with *Ernie Winfrey* and *Mike Bradley* engineering the sessions. . . . *Eric Clapton*, *The Talking Heads* and *Spandau Ballet* have all recently completed their next albums at *Island Records'* recording studios at *Compass Point* in Nassau, The Bahamas. . . . Atlantic artist, *KIX* recording an album in Studio E at *Criteria Recording Studios* in Miami, with *Peter Solley* producing and *Steve Klein* engineering. Engineering assistants are *Jim Sessody* and *Wolf Hutson*.

## NORTH CENTRAL

*Solid Sound, Inc.* in Ann Arbor, MI reports a new demo project by songwriter/singer, *Mary Liz Larin*. Other projects includes a demo by British-American artist *Peter Halifax*. . . . Recent activity at *The Chicago Recording Company* includes: *U.S.S.A.*, the band composed of former Cheap Trick member *Pete Comita*; *Cliff Johnson*, formerly of *Off Broadway*; and *Tommy Gawenda* from *Pezband*, cut two songs for a forthcoming EP. The band produced; *Paul Klingberg* engineered. . . . Recording activity at *5th Floor Recording*, Cincinnati, OH, includes: second single "Doo Wa Ditty." *Bootsy's* latest single "Body Slam" and *Midnight Star's* "Victory,"

the second single from their latest album. . . . Recent activity at *Studio A*, Dearborn Heights, MI: MCA artist *Bruce Nazarian* of *The Automatik*, teaching a class on recording techniques for *Wayne State University*, and Producer *George McGregor* working with singer *Mel Davis* on R&B tracks, with *Eric Morgeson* at the board.

## NORTHWEST

At *Rhythmic River Productions*, San Francisco, CA, *The Lloyds* are currently working on their new EP produced by *Bill Cutler*, engineered by *Pat Maloney*. . . . Activity at *Hyde Street Studios*, San Francisco, includes *Randy Hansen's* recording guitar overdubs in Studio A for Bob Heyman's *Planet Of The Enchained Guitarists*. *Scott Church* and *Ricky Lynd* engineering. . . . In Alameda, CA at *JENPET Music*, jazz/pop group *Ariel* cutting tracks for a self-produced EP, *Tom Size* engineering. . . . At *Cora-sound Recording* in San Rafael, Producer/Artist *Matthew Kelly* is mixing an album featuring: *Nicky Hopkins*, *Bob Weir*, *Michael Bloomfield*, *Jerry Garcia*, *John Cipollina*, and more. *Stephen Hart* engineering. . . . *Ocean Records*, the record company and publishing arm of *Ocean Studio*, Stinson Beach, CA, released its first pressing, a "Christmas card 45" for test marketing in the Los Angeles area. The cuts are "You Are My Christmas Tree" and "Black (Soul) Christmas" by *Timi Terrific*. . . . *The Berkeley Music Group*, Berkeley, CA, finished recording a four song demo for North Bay hard rockers *The Jeffery-Miller Band*. . . . *Dangerous Rhythm Recording Studios*, Rheem Valley, CA, is compiling a sampler album of ten Bay Area 'new music' bands, featuring: *B-Team*, *IfThen-Why*, the *Uptones*, *Necropolis Of Love*, *Bad Attitude*, and more. . . . At *Heavenly Recording Studios*, Sacramento, CA, the *South Loomis Quickstep Band* is recording their third album with engineer *Larry Lauzon*. The band is producing the project themselves. . . . The remote facilities of *Pine Apple Studios*, Philomath, Oregon, have completed a series of live recordings of country music group *Amarillo*.

## SOUTHERN CALIFORNIA

At *The Village Recorder*, West Los Angeles, *Robbie Robertson* producing "The King Of Comedy" soundtrack for *Warner Brothers*, with artists: *Bob James*, *Ray Charles*, *Rickie Lee Jones*, *Pretenders*, *B.B. King*, *Donald Fagen*, *Talking Heads*, *Tom Petty*, and *Ric Ocasek*. *Joel Fein* engineering, *Ginny Pallante* assisting. . . . At *Group IV Recording*, Hollywood, CA, *Roy Rogers & Sons of the Pioneers* cutting vocal tracks with producer *Glen Larson* for "Fall Guy" segment. Engineer *Dennis Sands*, assisted by



**Paul Aronoff** . . . At **Sound City**, Van Nuys, CA, **Quarterflash** cutting tracks for new Geffen LP, with **John Boylan** producing, **Paul Grupp** engineering and **Ray Leonard** assisting. . . Activity at **Soundcastle**, Los Angeles, includes: Singer/songwriter, **Peter Allen**, in doing overdubs and mixing on his new album for Arista. **Richard Landis** producing, **Joe Chiccarelli** and **Ed Thacker** engineering, **Mitch Gibson** assisting. . . **Mr. Bonzai** privileged to attend sessions at **Cherokee Studios** for forthcoming **Van Dyke Parks** album on Warner Bros Songs by Van Dyke with lyrics co-written by Martin Kibbee, **Steve Goldman** producing, **Rick Rugieri** engineering and riding herd on 35 piece orchestra (arranged and conducted by **Lennie Niehaus**) 12 vocalists including **Scatman Crothers**, **Jim Keltner** on drums, Mr. Parks singing the part of Brer Rabbit, providing comedy relief and critter comfort for project based on the stories of Uncle Remus. **Jeff Lorber** is currently recording a new album for Arista Records at **Indigo Ranch Studio** in Malibu with **Chris Brunt** co-producing and engineering. **Rick McMillen** recording **The Toasters** cutting new tracks for their debut EP at **Eldorado Studios**, Hollywood. Overdubs being cut at **Track Record** Hollywood. RCA's **Ron Fair** producing and engineering. **The Truck** Glendale, CA a mobile eight track recording facility, opened its doors for business last summer recording the synthesizer tracks for the ZAXXON video arcade game TV spot which has been receiving national airplay. The Truck has now completed the **Elderlocke** independent album project. At **Magnolia Sound** in North Hollywood, CA, **Kenny James** is finishing a LP for **Destiny Records**. **Elton Ahi** producing, **Stuart Taylor** engineering. . . At **Kitchen Sync** Recorders in Hollywood, the poprock band **Ducks Duet** have recently finished recording two new songs: "Don't Blame Me" and "Every Other Day". **Steve Richardson** produced with **Larry Menshak** engineering.

their recordings. . . **Catfish Bay Sound Studio** formerly of Clarksville, TN has completed its relocation to Nashville. The format remains 8 track with both in studio and remote recordings offered. **Chuck Emery** will still be handling all the engineering duties. . . **Music Annex** in Menlo Park, CA is constructing a sound stage and audio/video control room adjacent to the existing Studio C. Acoustical design consultant **George Augspurger** has been contracted for the project and completion is stated for early spring. The design calls for a central control room, two studio areas 35 x 45 and 30 x 20 and an isolation booth 10 x 13. The larger studio area will have a lighting grid, 20' ceiling and a 180° hard cyc wall. The smaller studio area will be a standard audio recording studio design. A 28 input Amek console and MCI 24 track recorder will be the nucleus of the audio package. . . After 5 years of steady and predictable growth, **Progressive Music Studios** has purchased new land for the building of a large facility in Tampa, FL. . . **E.A.R.S.**, located in East Orange, New Jersey, has recently purchased a pair of E-V Century 100 console monitors for its control room, and purchased and installed a new 32 x 24 Mainframe A.P.S.I. recording console. . . **Sheffield's** Remote Audio Truck out of Phoenix, MD is up and rolling again. The 30 ft. custom built 24-track truck was recently outfitted with a new Audio-tronics console. The first project using the new boat was for Pearl Records. . . **Audiograph Productions Inc.** in Haslett, MI, has just updated their in-house recording facility with the addition of a Neotek Series II 32 in 24 out console, Eventide H910 Harmonizer, Lexicon 93 Prime Time, Valley People stereo Dynamite, 2 Valley People Kepex II, 2 Valley People Gain Brain II, UREI 1178 Limiter, UREI 546 dual parametric EQ, Orban 526A Sibilance controller 2 Neumann U-87Z, 2 AKG 451E, 2 more Sennheiser 421, 2 Crown PZM. . . **ROAR Productions** is pleased to announce the opening of their new facility on Dobbin Road in Columbia, MD. The new location features tripled studio space, separate drum and vocal isolation, new control monitors, and a client lounge. Also new at ROAR is the official addition of **Mr. Gary Zeichner** as Operations manager, and engineer. . . **3rd Ear Recording** of Solana Beach, CA has moved and expanded to the Belly Up Tavern. The facility features live 8 track recording from the Belly Up stage. . . **Audio-techniques** is pleased to announce the installation of a MCI JH-24 transformerless recorder at **Petersen Music**, New York City. . . **Dallas Sound Lab** in Irving, TX will be opening in the Spring of '83. The facility will consist of: Studio A—48 track recording studio with video/film interlock capable of 60-piece capacity orchestra scoring, video sweetening, and album-jingle production, with audio tie lines to the three sound stages at Las Colinas for live TV shows, concerts, etc.; and Studio B—a film mixing theatre for automatic dialogue replacement, Foley effects, screening and film mixing. . . The first Ampex ATR-124 multitrack audio recorder for a commercial recording studio in the New York City area has been purchased by **Master Sound Productions** of Long Island. The Ampex ATR-124 has been installed at the Long Island recording studio to augment their expansion into audio and video post-

production. The ATR-124 is locked to an Ampex MM-1200 multichannel audio recorder and videotape recorder with SMPTE time code for productions including rock and roll, jazz, country, classical, and gospel.

**Sweetwater Sound Recording Studio** of Fort Wayne, IN, is pleased to announce the recent remodeling and upgrading of facilities and equipment, and the addition of **Dick Swary** to the staff. Equipment featured by the studio includes the Tascam Series Model 85-16 recorder and customized Model 15 console, Electro-Voice Sentry 500 Studio Monitors and Otari 5050 - B2 Half-Track recorder. The studio also utilizes an assortment of musical instruments including a Yamaha Grand Piano, Oberheim OBSX Polyphonic Synthesizer, Fender Jazz Bass, and Twin Reverb Amp. The owner is **Chuck Surack**. . . **Songbird Studio** announces they are the first studio in Atlanta, GA to have a Lexicon 224X in operation. Songbird has also acquired an Ampex ATR 100 2 track and plans to purchase 1/2" heads for the ATR 100. . . **Kris Stevens Enterprises, Inc.**, of Sherman Oaks, CA, was recently appointed by David Weitzner, executive vice president of Embassy Pictures to handle the major radio station promotion in conjunction with the release of the Rolling Stones' upcoming film "Let's Spend the Night Together." The movie, which is a Hal Ashby film, is scheduled for February release to the public. . . **Russian Hill Recording** in San Francisco, CA, has just fitted Studio A with a new (C)-lock 3 1/2" synchronizer and video projector system for use in film and video audio post-production. First projects include an upcoming "Charlie Brown" TV special, produced by Lee Mendelson, with music by Ed Bogas, both hot on the heels of the success garnered from the "Garfield the Cat" TV special. Jack Leahy engineering. . . **Penny Lane Studios** (NYC) recently continued the expansion of its state-of-the-art facilities by installing a SMPTE interlock system and digital signal processor. In addition, Penny Lane is the first studio in New York City to acquire the new Eventide SP2016 Digital Signal Processor, an advanced unit for high quality digital reverb plus all other time-related digital audio processing. . . Three Muscle Shoals (Alabama) studio owners are officers of the newly reorganized **Alabama Music Hall of Fame Commission**. Recently, the seven-member commission elected **Terry Woodford**, chairman; **Jimmy Johnson**, vice-chairman; **Chip Nix**, secretary; and **David Johnson**, treasurer. The other commissioners are Fame Recording Studio president and producer **Rick Hall**, of Muscle Shoals, RCA recording artist Alabama's accountant **Buck Borders**, of Fort Payne, and state official **Sherman Shores** of Montgomery.

## studio news

Chester, PA, now has its first full function demo recording studio, **Leonardo Recording Inc.** It features a Tascam 40-4 four track along with the Model 10 mixing console. Mics are Shure, AKG, SONY, EV. Monitors are JBL and Auratone. Outboard gear features Ashly noise gates and Symetrix compressors. The studio is owned and operated by **Linden** and **Gwen Leonardo**. . . Effective immediately, **Digital Services** in Houston, TX is the first and only company to offer true digital duplicating, editing, and disk mastering for the Sony F1 digital recorders as well as Technics digital processors and any other 14 bit EIAJ standard digital recorder. Utilizing the Sony PCM 100 14 bit professional digital processor with the advanced Sony DAE 1100 digital audio editor and professional PCM 1610 16 bit digital recorder, users of the consumer type Sony F1 digital processors may achieve the full benefits of true digital editing and disk mastering. True digital transfer of F1 14 bit tapes to full 16 bit PCM 1610 format is available and recommended to those users seeking the fullest performance from

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# YES . . . THEY ALL BUT LISTEN SYNCLAVIER® II



## **TOM MOODY**

Creative Director, Executive Producer, N.B.C. Television,  
Los Angeles

Well, it's hard to talk about any one aspect of the Synclavier II because everything about this instrument is so unbelievable; but if I had to boast about one area of its capability, it would be its speed and ease of use for composing new ideas. I find my scratch tracks suddenly become finished tracks, right out of the Synclavier II's 16 track digital sequencer to tape. This feature alone has increased my production output at least 300% in the last two years. Plus, the additional ideas you receive from the great number of Synclavier II owners who trade programs and innovative ways to use the system always keep the creative juices flowing.

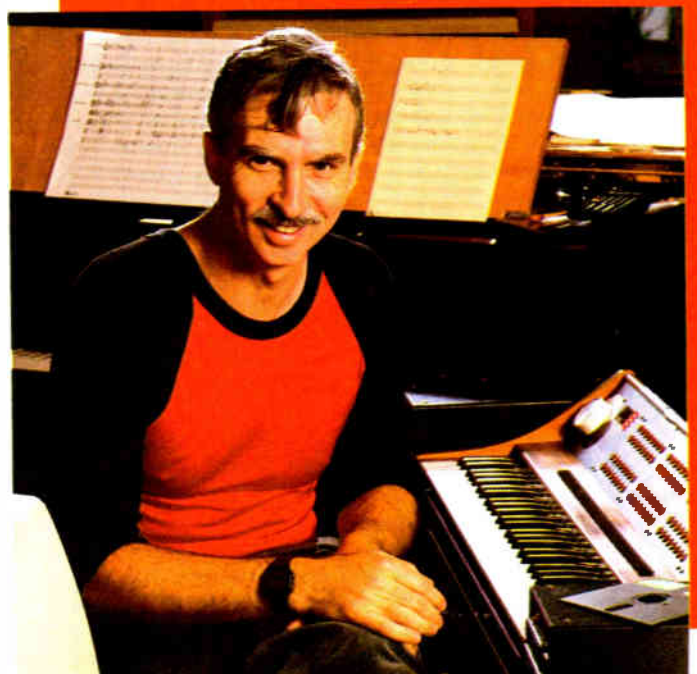
When you combine those musical features with the fact that the instrument, through new software and options, keeps expanding and getting better, what I first thought was a major expense has paid for itself many times over.

## **PAT GLEESON**

Synthesist/Producer, San Francisco

I used to own \$85,000 worth of analog synthesizers, but I sold them all to buy one \$40,000 Synclavier II which, by the way, paid for itself on my first Synclavier II project. The director of that particular film wanted to hear the music before committing it to tape, so how else could I do that except by using the Synclavier II's 16-track digital recorder.

Even more important is the attitude of the company. Over all of my years in the music business, N.E.D. is the first company that sincerely pays attention to its users. In fact, the great thing about the Synclavier II is that it's better today than when I purchased it, due to user input and software updates. I've heard about people who don't own one saying that in a year the Synclavier II will be half the price. The funny thing is, I've been hearing that for three years now.



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## OSCAR PETERSON

Toronto

A renaissance in music is happening right before our eyes and ears; and the Synclavier II is leading the way. This instrument saves many of my spontaneous compositions which before were lost. Then, to be able to automatically print out the music is just short of a godsend for me. What used to take two hours of transcribing music, now takes five minutes. Also, if there is a small feature which you think would improve the useability and musicality of the program, just inform the company and eventually you will have it. The printing feature gets better all the time. It sure is a pleasure to learn one instrument and grow with it. I have been more than satisfied with my investment and convinced it is one that will last as long as my first love, the piano.



## ALBHY GALUTEN KARL RICHARDSON

Karlby Productions, Miami (Producer/Engineer for Bee Gees, Barbra Streisand, Dionne Warwick and many others.)

I think we purchased the first or second Synclavier II built back in 1980 and without a doubt, it has been the best investment we've ever made for any computerized musical instrument. Recently we added the Sample-to-Disk™ option to the Synclavier II, which has opened up an immense amount of musical ideas while also saving valuable production time. For example, we were recording an artist and we wanted to change where the person sang and also correct a slight intonation problem. Instead of re-recording or splicing, we just sampled the performance to the Winchester of the Sample-to-Disk™. We then rolled back the tape, and played the phrase where we wanted to and corrected the intonation problem with the Synclavier II's pitch wheel. We also use it to precisely analyze the meter of any music. Of all the choices available to us, we're glad we choose the Synclavier II because we feel it's going to be the standard for every studio.

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World Radio History

# Suzanne Ciani

by Melodie Bryant

## Going Commercial

**A**s the big brown dog lopes across the TV monitor to the sound of an upbeat synthesizer soundtrack, a can of dog food suddenly flashes across the screen. The soundtrack emphasizes the image with rhythmic hits, then returns to the groove as the dog continues loping. Ah, for the life of a dog. Life for a synthesist/producer is not so easy.

"It's not together," says Ciani simply, to the group of musicians scattered around her living room/studio. "Let me hear the tracks one at a time."

If Ciani is businesslike these days, it's because synthesis *is* big business. And Ciani is a big part of it. It's a symbol of how far synthesis and Ciani have come. Synthesist and producer of commercial soundtracks for companies as diverse as Avon, Chevrolet, Coca-Cola and—in the above case—Alpo, composer for film ("The Incredible Shrinking Woman," "The Stepford Wives"), and sound designer for everything from video games to talking dashboards, she is at the top in a field which a little over ten years ago was restricted to the realm of the avant garde, or little known research laboratories.

If it's any consolation, she didn't get there without at least one detour. In fact, were it not for a minor setback, the name Ciani might be more closely associated with set designs than sound designs.

"I started to design furniture my concept of what it should be like," says Ciani, whose furniture these days is more likely to be doubling as musical equipment. "They were large pieces for groups of people. And the idea was that music would be incorporated into the furniture electronically so that people would sit in a circle—it would hold 12 people—and the music would surround them. A little sequence would run around, and everybody could tune their own note. It was a perfectly viable idea, however it came down to how cheap you could pack it and ship it. My pieces were so large, I couldn't move them. One was 16 feet long and 3 feet wide. The other was 13 feet in diameter."

While Ciani's first attempt at  
(continued on page 14)



PHOTO: HOWARD SHEHMAN

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So quit hesitating . . . talk to a Synclavier II owner or, better yet, visit New England Digital or one of our local distributors for a personal demonstration.



**Bradley J. Naples**  
Director of Marketing and Sales

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(continued from page 12)

marketing an idea didn't bear fruit, it wasn't so far removed in concept from what she is doing now: creating environments of sound.

Raised in Massachusetts, she attended Wellesley College where she majored in music. It was at this time that she first heard synthesized sound. While on a visit to MIT, she came across a student attempting to synthesize string sounds on his physics computer. Archaic as that idea now seems, the sounds set Ciani on fire. "That was it," she says simply. "A button pushed in me and that was it."

In pursuit of this new found world of sound, she went on to U.C. Berkeley for her M.A., taking a summer course at Stanford's Artificial Intelligence Laboratory in the Music V Program, which at that time was taught by Bell Labs innovators Max Matthews and John Chowning. "It was a good time," she says with a reflective smile. "We'd have to get up at 3:00 a.m. every morning and arrive there at 4:00. You know, driving, watching the sun rise over the salt flats of Oakland. And our class was from 4:00 to 7:00 because that's when they gave us the computers—it was time sharing and we got the off hours. So I spent my summer there, and then I continued on in the fall as kind of double school, doing part of my work in Berkeley and part in Stanford. I had an MG sports car, so I didn't mind commuting . . ."

Nor did she mind the drive to Mills College, where she found access

to the Electronic Center for Tape Music and an array of Buchla synthesizers. It was an experience which so impressed her that she subsequently went to work for Don Buchla, soldering in his workshop. "I was hoping to learn enough to build my own," she now says with a laugh.

In a sense, she did. With access to his studio at night where she would compose entire pieces, Ciani found she was easily able to adapt Buchla's instruments to her music because, as she says, "The way he designed the instrument, you got to design an instrument within the instrument." Weaned on Buchla's, she still refers to them as "The Maserati of synthesizers," and prefers them over any other for live performance.

While she was at Mills, Ciani worked on her first commercial soundtrack—a package of 20 spots for Macy's—hiding the scripts in the studio because the Tape Center's tax-exempt status made work for profit highly illegal. But while she found the experience exciting, the leap from the academic world to the business world was one she was not ready to make in the still uncharted field of synthesis. "I was frustrated about making my living in music. I didn't want to do that. But when I encountered the same problems in a different medium, I thought, if I'm going to have these difficulties, I might as well have them in something I essentially enjoy. If you have to make money at *something*, you might as well enjoy it."

As it turned out, making money was not half the hassle Ciani envisioned. She set up a studio in San Francisco and was getting studio work

immediately. From there, she moved to Los Angeles where her business steadily improved. But it was in New York, where she had moved for artistic reasons, that Ciani's career really took off. In 1976, she had been in Manhattan for about a year doing live performances at museums, and making her living in the studio, when almost by accident, she created the "pop and pour" sound for a Coca-Cola commercial.

Still half in the world of "serious" music, she had no idea of the potential she had unleashed. "At that time, I didn't know that what I was doing was a novel approach. When I started out at this, I thought everybody was doing it. I really did. I was shocked to come to New York and find out that there was really just not that much of a level of expertise. I had *no idea* what the mechanism was of really making money in this business. I did this little thing," she says laughing, "and it was like getting the three grapefruits in a one-armed bandit."

Ciani has been racking up grapefruits ever since. But while her success is very real, so are the conflicts and responsibilities that come with it. Once a student during the turbulent times at Berkeley, she was recently contacted by the Defense Department to help in their research. Were there problems of conscience? "Yes and no. Basically, I was designing sounds. They use video games to train people so that they don't have to go out and actually get bombed. They actually stay *in* and get bombed," she says laughing. "Feels the same but it's not as messy. So it's simulation, and that idea appeals to me. So it is the Defense Department. But when they called, they said, 'We want to finance your creativity,' and I thought, hmmm, maybe they can afford it."

Other dilemmas are not so easily solved. As president of Ciani/Musica, Inc., Ciani now has a group of engineers, arrangers, and assistants who work exclusively with her. Not all commercial projects are creatively tempting, but there are other peoples' livelihoods to consider.

And then there is always the client. Of all aspects of her work, Ciani concedes that this is the one for which she was the least prepared. "I have to keep reminding myself that basically I'm doing this because I enjoy it. And I'm learning not to be harrassed. But working with people—you know when you're working, you're not always able to service somebody's emotions. But everybody around me knows that's my weak spot and they all step in and support me."

If working in the real world has had its difficulties, it has also been

**Suzanne gets wrapped up in her work.**



PHOTO: HOWARD SHERMAN

good for the maturing process. Although primarily a synthesizer player, Ciani admits that her instrument of composition is the piano. It's an admission she might not have made some years ago when the concept of the keyboard was anathema to synthesizer purists. "I think as we grow older, we get off it in a lot of ways. I had a definite bias against the keyboard in the past because I felt the emphasis on it was really distorting the possibilities of sound; and I was really hostile because I felt it was destructive to the whole medium. It was being used as a crutch and people weren't getting beyond it. Now, things have changed, and most people know that there are other ways to control sound. The keyboard is one, and the keyboard can be whatever you make it—it can be pressure sensitive, touch sensitive; it can control filter settings instead of pitches."

She does not recommend a keyboard triggered synthesizer for someone just starting out, however. "There's nothing to learn there. When you're starting out, that's when you have the opportunity to really get into it and not be worried about whether it's light and portable and fast in the studio. A Buchla, or a modular system is a good idea. There are some great ones made by Roland and Korg. And the Alpha Syntauri system with the Apple computer is great because of the thinking and the concepts. It's great to come into it with an open mind. Then, if you want to narrow it down, at least you're aware of the possibilities."

Ciani's own equipment includes both keyboard-triggered synthesizers including three Sequential Circuits Prophet V's modified in different ways, a Synclavier II with Winchester (hard) disc—"The Cuisinart of disc technology" as she calls it—as well as modular gear such as the Roland MC-4 Micro Composer, and of course her Buchla Series 200.

While Ciani's synthesized sounds are now part of the mainstream, she is still pushing the limits of technology for new sounds. When designing sounds for Bally's Xenon pinball machine, she worked directly with Texas Instruments and the manufacturer on their new "speech chip" to create vocal sounds, and has also been working with R&D microchip people on the best application of such chips for their clients, such as car manufacturers who are now introducing vocal commands into the dashboard.

When technology doesn't provide an outlet for her ideas, Ciani improvises—as she has with her "Voice Box": Bode 7700 Vocoder,

*(continued on page 99)*

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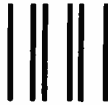
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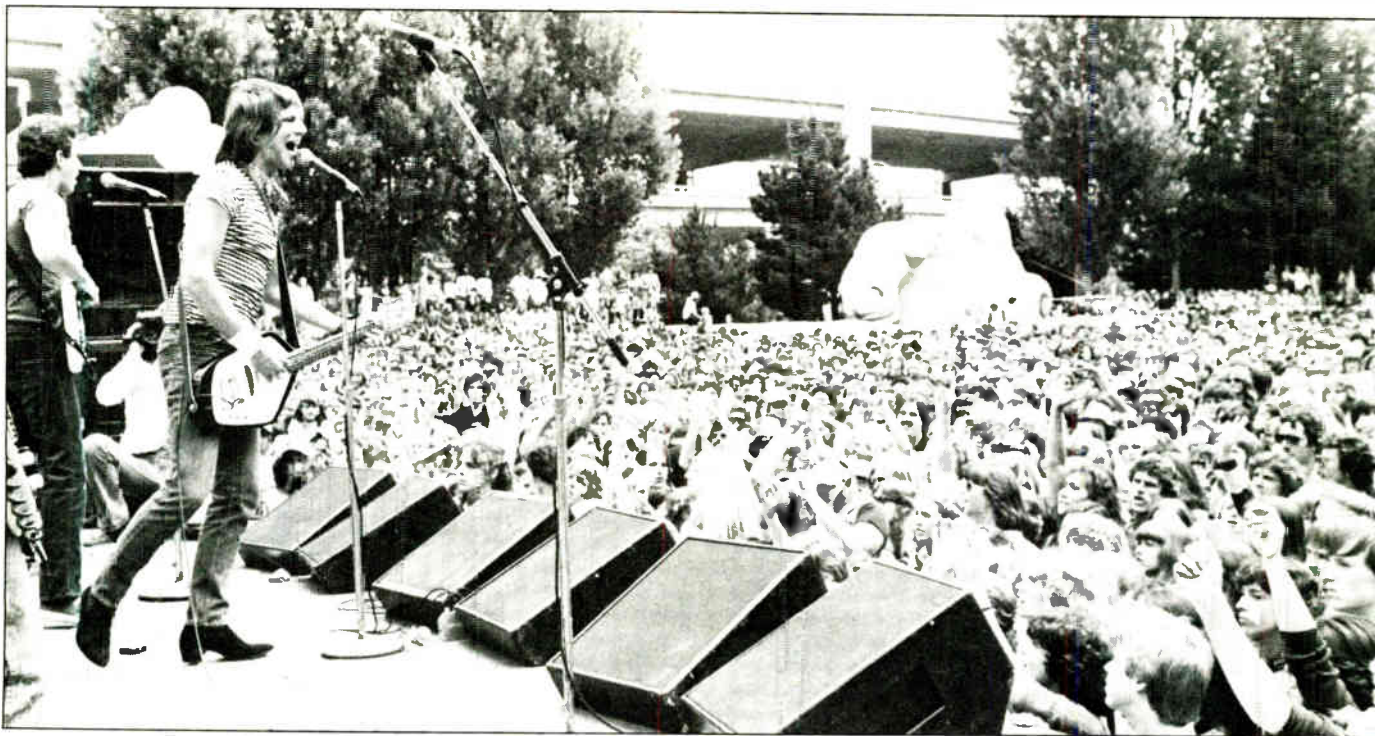
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*Greg Kihn uses custom built stage monitors from Sound on Stage of Brisbane, California*

# STAGE MONITORS

## HIFI FOR THE PERFORMER

by Robin Tolleson

"Gimme more monitor!" The phrase is heard countless times each night in clubs and concert halls small and large. The blasting power amps at work in much of contemporary music have created the need for exceptional monitors, and performers know what a great tool those exceptional monitors can be. "The artists have gotten over the point of being able to hear the monitors now," says Will Parry of Maryland Sound. "Now they want to hear what *they* want to hear, and they want to hear it like a hi-fi." Parry's Baltimore-based outfit is one of the many sound companies that has sprung up to meet the needs of today's touring musicians. Maryland is working with artists like Hall and Oates, Al Jarreau, Crosby, Stills and Nash, and George Benson. But none was so outrageous as the system they designed for Stevie Wonder—64 inputs onstage, with 24 discreet mixes. That's what I would call "more monitor."

Sound companies like Maryland generally build up their own monitor cabinets, buying the exact components they want. JBL speakers got high ratings with nearly everyone I spoke with, including Maryland Sound. "There's certainly no secret to good

equipment," says Parry. "It's only being willing to spend the time designing it, and buying the right stuff. If we don't feel the manufacturers make it, then we make it ourselves." Maryland builds switchable 2-way, 3-way, or 4-way crossover units. They build their own monitor consoles, with three band parametric equalizers on each channel. They have also modified the PM2000 mixing boards to permit 14 discrete monitor mixes. But according to Parry, it takes a heads-up monitor engineer to make the whole thing work. "It takes guys who know how to make the group happy and understand what they're saying when they request something—not just pooh pooh it—but understand it. You know, the artist is saying *this*, but what he really means is he wants more low end or top end, whatever. He's describing it as maybe, 'It sounds too grey for me,' or 'It sounds like a night on the town,' who knows. Musicians have their own way of thinking, and the guy that can translate that into technical terms is a very valuable person."

Wesley Sharp, owner of Audible Sound, Los Angeles, explains that they think about the final application of each cabinet before choosing the speaker. "Usually a JBL speaker with relatively high efficiency is used, such

as an E130 or 2220," he says. "That's very efficient for a vocal range. If you want to get into separate needs, such as bass or guitar, then you'd need some other models, like the E145 or maybe an E140. The E145 is a little better for a smaller cabinet, and you usually use small cabinets for monitors. And then for the high end you just find the loudest high compression driver you can find, and that's probably a 2440 type of set up, with a horn on it." Sharp prefers to use a third octave equalizer for the monitors. "They're quicker than a parametric, and you need to make changes quickly sometimes with monitors," he explains. "With parametrics you are limited to five bands of changes, and after you've adjusted those five bands you can't adjust any more. With a third octave equalizer you can make 27 different adjustments within the entire spectrum."

Jerry Pfeffer of Sound On Stage (San Francisco) also likes the third octave EQ. "It's more visual, it's quicker, and it enables you to 'go fishing' for the sound you want," Pfeffer says. Sound On Stage prefers JBL speakers for high end, and Gauss for low end. They use Crown, Phase Linear, and Hafler amps, and generally build their own mixing consoles. When Pfeffer began mixing monitors 14 years

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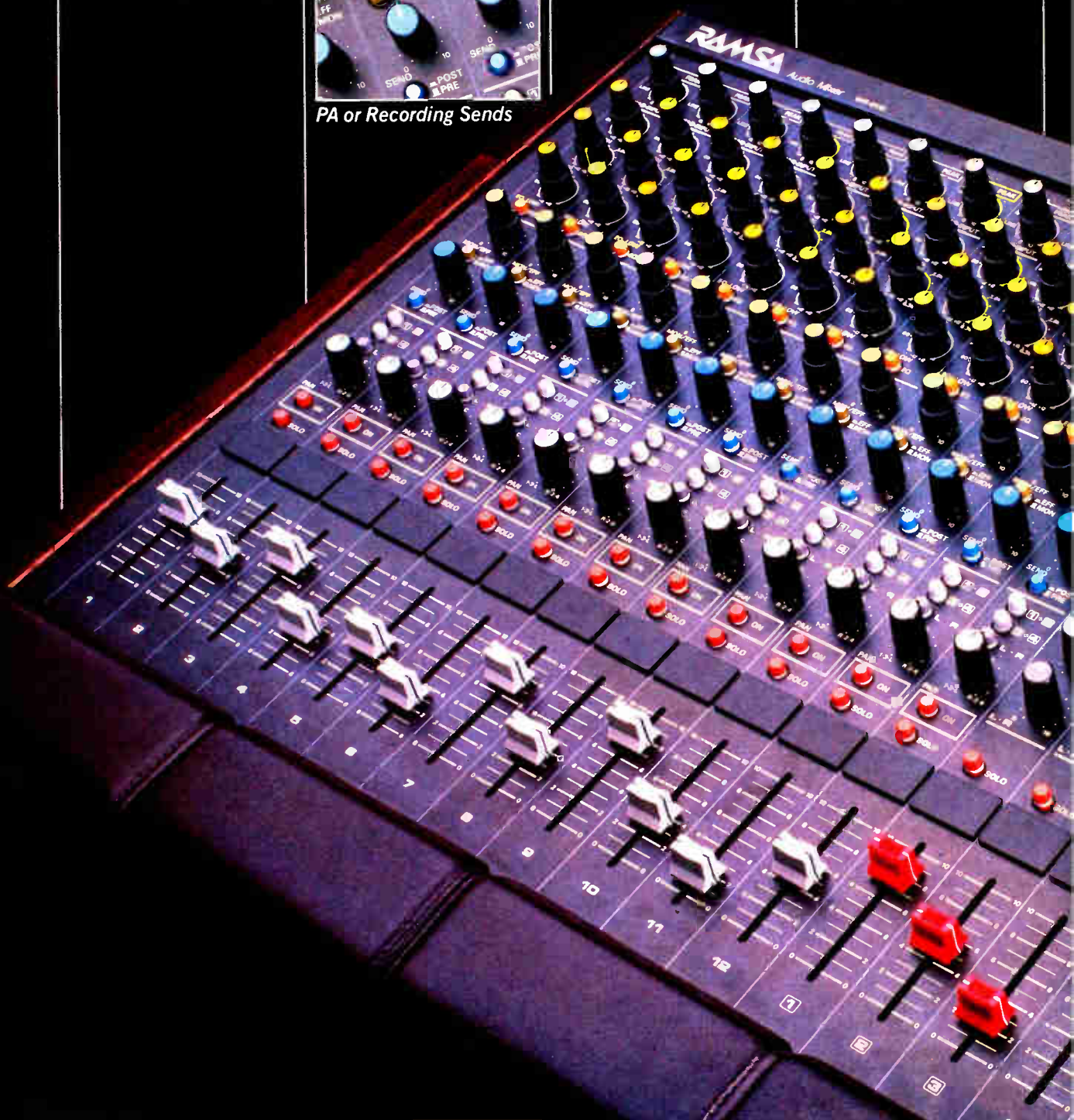


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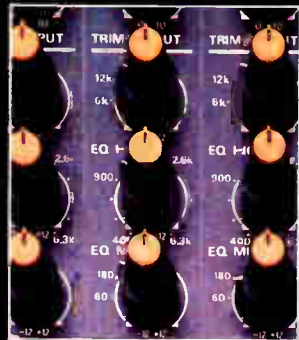
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ago, the monitor mix was just a tap off the house board. The Gamble consoles that he just bought can provide up to sixteen discrete mixes onstage. Gamble consoles (Jim Gamble, of Lake Tahoe, CA) are becoming widely noticed. They are being used by the Ultrasound company (San Rafael, CA) along with John Meyer monitor speakers. Ultrasound, which provides the entire sound system for The Grateful Dead and Jefferson Starship, is a dealer of Meyer Sound Labs products of San Leandro, CA. General manager Don Pearson speaks of the Meyer system. "When you first listen to it, it doesn't seem like it's very loud, because you're used to a certain amount of edge. Edge is associated with distortion. And so the first impression of these is that the apparent volume is much lower, but after you listen to them for a few days, you suddenly discover that every word is very clear, and you don't need to have it that loud. So it winds up having this incredible intelligibility factor." The Gamble console (40 inputs, 16 sends) has three bands of full parametric EQ on each input, and each output mix has four bands. "At first," Pearson explains, "people who are used to using their equalizers think they need them in the system, and they use them a bunch. If you watch people go on the road tour by tour, they slowly back off on the outboard equalizers, then they start not plugging them in, then they start not taking them on the road. We've been using the Gamble boards and Meyer monitors, and none of the acts we work with use any external processing other than the console and the monitors. No outboard equalizers, limiters, or anything of that type, which really says a lot."

Greg Rehberg is the Jefferson Starship's monitor mixer. He learned a lesson about the importance of monitors while he was working with Heart. "If they start singing too hard to try to hear themselves, they just don't hold out more than four or five weeks. And that doesn't do your tour any good," he deadpans. Rehberg is delighted with the Meyer/Gamble system he uses with the Starship. "It has a flat frequency response and phase response across the whole audio spectrum, and that's due to the processor. There's a unit called the Meyer Processor that is used in place of a crossover, and as well as crossing over the signal it also provides time alignment and phase correction." Rehberg continues, "When you have a flat system to start with, you don't have so many peaks and valleys in the response that cause feedback and poor quality sound." Rehberg also notes that the system is usually set up and running less than an hour after it rolls off the truck. "That's pretty quick compared to

a lot of systems where they have to set them up and spend a lot of time feedback tuning."

"The Meyer monitors are great for somebody who just needs some good monitors but that doesn't have the resources to do any of their own design and development work," says Jack Maxson of Showco in Dallas. Showco only uses one cabinet that wasn't designed in house. "That's what we call a Dum-Dum," according to Maxson. "It's a JBL 4560 single 15" cabinet that we fit with a 2482 and a couple of bullets." Showco has chosen to use JBL speakers almost exclusively. They have some large, discrete 4-way cabinets that use some E-V and Gauss drivers, but we really could have used all JBL," Maxson says.

Showco is currently using the Stevenson Interface monitor console (38 in x 8 mix), an off-the-shelf board that they have modified extensively. For amps they are using mostly Crown DC300s. Showco is presently on tour with The Who, Rick James, Genesis, Van Halen, and recently provided the sound for the Rolling Stones' European tour. "I wish I could remember the number of floor monitors," Maxson says. "There were two mix consoles, two different mixers, incredible numbers of kilowatts of power, most of it discrete four-way cabinets because of all the real estate that had to be covered by Mick Jagger." Showco uses biamped three-way floor monitors, and they build their own crossovers. They have been using biamped floor monitors for almost ten years. "Our systems operate well in most instances with no equalization whatsoever, other than the front end board EQ." There is a graphic equalizer on each of the mix sends on their monitor board.

Showco joined forces with Clair Brothers of Lititz, Pennsylvania, to build the state-of-the-art PA system used at the US Festival. Roy Clair explains that Clair Brothers uses two types of monitor speaker, JBL and TAD. The TAD speaker sounds very much like a JBL, according to Clair, but is made with modern materials—a beryllium diaphragm rather than aluminum in their compression drivers. The TAD woofers can withstand very high sound pressure levels, Clair says. Clair Brothers use Gamble, Soundcraft, and Midas monitor consoles, and SAE power amps. They generally use visual third-octave EQ, possibly with parametric EQ on the individual channels. Clair's list of clients is impressive—Fleetwood Mac, Queen, Billy Joel, and Asia, to name a few. "We actually choose the monitor for the customer," says Clair. "If we went with Olivia Newton-John we would make an acoustical



*David Grisman and bassist Rob Wasserman monitoring with Galaxy Audio's Hot Spots*

adaptation. We'd choose a different monitor for her than we would for .38 Special. If you have an entertainer who wants quality, you select a monitor that was made for quality rather than SPL." Clair uses three types of cabinets, a single 15", double 12", and double 15". All their cabinets have compression drivers, high frequency drivers, and Clair Brothers horns.

Geoffrey Ganiford, sound engineer of The Tubes, is used to working various size halls, from clubs to 3,000 seaters. The Tubes do not travel with their own PA, but Ganiford finds that the pro sound companies they work with use near state-of-the-art speakers. "They're going to be either JBL or Gauss. Biamped wedges are better because you can get much more punch from them." Tubes' singer Fee Waybill covers a lot of ground onstage, creating problems for the engineer. "He uses a radio mike," Ganiford says, "and does a lot of theatrics onstage. The mike is very often pointed right into the high end of the monitor cabinet, so it has to be EQed very carefully on sound check."

The Manhattan Transfer vocal group at one time was ordering eight different monitor mixes, according to the group's production manager, John Cutcliffe. Now they are trying to whittle that number down. "For us, microphone selection is real important," Cutcliffe says. "Having good clean stage gear, and small amounts of it—that's worked pretty well for us. We usually use two wedges down in front, and we've used all kinds of cabinets. Lately we've been using the Yamaha, and partially because they always sound the

same, no matter what's going on. No matter how good or bad your mixing and stuff is, those cabinets usually have the same quality. And we try to make everything as consistent as possible." The Manhattan Transfer does a lot of work overseas, and they find they can use Yamaha in Japan or Yamaha in California and get away with not carrying their own monitors, because Yamaha is so consistent. They have been using the Yamaha 916 and 1516 boards for monitors. The Transfer's backup band keeps a pretty low stage volume, meaning the monitors onstage don't need to move a lot of air. But the monitors are so important in the group's performance that they always spend time sound checking. "We really try to concentrate on the stage thing," says Cutcliffe, "because we're firm believers that if it doesn't happen onstage, it's not going to happen in the house, no matter how good the house engineer is."

Taking a look at what kinds of monitors are being used in different size nightclubs brought out more possibilities. At San Francisco's Old Waldorf, Harbinger boxes are used (with JBLs inside). Associate soundman Kevin Chisholm reports that he and Robbie Taylor use Crown amps, an Interface monitor console, and half-octave graphics by SAE on each monitor send. At The Stone across town, the cabinets are made by Mark Wayne. Sound engineer Jim Dunning likens the Mark Wayne cabinets to Harbingers, except that they are roundbacks and can be tilted to different angles. The Stone uses EAR amps, SAE half-octave graphics, and a Yamaha PM1000 board. P.B. Scott's is a unique nightclub in Blowing Rock, North Carolina. It is a 48½' diameter geodesic dome with three levels, and has recently played host to Leon Russell, the Tommy Dorsey Orchestra, The Dregs, and Rita Coolidge. Technical coordinator Joe Scarborough stands by his Bose monitor system. "I like them but most bands don't, because they're Bose. They think, 'How can you get anything out of those little speakers?' But then again I have rock and roll bands that come in here with their own PA and use my monitors because they like them." Scarborough's monitor system includes four Bose 802s, two Bose 800s, biamped Bose amps, a 27 band equalizer, and a Yamaha PM700 12 channel mixer with 3 outs. "The Bose monitors are good monitors for many applications. All monitors have their limitations, and most people get into this battle between themselves and the monitors. They say, 'Turn *me* up in the monitors,' and then that's too loud for someone else and they say, 'Turn *me* up in the monitors.' Then it's 'I've got to have some kick,' because every-

thing is so loud you can't hear the kick any more. So you put some more kick in there and that trashes everything up. Then they can't hear the vocals. Everything just gets louder and then they start turning up onstage. It's a never ending cycle. Except for a very few people, musicians are unable to cope with lower stage volumes. And if they had lower stage volumes—and I'm talking about the 2,000 and below size club—they would probably have a better presentation."

The inherent problem of feedback onstage is side-stepped with the invention of Micro Monitors. Each Micro Monitor is custom molded to fit comfortably in the ear of the person wearing it. So far, stars ranging from Diana Ross, The Doobie Brothers, Olivia Newton-John, and Clyde the ape have been fitted for them. "Everyone's ear is a different design," says Michael Savage of Soundsight. "To duplicate the shell of somebody's ear, the way the sound goes in and around and is heard, you must take a mold. Everyone's highs, mids, and lows are different, and everyone hears differently. So when you do get that mold and duplicate it, you're getting a direct line to the hearing. And when you do that the efficiency is incredible, because you're getting

rid of overdriving, and you don't need that much to drive the sound to the eardrum, to get the frequency response." A small power pack is worn on the waist of the performer (with EQ adjustments at hand), which receives the signal sent from the custom-designed transmitter. "You're talking planet Zircon here," Savage beams. There is an ambiance hold in the Micro Monitor that can be open to different sizes to allow room noise to enter. And in the unlikely event of Micro Monitor feedback, the nine-volt battery that powers the unit will automatically turn off. Savage doesn't rule out the possibility of using the Micro Monitors along with a conventional monitor system. "You can always use a few speakers onstage for fills, for more ambiance," he says. "There's a way of incorporating the old monitor systems with what we have. In fact, under certain circumstances it might be beneficial depending on how large the stage is, and how spread out your musicians are."


As monitor systems continue to improve in quality of sound, sound pressure level, and ability to combat feedback, it should mean more confident performances by those artists plugged in to the technology. Audiences will certainly benefit as well. ■



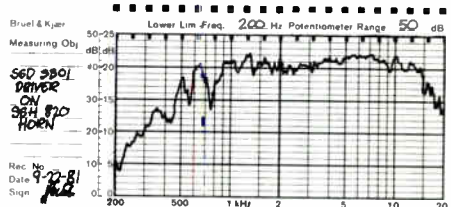
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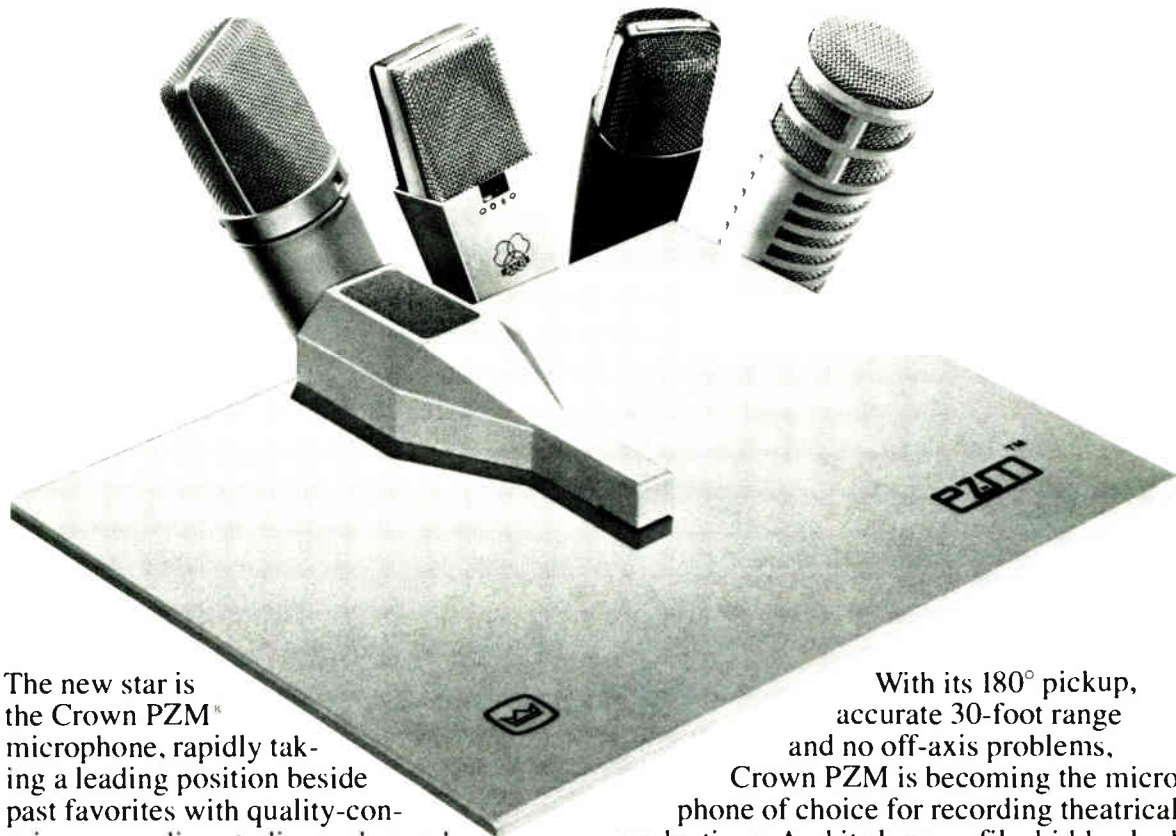
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# JOE WALSH & BILL SZYMCZYK

## *The Robinson Crusoe Approach To Recording*

*By Josef Woodard*

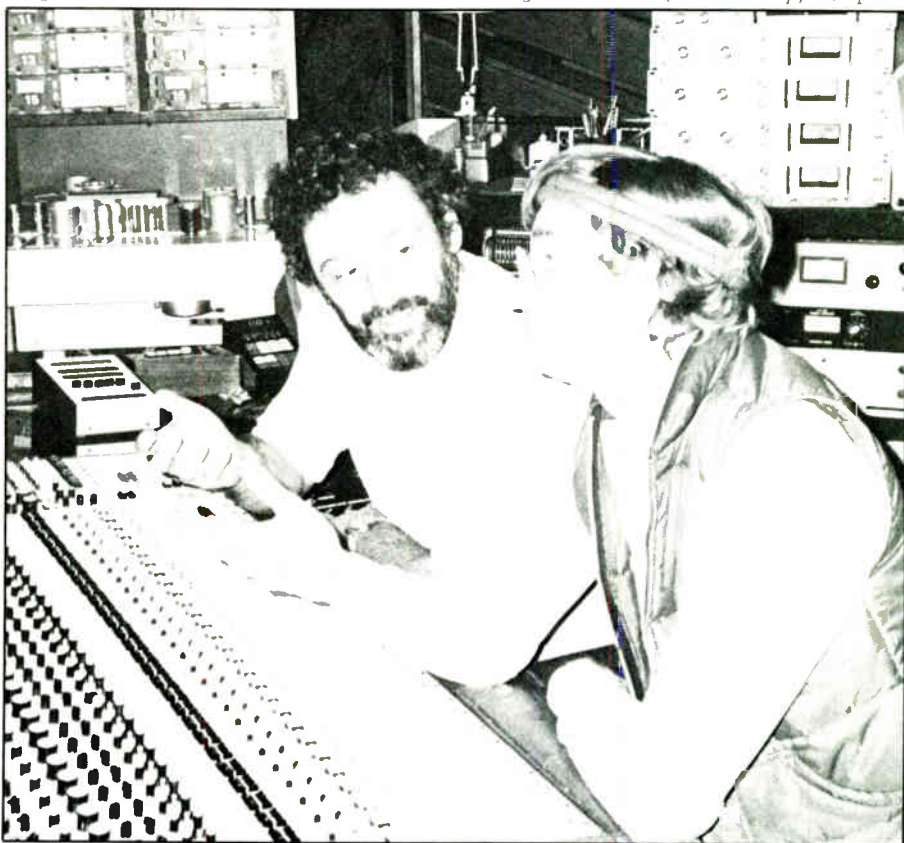
Joe Walsh has submitted to a few questions between mixing sessions in the upstairs lounge at Santa Barbara Sound. Producer Bill Szymczyk is downstairs manning the knobs on the last leg of Walsh's latest album, periodically calling up: "Bridge to tower. Send Joe down for a listen." Drummer Joe Vitale interrupts with a call from Portland. Still, Walsh is clearly a man with something on his mind.

"Forgive me if I get out there or radical with my rap. It seems to me, as technology marches on, that we are all losing the point. I'm not a great endorser of state-of-the-art, latest technology having any particular bearing on anything, right? Some of the new state-of-the-art stuff designed by whiz kids with computers. . . if the people who designed the stuff had to use the stuff that they designed, they'd throw it out and realize how stupid they are. It also seems to me that there's an attitude, an inherent attitude that goes along with recording in the studio—*sessions*. Very good, capable people can play sessions well and that's just not the way I wanted to go."

Walsh takes a drag on his cigarette as if to gather steam. "I know how to play rock and roll. I used to. I haven't in a long time because my environment in the studio has been too microscopic, too clinical. I don't

particularly care if things are perfect if the magic of the performance is there. I'm forgiving that way. So I decided to get out of the studio. I decided not

to use a keyboard player; I decided to go back and use two guitars and minimal technology. We got a truck, we got 16 tracks, non-Dolby, 15 ips



*Bill and Joe at Santa Barbara Sound*

and went somewhere and set up in a hall. My intention was to line all the amps up, turn 'em up to 10, and break the knobs off.

"It did a couple of things. It forced me into a corner where I had to play. I mean, when you have 3 guitars and double keyboards, you play a certain way, you stay out of the way. That's the key. You have to keep the symmetry, keep the spaces and each melodic instrument that you add has a bearing on how many spaces are left to play and be effective. So I went with a skeleton crew and one other guitar player to get me off, and me to get him off, and it forced me to play which I haven't done for a while. And it forced the technical side of it to scramble. As far as I can tell it worked really well, beyond my expectation."

A lot of people have learned to have high expectations of Walsh. In his decade and a half in the rock and roll ballpark, Walsh has embodied his musical roles as a gutsy guitarist, a writer with an ear for parody and a sharp weaver of instrumental textures. He has worn the different hats at different times throughout his career, with the James Gang beginning in the late 60s, with the 70s supergroup the Eagles, and, of course, on an impres-

sive stock of solo albums. The sky's his limit.

Walsh's solo vocation has been through the thick and thin of commercial acceptance, but he has always remained true to his instincts (which can get him into trouble). So, it may come as a shock to some that, after 1980's *There Goes the Neighborhood*, probably his most lavishly-produced work, Walsh is going on a roots-rediscovery mission. This, also, at a time when Don Henley and Glen Frey, fellow Eagles alumni, have released LPs with thick debts to the Eagles sound. Walsh, on the other hand, takes another path: big, two-guitar rock and roll with his maverick wit intact.

In the process of returning to rock basics, Walsh had to go through a bit of deprogramming, denying his former reliance on studio wizardry and perfectionism. The easiest way to do so was simply to stay out of the studio. Walsh's location scouting landed him in an unlikely spot—in the Casino Ballroom on the small Catalina Island, off the coast of Los Angeles.

**C**all it the Robinson Crusoe syndrome; Walsh and a handful of crew secluded themselves in the ball-

room, with its huge, natural reverb and concert vitality to cop the right mood. That live feel was the objective. The technical arrangement was rather unorthodox. Engineer Jim Nipar and assistant Terry Nelson worked in a recording truck 100 feet below the "room" and kept as tight a communication link as possible with the action upstairs. "It was a job that required a lot of quick decisions and memorization of the settings, but I think it all worked out for the best," reported Nipar. All but one of the album's cuts were laid in the ballroom with Walsh's quartet: Waddy Wachtel on guitar, George "Chocolate" Perry on bass and Walsh's long-standing crony Joe Vitale on drums.

It took a bit of adjustment to adapt to the new, rawer game plan. "For example, I walked in one morning and the truck wanted the drummer to go around the tom-toms to get it set," recalled Walsh. And I blew up, because that negates everything I'm trying to do. My position was 'Hey, you see this drum set? That's your drum sound. Mike it. Roll the tape. Don't bother me—I'm not going to stand around wanting to play while we get the tom-toms perfect. I wanna play.' I think it turned everybody's head around. You don't need a computer board. You don't need all this state-of-the-art stuff because that's what they're doing—you go in and play and *fix it in the mix.*" They got all this stuff to fix when you play bad. If you play good, you don't need all that. I think that is my new position and I think it's valid. I'm concerned that as technology marches on, we are losing the point, and that is 'what about the music?'"

It's only sensible that, as Walsh rediscovered his older working processes, he came full circle in other areas as well. For one thing, the album marks something of a reunion with producer Bill Szymczyk, who has dealt with Walsh since the James Gang days, but not in the past few years. Szymczyk, in his 20 years of work in the studio has produced a veritable *Who's Who* of pop acts. It was through Walsh, though, that he received his most lucrative commission—producing the Eagles. It's safe to say that Walsh and Szymczyk are agreeable partners. "Joe has fired me a couple or three times and I've quit a couple, three times," said Szymczyk. "But we've always maintained our friendship. This new album we've been planning on for a year; it's been, 'We'll get 'em.'"

Novel recording circumstances are not a new thing with Walsh/Szymczyk. Gearing up for 1978's *But Seriously, Folks*, the Walsh gang

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rehearsed and cut demos on a 72-foot boat in the Florida Keys. One of the demos, the instrumental "Theme From Boat Weirdos," became a master take. Appropriately, a cut on the new record is entitled "Theme From Island Weirdos."

The Catalina concept struck Walsh late one night last fall after a session producing the latest album from Ringo Starr, also at Santa Barbara Sound. He called Szymczyk and cleared the idea with Irving Azoff. They ferried out a Record Plant truck and a total entourage of 11—the band, 2 roadies, 2 maintenance men, Szymczyk and the 2 engineers. The Casino Ballroom is located on a peninsula a mile from the Island's central town, Avalon. The ballroom, they learned from a tour guide who herded tourists through before the recording began, features the world's biggest dance floor.

But did it have killer acoustics? It took some trial and error to locate the ideal spot for recording. The first attempt was on the stage itself, then in the center of the room, which presented a big slap-back problem and felt awkward, performance-wise. They wound up setting up back by the stage, but in a large semi-circle, with Vitale on risers and the other players

extending around him. Szymczyk was directly in front of the drummer.

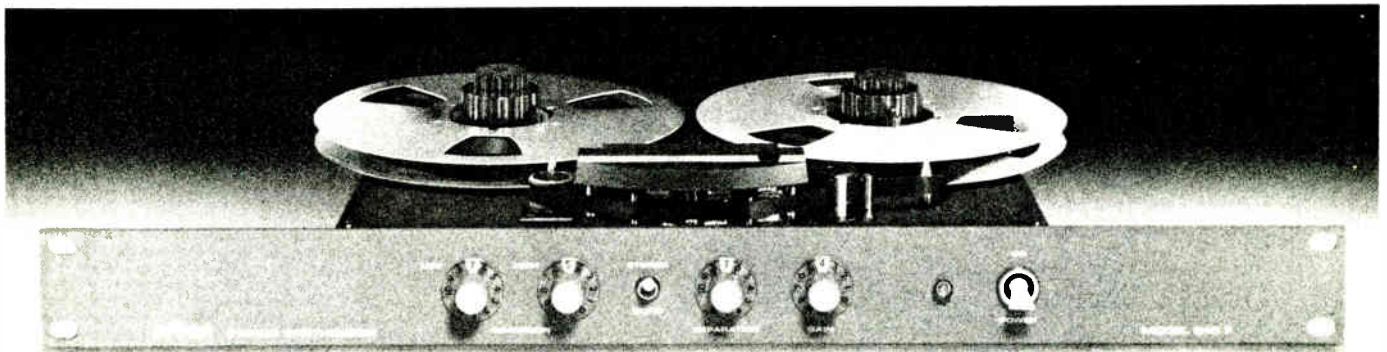
"We did it without any headphones," noted Szymczyk. "The band just set up as a live unit. No gobos. No baffles in between amps or anything. We actually set up a monitor system—I mixed the monitors while Jim Nipar and Terry were down in the truck. We created what was like a giant headphone mix that everyone could hear. We fed the guitars and vocals to Vitale and fed the drums to the guitar players. So everyone could hear well, yet there was a minimal amount of leakage. They could play live, work their amps, walk back and forth. What I figured out halfway through the thing was that Walsh wanted to get the world's most expensive garage band in the world's most expensive garage."

What kinds of problems did they run up against? "Keeping Nipar sober." (Szymczyk laughs.) "Not really. He only got out of hand once or twice a week." Later contacted, Nipar posed the question, "All I want to know is, what does Szymczyk do when he's not producing?"

**S**zymczyk went on, "As I look back on it, the only problem we had

was the flies. We went out there in the middle of the biggest fly invasion in the history of Catalina. All the locals were freaking out about it. You'd have a cheeseburger in the afternoon and the suckers would carry it off, right out of your hands. At the end of it all, we put on a live show as a benefit for the Youth Foundation—put lights on the baseball field or something. It was really more like a 'thank you' for putting up with us careening around the island in a drunken stupor in our golf carts—because that's how everybody gets around on the island. We have a song on the album called 'Buffalo Island' that pretty well sums up the experience. You know, there are buffaloes out in the middle of the island as well as flies and golf carts. It was weird; here you are, rich rock stars, and your life revolves around copping a golf cart to get to work or to go eat breakfast."

Szymczyk's own rise to renown has been rather meteoric. After getting involved with electronics in the Navy, he worked his way up in the studio scene in New York City starting in 1964. "I was doing R&B acts at night and folk acts during the day. Phil Ochs and Eric Anderson in the afternoon and then doing Van McCoy—black sessions at night. It



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was a good cross section: folk and funk." It was as an A&R man for ABC Records, scouting in Cleveland, that he ran across Walsh. "I was there to see another band, which I passed on. Their manager took me to see the three piece James Gang at some gymnasium-type place. Outside, it sounded like a 4, 5, 6 piece band. It was three. Walsh was doing everything. I went, 'Whew, this guy's intense.' I got to know him and signed him to ABC in '68, and we've been more or less together since then."

Walsh, in the early '70s, befriended the Eagles, and when they confessed frustration with their image, Walsh immediately thought of Szymczyk to help patch them up. "My initial reaction when Joe said, 'Do you want to do the Eagles?' was 'No way, I don't do that country, wimpy shit.' That's all I'd heard up 'til then—'Take It Easy,' 'Peaceful Easy Feeling' and all that. At the time, I was doing the Geils band, Rick Derringer and Edgar Winter and I didn't want to know about that," confessed Szymczyk. "We all went out and had dinner together and they said, 'No, no, no. We want to be an American rock and roll band.' I said, 'Well then, you got the right guy. You want to do that wimpy shit, I ain't it.' That's how it happened and they did, indeed, rock out."

Szymczyk came on in midstream on the Eagles' *On the Border* album to pick up the pieces and the pace. It was on the next record, *One of These Nights*, that Szymczyk worked with them from the ground up. It was also the disk that established the band as an industrial strength supergroup. With his newfound economic power, Szymczyk moved to Coconut Grove, Florida and built what was to become his homebase studio, Bayshore Recording. "I've always said that Bayshore Recording was the house that *One of These Nights* built," said Szymczyk. "That's a fact: my first royalty check that had 6 digits on it."

**B**ayshore was Szymczyk's outpost for 6 years, until it was bought out from under him last year. "Now I'm in the process of looking for a new space," he reported. "The control room was the diamond, as far as I'm concerned. It was the best control room that I've ever worked in. Of course I'm partial, but other people have said that too—it was just perfect for mixing." Along with being the Eagles headquarters after '76, Bayshore drew such acts as Jimmy Buffet, Mickey Thomas, Bob Seger, a Who record mixdown, etc.

Working on the Walsh wrap-up

at Santa Barbara Sound, Szymczyk seemed nostalgic. "This is the first album I've mixed outside of my place in 6 years, and I approached it with some amount of trepidation. But it has worked out extremely well. I've managed to set up my monitors—I've always mixed with (JBL) 431 Is. I brought my mike stands, my limiters and outboard equipment and I made it feel as much like home as I could. I even brought my sign. Santa Barbara Sound has become my Bayshore West. Another thing I like about the place is that the staff treats me like I would hope to treat clients that come to my place. It's the people that make the studio as much as the equipment. I'm not fond of the factory five studios, the attitude where you walk out in the hall and you run into 18 different acts all careening around the rooms. I built a one-room place on purpose."

What does he look for in a good studio? "An MCI board is really important to me. I had all MCI equipment in my place in Florida because they were built right up the street. I had a hand in designing the 500 series board. When they were going from their 400 to their 500, they consulted everybody at Criteria Studio, where I also worked, as to

what to put into a board. All of us producer/engineers wanted in-line monitoring and certain features that we got. There are quite a few of my ideas in this board [he pats Santa Barbara's MCI], ideas from all us South Florida guys. So, when I built my place, naturally that's what I went for. I got so used to it having spent 6 years there making records, I go to another board, and I go 'huh?'"

"People ask 'What does a producer do?' The best way I know to relate to it is that a producer to an album is like a director to a movie. You have a story which is the songs, you have actors which are the musicians and you're given a budget and a time frame and you have to somehow get that all done and onto 12 inches of vinyl. **X** amount of dollars, **x** amount of time and **x** amount of burnt brain cells. Whatever it takes, you do."

Tenured in the industry as Szymczyk is, he has seen the perpetual rise and fall of music's degrees of affluence. The bottom line, today, is maximum studio efficiency. "The business has tightened up, the economy sinks and we have to tighten up right along with it," he commented. "I'm proud of the fact that we got this new album done in a

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matter of 10 weeks. It's like the old days, the 60s. Considering that the Eagles' *Long Run* took 18 months, it's a hell of a change. Joe had a basket of songs, we went in and did it. I've been concentrating totally on getting this album done before Joe's baby was born. And he beat me by 3 days." (Walsh became a father of a girl, Lucy, days before the album was in the can in December).

Walsh moved to Santa Barbara, a semi-resort town 100 north of LA, while still in the Eagles. "I lived in LA for 3 years and I couldn't get anything done. I realized it's a constant party, man. Unconsciously, I would go out to the grocery store and I'd bump into somebody and I'd come home two days later," claimed Walsh. "There are also chances to play on people's records and chances to hang out and create late at night that you just can't say no to. But I wanted to settle down and think about a family. So I thought I should get out of there because Los Angeles—I'm not puttin' it down, it's very valid—but it can eat you."

The reputation Walsh has stored up through the years has not been that of the family man, and his recent fatherhood does nothing to dispel his image as a rock and roll prankster. From the outset of his solo career to the new album, Walsh has varied from the raucous, mighty guitar sound of tunes like "Rocky Mountain Way," and "Turn to Stone" to more tongue-in-cheek production numbers like his chart-climbing "Life's Been Good" and the recent hit "Waffle Stomp" (from the movie "Fast Times at Ridgemont High"). "Life's Been Good" is about me, it's about the lifestyle someone in my position leads," said Walsh. "The message is that it's not all as glorious as it seems. I think it got a lot of people off because I copped to it, I was busting myself, busting anybody. The Maserati thing was actually about J. D. Souther, who is a car freak. He totalled 3 Lotuses in something like 6 weeks."

It seems that Walsh's crafty wit and rugged guitar playing were the two assets that he lent when he joined the Eagles in 1976, a liaison which led to the phenomenally successful *Hotel California*. "We didn't realize that the album would turn out to be such a landmark album," Walsh commented. "But, looking back, one of the things the guys in the Eagles are very proud of, the high point for me in my career was being in a position and having a power base to be able to make a valid musical statement for the generation we all represent. The thing that started to get to us in the Eagles was that we became

uncomfortably important, economically. We became very important to the industry, which I didn't like that much. None of us did. Yet, on the other hand, I didn't mind the royalty checks. The thing is, we realized great material benefits in our lifetime. Mozart died poor. He wrote all that crap and died and they found a trunk of his stuff in somebody's attic and said, 'Who is this guy?' He never got a royalty check. You can't even find where he's buried. I think royalty checks can really hang up the artistic process."

After the Eagles disbanded, Walsh went into Santa Barbara Sound for the first time to produce his own album. The resulting record is a richly-produced and arranged work, *There Goes The Neighborhood*, that didn't fare too well, commercially. "On *There Goes the Neighborhood*, I think I forgot that people who like me and listen to my music love to hear me play guitar. That's the underlying foundation. I got too much into the intelligent harmony and melodic content and trying to have lyrics with intellect and I forgot to turn up and play guitar. I was trying to show everybody how cool I was, and that accomplishes nothing. But it was the end of a phase for me. These songs had been in my head for a long time. I had to clear the board before I could go in the direction I am now. I think I'm coming out swinging this time. I wanna go out touring and play some kick-ass guitar."

This has been something of a banner year for Walsh. In addition to cutting his own rock and roll record, started and finished at Santa Barbara Sound, (overdubs included back-up vocals by Don Henley and Timothy Schmitt), Walsh took the producer's seat for Ringo's soon-to-be-released album. Santa Barbara Sound has become to Walsh what Bayshore was to Szymczyk: a fully compatible workshop. "I feel like I'm the staff artist," Walsh chuckled. "I'd rate it in the top 5 studios I've ever worked in. The staff is brilliant. The technical stuff here is great. Maybe I've taught the people here a thing or two, but it's just made the studio a better place. I like it because there is an atmosphere here where you can really play music. I'm proud of it. I would recommend it to anybody who wants to get out of the mainstream to make an album but I hope they don't come cause I need the time." At this point, Joe Walsh, proud father, rock star and Santa Barbaran went downstairs to check out his new album . . . his new beginning.



## Standards, Morality, & Other Considerations

by Michael R. Lane

Having considered the problems and techniques of historical sonic restoration from the technical viewpoint, we must now consider its objectives. The technical matters are merely tools, but for what purpose? First and foremost, the purpose of historical recording restoration should be: *to fully recreate the artistry of the performer.* This implies a great deal.

### SOME ELEMENTS AFFECTING THE ARTISTS

Consider two great pianists of the past, Josef Hofmann and Sergei Rachmaninoff. Hofmann probably never played a piece the same way twice in performance. He was always inventive and volatile. A Hofmann recording simply can't show this ever-changing dynamism; it can only show one static moment of his art. On the other hand, Rachmaninoff tended to have a single concept of a work in his playing. He would polish and refine that concept, but it rarely changed. Thus a Rachmaninoff recording gives a truer picture of his overall pianistic art than does a Hofmann recording.

Most artists suffer from "mike fright," at least in their early exposure to the recording process, but today's artists grew up with an awareness of microphones and recordings. Artists in the earliest days of recording didn't have this familiarity and may have been intimidated when they stood before the cold, impersonal recording horn. There was no tape editing; if they made a mistake, it was recorded.

If the results were unsatisfactory, it would be done over again and again. Hofmann is reported to have recorded some pieces seventeen or more times before he was satisfied. However, the final recording was one unified interpretive performance on the 78 side. Many of today's recordings are note perfect, but they are not unified interpretive performances; rather they are spliced or mixed combinations of different takes.

Except for live recordings of an actual performance, records lack the interplay between performer and audience. This affects some artists more than others. Leopold Godowsky's piano recordings, marvelous as they are, are said to be but a pale reflection of what he could achieve in the atmosphere of a small musical soiree. Performing before large audiences and making records apparently inhibited him. Those who knew the great French actress, Sarah Bernhardt, said that her recordings do not give the slightest idea of the impact she made live on the theatre stage.

The technical limitations of early records in themselves affected artists adversely. Limited time per side (about four minutes maximum), poor frequency response and unnatural resonances, etc., caused some artists to alter their normal expression in an attempt to cope with the limitations of these primitive recordings. Others were so disgruntled when they heard the results that they refused to allow the release of the records and flatly rejected all further recording offers.

It becomes obvious from the preceding that we can never say with certainty that any historical recording *fully re-creates the artistry of the performer.* What we can say, and this is important, is that the recording

represents what was done at one time, at one place and under one set of conditions. We must therefore narrow our standard for sonic restoration to what is possible, namely, *to re-create as fully as we can the specific interpretation of the artist when the recording was made.* We cannot know what "The Divine Sarah" was like when acting on the stage; we can know only what she was like when she made her recordings.

### SOME ELEMENTS AFFECTING THE RECORDINGS

#### 1. TECHNICAL LIMITATIONS

We can know what Sarah Bernhardt was like when she made her recordings!?!? Alas, only if many of the technical limitations of the acoustic process can be undone, and the same is true to a much lesser extent for early electrics. The job of the sonic restorer is to remove the unnatural sounds caused by the early recording process and to put back the natural sonic characteristics which we know, or can infer, were not properly recorded. With our multigraphics and parametrics, etc., we can, and will, be making alterations in the sound qualities. The moral consideration in this is simple in theory; changes must be made in the direction of greater authenticity to the original performance. However, the application of this principle is difficult, for, to make such changes, we must be able to infer the sound qualities of the original performance. We will defer this problem for the moment.

*(continued on page 32)*



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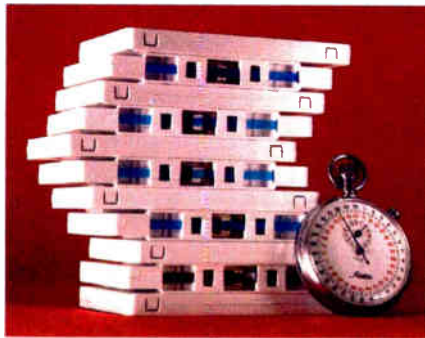
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(continued from page 30)

## 2. MECHANICAL LIMITATIONS

Many mechanical problems are solvable. Warps can be flattened. Off-center records can have the center hole enlarged and then be recentered on the turntable. Even broken records can sometimes be glued together, taped and the severe clicks spliced out. With minor distortion it is frequently possible by selection of stylus size to rise above or drop below the damaged area. However, with some recordings groove damage is so severe that meaningful restoration is impossible by any current techniques.

## 3. ENGINEERING ALTERATIONS

Historical recordings have very few intentional alterations by recording engineers. In fact, we are convinced that early electric 78's (1925-1935) represent (with proper playback) their artists far more accurately than many modern recordings with their "artist/engineering" synthesis. The early recording engineers had neither the technology or inclination to make the sonic modifications so common today. This is fortunate for the sonic restorer. Had historical recordings employed a lot of "artist/engineering" synthesis we could never recover the artist's interpretation as we would not be able to separate the artist from the engineer.

## SOME OTHER CONSIDERATIONS

We have tended to emphasize acoustic recordings in this discussion. It is not that they are necessarily more important historically than later recordings, but rather their sonic restoration problems are so much greater. Probably classical vocal acoustics are the greatest challenge facing the sonic restorer, so we will be emphasizing this type of historical recording.

In historical sonic restoration the key word is **HISTORICAL**. Saleability and other considerations may be important with many sonic restorations, but in the sonic restoration of historical recordings the integrity of the interpretation is the fundamental moral and ethical consideration and comes before everything else. Gross tinkering with historical recordings is easily spotted. For the sonic restorer the dividing line between change for "effect" and change to increase authenticity by undoing primitive recording limitations can be very, very thin. The problems are immense and a great deal of discrimination is needed.

In many cases we will never know exactly what "inherent" recording EQ was used on a given historical recording. It was common practice to alter the EQ until it "sounded right." While this was a form of engineering alteration, at least the objective was to make the final result sound like the artist, rather than to create a novel effect.

## WHAT DID THE ORIGINAL PERFORMANCE SOUND LIKE?

Through comparative techniques we can accurately infer what an historically recorded performance really sounded like when it was recorded. The basic reference is live sound, heard today, with no electronic intervention. The next best reference is "flat" recorded sound, such as Mercury Living Presence records, Sheffield Direct Disks, etc. Given this, along with good hearing and lots of experience, we know what an orchestra or band sounds like. We know, barring the subtleties of individual instruments and artists, what a piano or violin, etc., sounds like. Hence we can do our sonic restorations in the directions of these sounds, bearing in mind that orchestras and instruments of the past didn't always sound like their modern counterparts. The toughest problem is, "What did the acoustic vocalists really sound like?"

## 1. 1925 CROSSOVER COMPARISONS

As we have tried to show, the early electrics, including vocals, when played back properly tend to be a very accurate representation of the artists recorded. Consider the great soprano, Amelita Galli-Curci. Her recording career spanned the 1925 change from acoustic to electric recordings. So we play a number of her electrics and get her unique sound quality firmly in our mind. Then, in restoring her acoustics, we use our multigraphics, parametrics, etc., always in the direction of the natural resonances, overtone structure and timbre as found on her electrics. The procedure isn't perfect; voices age and change with time, but the changes are usually a darkening of the voice and perhaps a lack of steadiness with the passing years, not a basic change in tone quality (there are some exceptions). We can compare the electric recording of La Paloma made by Emilio De Gogorza with the acoustic of the same song he made a few years earlier. There are hundreds of such comparisons which can give us a true picture of what these 1925 "crossover" artists actually

sounded like.

## 2. COMPANION VOICE COMPARISON TECHNIQUE

With Enrico Caruso, the problem is more complicated, for he didn't live long enough to make any electric recordings. However, he did make many records with what we call "companion voices." He made acoustic duets, trios, quartets, etc., with singers like Galli-Curci who spanned the 1925 crossover to electrics. So we adjust a Caruso/Galli-Curci collaboration for what we know is the true Galli-Curci electric sound quality and obtain a "set" on Caruso's sound quality. We do the same with the Caruso/De Gogorza duet and obtain another "set" on Caruso. We can obtain "sets" on Caruso via his recordings with Frances Alda, Giuseppe De Luca, Schumann-Heink and others who recorded with him and later made electrics. Always we adjust the "companion voice" for those sound qualities present on their later electric recordings. Soon we have many "sets" on Caruso, and if Caruso sounds the same on all these "sets" then we have the true authentic voice of Enrico Caruso as it sounded at the recording horn. How Caruso sounded on the stage of the Metropolitan Opera House in live performance we will never know accurately. There are too many variables, and the memories of those still living who heard him live are colored by years of nostalgia and memory from childhood.

For singers who made only acoustic recordings, the "companion voice" technique is a bit less reliable than restoring singers who spanned the 1925 acoustic/electric crossover where direct comparisons are possible. Caruso may not have stood the same distance from the mouth of the recording horn as did Galli-Curci (he probably didn't), and as a result the horn resonance characteristics for the two voices would be different. "Companion voices" may have been considerably older when they made their electric recordings which we use for reference. To get around these problems we take as many "sets" on Caruso as we can using companion voices and take their average sound if there are differences among the "sets."

Once we know Caruso's voice we can use him as a "companion voice" and go back to earlier artists from the first days of recordings. Certainly as we go further back in time the comparative process is less reliable but it does offer a technique that is not based on memory, opinion or what some critic wrote, but rather is based on the internal evidence of the records themselves, whereby we can infer with reasonable accuracy what historical artists actually sounded

like when they stood before the recording horn.

### 3. MANUFACTURER/AGE TECHNIQUE

The vocalists most difficult to pin down are those where there are few, in some cases no, "companion voices" which can be traced up to the electrical era. Even here the situation isn't hopeless. Our own personal collection of over 35,000 historical recordings goes back to the dawn of recording and through years of experience we have found that the recordings of a given manufacturer and similar age have very similar resonance characteristics. Let's take as an example the great Italian tenor, Eduardo Garbin. He didn't make a great number of records, they are fairly rare, and his Fonotipias were all recorded about 1905. We found only one companion voice for a single "set" on his voice quality and this isn't enough. However, it is extremely likely that his Fonotipias have similar resonance characteristics to other Fonotipias of the same era which we can trace up to the electric era via the "companion voice" comparison technique. Hence the corrective multi-graphic and parametric settings which we use on these other Fonotipias should apply also to the Garbin

recordings. This method isn't fool-proof, but it's a lot better than using our electronic tools with standards based on personal bias and personal wishes. Working with the earliest recordings becomes a detective game, but the reward is being able to say with reasonable probability, "This is the voice of Eduardo Garbin—not as I think or like, but as he truly was." Garbin represents a style of singing which is totally gone today and it is important in terms of musical history that restorations of his recordings and those of his contemporaries, both classical and popular, be more than just guesswork.

### CONCLUSIONS

Using the techniques we have outlined in this series, it is possible to produce sonic restorations with a vividness and reality previously thought impossible. The authenticity to the original performance can be enhanced and a clear window on performers of past time achieved. It is, of course, important to preserve the original source material in an unaltered state and this is being done increasingly by institutions and archivists as they transfer "flat" to tape for

preservation of the unaltered source. However, there is nothing sacred about the old records. What is sacred, if that's the right word, is the interpretation of the artist, and a quality restoration can enhance our understanding, appreciation and enjoyment of past artists far beyond the ability of "flat" records to do so, but *only* if the basic moral position of the restorer is authenticity to the original performance. With this approach, blues singer Ma Rainey, King Oliver's Jazz Band, cornetist Bix Beiderbecke, soprano Nellie Melba, conductor Richard Strauss, pianist Josef Hofmann, and many other great artists of the past come alive for us.

The sonic restoration of historical recordings is both Art and Science. The Science is knowledge of music—its history and psychology, electronics and acoustics. It is having and maintaining the restoration equipment. It is developing the skill to use the equipment. The Art is the patience to do the job again and again until it's just right. It is the love of the work. It is the standard of authenticity to the original performance. Above all, it is the subtle discrimination needed in achieving that authenticity. The Science can be acquired with time, study, money and work, but the Art—the Art is very rare indeed. ■

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System Time Delay (including electronics)	± 350us, 100-20,000Hz ± 25 us, 2,000-20,000Hz
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Maximum SPL Continuous	120 dB
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List Price (two loudspeakers and control electronics. Amplifier not included)	\$4,950.

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Until now, self-powered mixers have had some serious shortcomings. Like inadequate power amplification, limited input channel capability, a serious lack of signal processing and most of all—not enough thought (or care) put into the construction.

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There are two models of RXA consoles: The 16 input console has four built-in power amps of 120 watts each into 8 ohms. The 12 input has two, 120 watt assemblies. These amplifiers are totally accessible for whatever use you may have for them, including bi-amplification.

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Our new RXA consoles are engineered for where you're going, not

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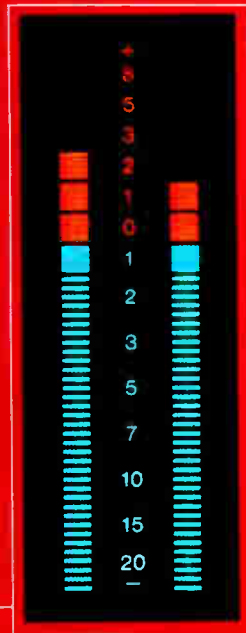
#### SPECS:

Frequency Response:	20Hz-30kHz
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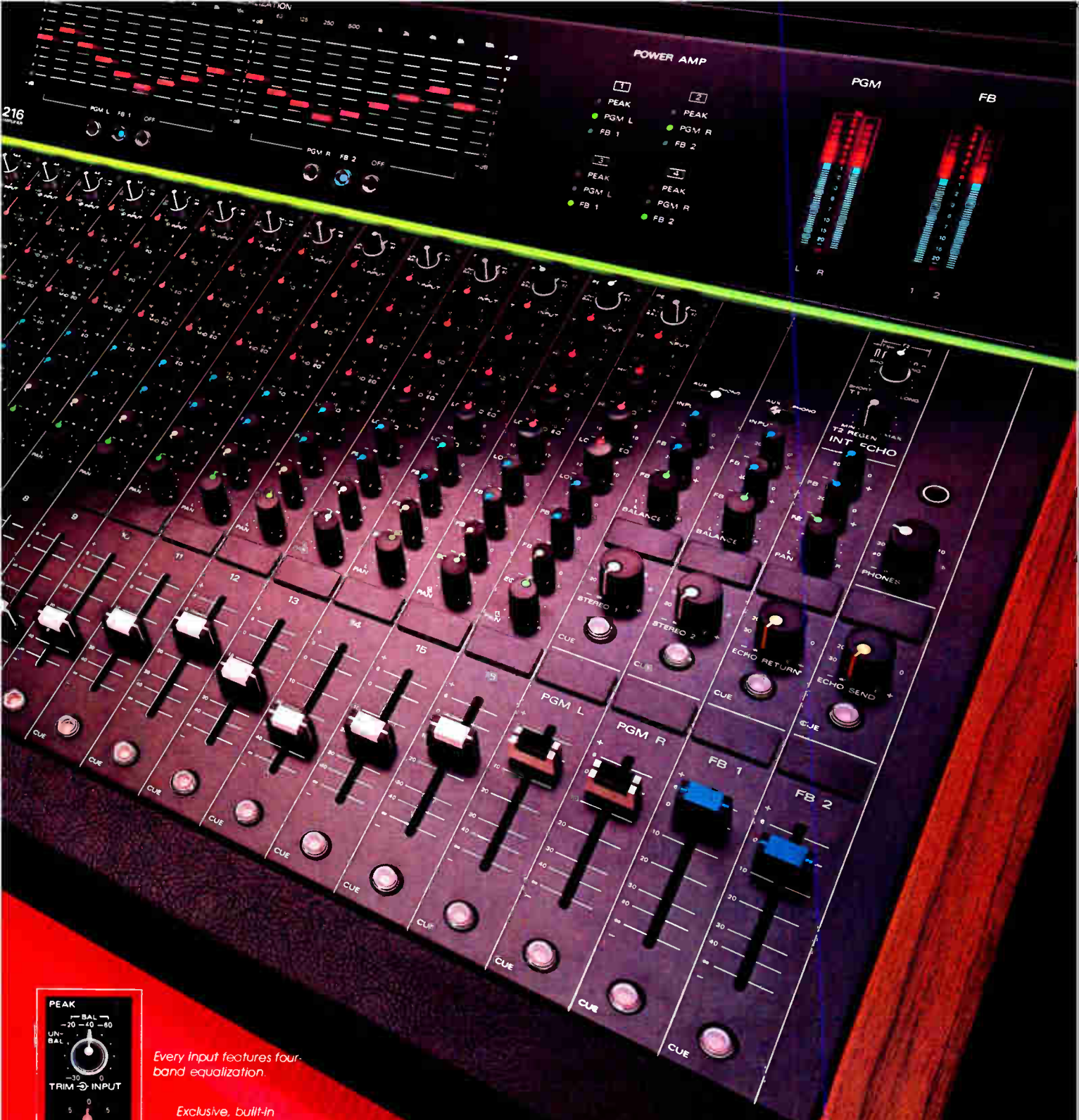
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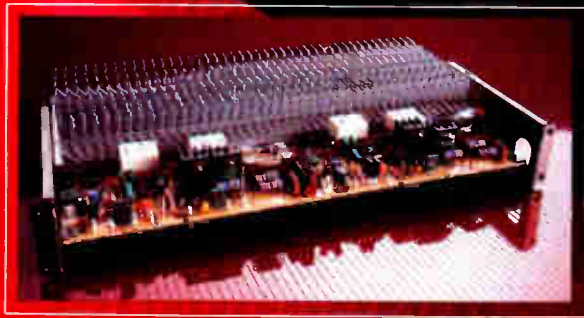


216



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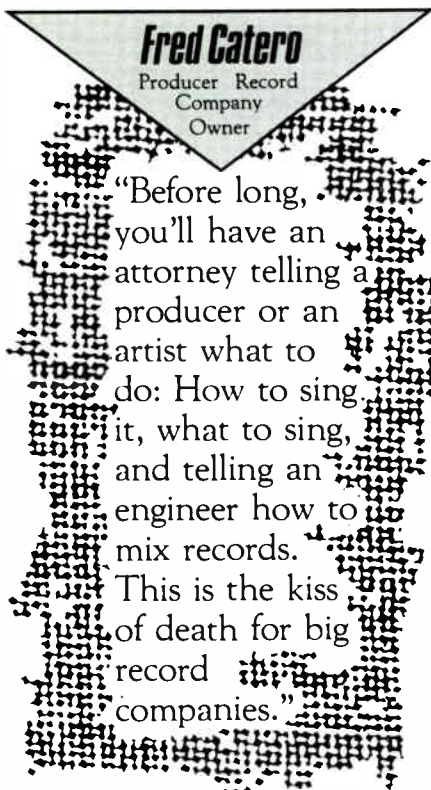
The role of the record producer in the 1980's is a far cry removed from the producer of twenty years ago. The current state of the economy and its impact on the record industry seem to be the topics of the day. The growth of digital technology and the emergence of video as a major force in record promotion are just now changing the face of the business. And independent labels are steadily increasing in numbers, while the number of new major label album releases drops each year.

How are these changes being handled by today's record producers? We polled a few to pass along some of their insight and recent experience.

## Producers Forum

# ***SURVIVING THE 80'S***

by George Petersen



**Fred Catero**  
Producer Record  
Company  
Owner

"Before long, you'll have an attorney telling a producer or an artist what to do: How to sing it, what to sing, and telling an engineer how to mix records. This is the kiss of death for big record companies."

### *WHAT CHANGES HAVE YOU NOTICED IN THE INDUSTRY OVER THE PAST FEW YEARS?*

"The most obvious change is the big record companies are not putting out as many records as they used to. They're playing it close to the chest and sticking with the sure shot. This has caused a lot of musicians and producers to do their own record.

"I'm starting my own label because I got tired of seeing so many good artists being dropped off labels. They sell maybe 50,000 records and that's a big loss for a major label, so they don't renew their contract. Under the circumstances, there has never been a better time to start a record company.

"I'm not going to compete with the charts, I'm just going to keep it good. Some economists predict within the next four years there will only be four major labels. The rest will be independents."

### *IT'S LIKE WHAT HAPPENED TO THE FILM INDUSTRY . . .*

"Exactly. I think when you get to be too big, like a Columbia, RCA, or Warner Brothers, you become in-

flexible because of your own infrastructure. With a small company, you have creative-types running it. As you get bigger, it behooves you to have lawyer-types, because that's the way corporations work. They want a guy who can talk 'corporate mergers and percentages of gross sales income transactions', and all this stuff. So what happens is you end up hiring these people who talk this way. It's not long before they think they know about records and music, and become the people in power. Before long, you'll have an attorney telling a producer or an artist what to do: How to sing it, what to sing, and telling an engineer how to mix records. This is the kiss of death for big record companies.

"It's like government. How can you tell me it takes \$200,000 to make 45 minutes of music that sounds like this, when the guy across the street is doing it for \$10,000. It's because of the bureaucracy, and the way they run. I'm counting on this for my survival. There are too many performers and musicians out there who really need a chance. This is the time. It's product and the way you handle it."

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\*1981-1982 Billboard Magazine  
Brand Usage Survey

## Brian Ross

Producer  
Record Company  
President

"I think there should be a law that you should have to play a musical instrument to be an A & R man."

### HOW ARE YOU COPING WITH THE CURRENT STATE OF THE RECORD BUSINESS?

"We started a new record label. We formed Starborn, with the purpose of new artist development, entirely. I've been a producer for 18 years, I've worked for all the major labels, and my opinion is they are just not spending enough money or interest in new talent development. It's very hard for new groups, singers, and songwriters to get an ear in anymore. It may have something to do with the current A & R departments. I think a lot of these guys are more into marketing and promotion, and don't really have A & R 'savvy'. I think there should be a law that you should have to play a musical instrument to be an A & R man."

### WHAT TRENDS DO YOU SEE IN THE BUSINESS RIGHT NOW?

"It's a trendless industry right now, and where the business is going, no one knows for sure. It has to go somewhere, back to a good song, a good lyric, and good production. It doesn't have to be overproduced."

"There are a lot of new and interesting synthesizers on the market, the Emulator, the Roland, the Sequential Circuits' Prophet, and the new Moog Systems. There are some interesting sounds to be made out there. I see a big new trend in technorock, something between a commercial new wave and a pop/top 40 contemporary sound. I truly believe that's where music is headed."

"I also believe that when you put out an album with ten songs: don't give them one hit and nine lousy songs. If you can't put out an album with ten great songs, then you should put out an EP."

### WHAT'S IN STORE FOR THE FUTURE OF THE INDUSTRY?

"The major record label in the next five or ten years won't be in the

same capacity that they are in now. There will probably be only four of them and they'll be distributing custom labels like Starborn. It makes a lot more sense for a major label to make an association with a Starborn, *ala* Capitol/Apple than it does to second guess and pay some young A & R producer to find and develop acts. Not only that, I can put out records without the 'benefit' of a long and detailed A & R meeting, which goes to management, to decide whether they like it. When I hear a master, I'm in a position to say 'I like it.', lets go down to Allen Zentz or the Mastering Lab and make a disk on it. I'll have pressings in four days, and in two weeks, have them shipped all

over the United States. That's where the business is headed. Definitely.

"I listen to each and every piece of product that comes my way. I'm encouraging people to send me masters and developed-out demos, so I can be helpful in getting to the source, and try to create some interest in the general public. Starborn will be a company totally dedicated to the development of new artists, new material, and new trends. Nothing bizarre, it's all headed by mainstream record company executives. It's going to be a high level company, involved with the frontrunning type of product. If you've been turned down everywhere, you're probably exactly what we're looking for."

# Ron Capone

## A Memphis Touch in L.A. Recording



### by John Trechak

Unlike many engineers who specialize in a certain type of music, Ron Capone has found success working for a wide variety of clients: Jerry Lee Lewis, B.B. King, Tower of Power, Cheap Trick, Otis Redding, Jeff Beck, Black Oak Arkansas, Al Green, Ramsey Lewis, The Ohio Players, Yvonne Elliman, The

Bar'Kays, Booker T and the MG's, and many others. He won a Grammy Award for engineering "Shaft" in 1971.

Currently, Ron is the chief engineer at Westwind, in Westlake Village, California, and after spending a dozen or so years engineering in the big studios in Memphis, he is glad to be out west. Recently, Ron has worked on projects for Quincy Jones, Lena Horne, Tanya Tucker, John Davidson, and Glen Campbell.

### MIX: How did you get started in the business?

**RC:** I was originally a drummer. Back in 1955 I was in a jazz trio with Larry Muhoberac in Baton Rouge, and for a while we had a five-day-a-week radio show on WJBO. During the late '50s and early '60s I was doing concerts and sessions with musicians like Charlie Rich, Ace Cannon, Johnny Cash, and Jerry Lee Lewis. I even played a big concert at Ellis Auditorium with Elvis once. But around that same time I was also playing jingle dates, and it was in the jingle business that I got my early training in engineering.

### MIX: When did you start with Stax?

**RC:** That was around 1967. Steve Cropper and I were good friends because I was playing a lot of sessions at Stax. But at that point I also had about nine years' experience as an engineer in the jingle business. So when Stax decided they needed a full-time professional engineer, they made me an offer I couldn't refuse. Eventually, I got to be their chief engineer and in charge of production.

### MIX: Let's talk a little about equipment. What are some of your preferences?

**RC:** Well, for mikes, I've formed the opinion that the [AKG] 414 is the best all-around mike you can have in the



## Leslie Ann Jones

Engineer  
Producer

"I think there should be a graduated price structure for albums: new artists being a few dollars less than established artists."

### WHAT MAJOR CHANGES DO YOU SEE AHEAD FOR THE INDUSTRY?

In the long-term, the compact disk will, I hope, revolutionize the industry. It's small enough that you could have a player in your car. You could take one disk with you wherever you go. The way they're talking, the price will eventually come down to the point where anyone could afford it. I see this as the next big step."

### DO YOU FEEL THE SAME WAY ABOUT DIGITAL RECORDING IN GENERAL?

"I don't. I have done a digital album, and I still think the cost is prohibitive for most artists. In a lot of cases, with what you end up hearing

at home, it wouldn't make much difference, except for a few projects, jazz or acoustic, that can really benefit from the signal-to-noise ratio and the transient response."

### WHAT ABOUT VIDEO'S INFLUENCE ON THE INDUSTRY?

"I was watching a program on TV last week, and they were interviewing the average American family. The kids, who were pre-teens, were talking about the fact that most of their friends turn on MTV and do their homework to it, and eat by it. It's become the small transistor radio of the 1980's. It's going to be very big.

"One thing I would like to com-

(continued on page 41)

studio now. It's taken the place of the 67s, 87s, and 84s. It's good for vocals, good for horns, strings, even drums. It's really a good all-purpose mike. In fact I get a lot of musicians coming in and specifically asking for it on their instruments. As for monitors, I'm very partial to the UREI "Time Aligned" speakers. And I'm very happy with the BGW amps that we have. They're excellent.

**MIX:** What about mixing consoles?

**RC:** We've got an MCI-JH416. That was the last model Dave Harrison designed before leaving MCI. You know it's kind of funny. When Gino [Vanelli] first came out here, he told us he'd be willing to do more at our studio if we got a new Neve board. So at that point we were actually planning to get a newer console. But since then, Gino AB'd tapes he's made here with tapes done at other studios he's been using. He says he prefers the sound he's getting here.

**MIX:** Around studio engineers, one topic that always seems to come up is how to mike drums. What are your views on the subject?

**RC:** You do hear a lot of discussion on that subject. But that's probably because there really isn't just one correct way to mike drums. It depends on the type of music you're recording and what you're trying to achieve. In a studio like this where we record a wide variety of musical styles, plus commercials and even film music, I have to use a lot of different miking techniques.

As for the mikes themselves, generally speaking, on bass drum I'll use an SM57, Sennheiser 421, or an RE20. I've found that a 414 will also work fine. I know a lot of engineers will disagree with that, but when I have a bass drum that lacks real body or fullness, I find that the 414 usually solves the problem. The same thing

with the snare. To get a nice big fat snare drum sound, most West Coast engineers seem to use a 57 or 56. I prefer a 414 or a KM84.

As for placement, if I want a real live stage sound for rock, I'll have mikes overhead—way up above, left and right. But if I'm doing an R & B session, I probably wouldn't even use overhead mikes because you're not interested in cymbals. Most R & B producers, like Steve Cropper, hate cymbals. They don't want to hear them, only the drums. In fact, for a Cropper session, a drummer, except for crashing, could set up a high hat and a crash cymbal and never play a ride cymbal.

For rock, the rides are very important, and getting a good cymbal sound is very important. Whereas on an R & B session I might mike the drums with five or six mikes, on a rock session I'll use 10 mikes, maybe more. Furthermore, for rock I do have a style of mike placement on drums that is a little different than anybody else's. I take the two overhead mikes, and instead of putting them directly overhead, I put them overhead and a little behind—one pointing toward the floor tom and the other pointing toward the snare drum—completing a circle with the forward mikes. I put each of these two mikes on separate tracks and balance them by eye on the meter. I've found that this technique makes a significant improvement in the drum sound.

**MIX:** In music circles the idea of a distinct "Memphis feel" sometimes comes up when discussing drummers.

**RC:** The general public is probably not aware of it, but there are definite "feels," or rhythm subtleties, in the music of different parts of the country. The feel on the East Coast is that the drummers and the bass players play right on top of the beat—precisely on

top. Here on the West Coast, they play a little more laid back. But in Memphis—and I include Muscle Shoals; Jackson, Mississippi; and the rest of that region in this—they give you a *really* laid back feel. I don't know if that comes from the relaxed temperament of the South or what, but it's definitely there. Play me a tape of a Memphis group, without telling me where it was done, and I can still tell immediately it was done in Memphis.

**MIX:** Any other comparisons you can make between recording in Memphis and L.A.?

**RC:** One big difference is that back there, when a drummer shows up for a session, he'll probably show up with just his sticks, if that much. That's because the studios back there all have their own set of drums—and they're always good drums. Out here there's cartage—the drummers have to have their own set delivered to the sessions.

The advantage of the Memphis practice is that once you've got good drums set up in the studio, and you've got them tuned the way you like them, and they're miked properly, you can just leave everything there and be sure of getting a great drum sound every time. Sure, with different drummers and music styles there are adjustments, but most of the time you can just turn up the faders, and you've got a good sound.

On the other hand, here in L.A., today you'll have one drummer, and tomorrow a different drummer with a completely different set of drums. The same miking will probably not work for both. And the arranger or producer will probably be pushing you because of schedule restrictions or deadlines so you can't always spend enough time trying for a perfect drum sound. The Memphis custom has real advantages. ■

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ment on. I think there should be a graduated price structure for albums: new artists being a few dollars less than established artists. You should be able to pay \$8.98 if you want a Crosby, Stills and Nash album and \$5.98 if you want Translator. People who used to walk into record stores with ten dollars and buy three albums can now only buy one. It doesn't make sense to me, particularly in terms of the budgets of new acts compared to established acts. I also think this would cut down on record rental stores, since I'm not thrilled with that at all. The idea of renting a record to take it home and tape it is ridiculous, in terms of the amount of work and money we all put into the projects we do."

### Terry Garthwaite

Producer, Artist

"I think digital makes sense when you can afford it, but thank God there are other options."

#### WHAT ARE SOME OF YOUR RECENT PRODUCING PROJECTS?

Producing is kind of a new area for me. The first album I did was Garthwaite/Hawkins/Sorrels. It's a live album I did with a couple of other people. Stephen Miller engineered it and we edited it and put it together. The second one was Robin Flower, a bluegrass musician, and then I did Nicholas, Glover, and Wray, a jazz vocal group."

#### AS AN ARTIST/PRODUCER, HOW HAS THE INDUSTRY SLUMP AFFECTED YOU?

"The main way it hits me is that I work with independent artists, and they have trouble getting money together to do their projects. I've been talking to Ferron, a Canadian singer/songwriter for about a year and a half, and once we get the fronts for her, I'll produce her album. The small labels have only been willing to put up a little bit of money. The big labels are just preoccupied with bigger names."

#### WHAT ARE YOUR FEELINGS ABOUT THE DIGITAL MOVEMENT?

"Since the people I work with don't have much money, it's not

something that makes much difference to them or me, and I'm not going to concern myself with it at this level. I think digital makes sense when you can afford it, but thank God there are other options."

### Eric Jacobsen

Producer

"I'm not going to have anything to do with artists who don't have video potential anymore."

#### HOW HAS THE SLUMP IN THE RECORD BUSINESS AFFECTED YOU?

"I'm surviving. For me it's a better time now. I'm a song guy and the 70's were personally very difficult. I don't like heavy metal. I hated disco in its form then. But in the past year

and a half, things have opened up. I love it. Plus, the group I'm working with now, Silverstone, is fantastic. I'm also very into syntho or techno, or whatever you call it."

#### WHAT ARE YOUR FEELINGS ABOUT VIDEO?

"I'm not going to have anything to do with artists who don't have video potential anymore. It's going to make a big difference. You can either rise or sink on the strength of your video. It can either sell hundreds of thousands of records, which has been proven already, or if it's bad, you're done. Video is definitely a part of the future as I see it."

#### WHAT ARE YOUR FEELINGS ABOUT THE DIGITAL MOVEMENT?

"I don't like digital. I don't like the sound of it. I don't like the cleanliness of it. I'm not looking forward to using digital for at least 15 years."

"Obviously, digital has tremendous applications, and I don't want to sound like an old-fashioned guy, but to me, I prefer the sound of a 16 track over a 24 track. You've got more signal. To me, if you've got the great song, the great singer, the great band and arrangement, it doesn't matter a row of pins whether you pay the extra \$75,000 to do your album digital or whether you do it 16 track."

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**Jerry Fuller**

Producer  
Studio Owner

"As a matter of fact, the saving grace for most people in this business is publishing."

#### HOW HAVE YOU BEEN DEALING WITH THE SLOWDOWN IN THE RECORD INDUSTRY?

"Well, I'm not only a producer, but a songwriter. I've always done well with that. I guess that's my supplement, so to speak. The good song is the most important thing in the business. Also, I find when I look at my BMI statements, if you add up all the releases that barely bubbled into the charts, and compare them to the big hits you've had, it comes out about even. Everything counts. It's a matter of being as diversified as you can. My studio (Footprint Sound, Sherman Oaks, CA) has also been doing well. I don't make a fortune on it, but it's another good supplement." **SO THE SONGS ARE THE THING?**

"I've always felt that. As a matter of fact, the saving grace for most people in this industry is publishing. I've worked in all aspects: I've been a writer, producer, I've run record and publishing companies, and I really think publishing is where it's at. It's like a nest egg. The representation of the song is important as well. It all adds up to one thing: the final product."

Following is a list of independent producers and engineers who responded to our recent survey. The information was supplied by those listed, and thus Mix is not responsible for its accuracy.

We urge other independent producers and engineers to get in touch with us in order to be included on our next update. ■

# INDEPENDENT ENGINEERS & PRODUCERS

## EASTERN

### PETER NELSON ARCHER

*Producer*  
ARCHER PRODUCTIONS, INC.  
Pompano Beach, FL 33061 (Box 1118)  
(305) 785-9242 (Atrisan, 786-0660)

**Credits:** Creators of ZODIAC: an audio visual rendition of the constellations, developed by Astrological meaning to represent a Journey by a Colony of Space Men to the edges of the Third Dimension and to the dawn of New World Dimensions; Creators of ELECTROGRAM, video-music pop rock band, live synthesized performance

**Services Offered:** Electronic art design, production, recording and marketing to design-related audio video industries; Mobile 24 track audio video CAD Productions specializing in total video music productions, live telecast/simulcast and satellite uplink productions; offering turnkey mobile audio and CAD/CAM Systems

### RON BROUWER

*Engineer & Producer*  
DANCE-O-TERIC INC.  
P.O. Box 759 West New York, NJ 07093  
(201) 861-6719 or (213) 644-9220

**Services Offered:** Independent record prod. specializing in the co production of unsigned acts, assisting them in projects from point of conception through arranging, rehearsal, recording, A S C A P publishing, promotion, etc. We specialize in music and drum synthesis. Have our own fully equipped 8 track studio but have access to major studios in the New York and Los Angeles areas

### DAVID DACHINGER

*Engineer*  
RECORDING & SOUND SERVICES  
(498 W55 St) New York, NY 10019  
(212) 246-3254 or (212) 475-6571

**Credits:** Available upon request  
**Services Offered:** Recording and mixing as well as editing, at several preferred studios, or at studio or location of client's choice. Well rounded experience in jazz, rock, pop, and R&B projects; also film score, jingles, video, sweetening and multi media presentations. Please call for additional information and rates

### HAYNE DAVIS

*Engineer & Producer*  
MCP/DAVISOUND  
Newberry, SC 28108  
(803) 276-0639

**Credits:** Labels: ABC, Federal, Cleo, Car, Broadcast created promos, spots, jingles for over 2200 radio and TV stations world wide since 1970

**Services Offered:** Custom recording production, demos, jingles, commercials, audio visual productions, motion picture production, audio design, engineering, and sound alterations and installation. Custom built audio gear. Consultation

### BOB DUNBAR

*Engineer & Producer*  
GIEMO RECORDING, INC.  
Vienna, VA 22180  
(703) 938-6692

**Credits:** Fantasy "Rock n' Roller at Heart" album, Fantasy "Just a Little Bit Longer" single, Death Rose "All Your Sins" Engineered for self, Chaser Hellion, Danny Niblett and F. Frederick Skitty  
**Services Offered:** Engineering your sessions to producing your group. Own 8 track studio in Vienna, VA. Will consult

### CHRIS FICHERA/BILL GOODWIN

*Engineer & Producer*  
HEMI SEMI DEMI  
East Stroudsburg, PA 18301  
(717) 421-5150

**Credits:** Phil Woods Or. Birds of a Feather, Solar Energy, Hill

Dobbins/Dedications, Eric Kloss/Sharing, Hal Crook/Hello Heaven, Dave Finsberg/Songbook #1

**Services Offered:** We offer complete production and engineering services including remotes. We make records! Finding the right studio atmosphere for each project is our specialty. We meet specific needs with the highest technical quality available. Flexible. Personable. Experienced.

### MARTI GARAUGHTY

*Producer*  
MARTOONS  
5647 6th Ave., RSMT., Montreal, Quebec H1Y 2R1  
(514) 728-5907

### EDDIE HOWARD

*Engineer*  
MARK V STUDIOS  
Greenville, SC 29610  
( ) 269-3963

**Credits:** Beck LPs, The Wheels, Killer Whales, Pilots, Playboy Band, Gospel LPs, Cruise Family, Danny Gaither, Herborm Revivalton, Tami Chen, Jimmy Swaggart, Joannie C. Riley, Kinismen, Speers, PTL Band, Spurlows, Nancy Harmon, Custom LPs, over 250 jingles, Coke, EMS, Precision Tune, Buck Stove, Prissy Wicly, numerous regionals

**Services Offered:** Engineering and producing partial or complete LPs, singles, demos, jingles, chief engineer on 6 live LPs from concert through mixdown. Offering 24 track MCI Neve automated desk, full selection of instruments, mikes and outboard gear. block booking, deals on considerable budgeted projects. More than 15 label LPs experience

### CHUCK IRWIN

*Engineer & Producer*  
CHUCK IRWIN  
New York, NY 10021  
(212) 371-1235

**Credits:** Recording engineer for the films Fame, Hair, Rhinoceros, Moon Over the Alley, Prince of the City, Jimmy Records, Chuck Mangione Quartet, Moriana King, Barry Johnson, Galt MacDermot, Joe

**Services Offered:** Independent engineer/producer available in either or both categories ranging from mono to 48 tracks synchronized to video or film. Available anywhere in the country on long or short term contracts

### HARRY KING

*Producer*  
SKY'S THE LIMIT PRODUCTIONS  
Reading, MA 01867  
(617) 944-0423

**Credits:** Afternoon Delights, Jonathan Edwards, Ann Kenneally, Bill Chinnock  
**Services Offered:** Independent production

### LALLERSTEDT & BUGG

*Engineer & Producer*  
TWELVE OAKS STUDIO  
Atlanta, GA 30080  
(404) 435-2220

**Credits:** Pat Terry Group, Teddy Harmon, Gen Garrott, Mike and Von Rogers, Al Holloy, Frank Rogers, His Amabassadors, Mike Barnes, Carpenters Tools, Children of Light, H.I.S., M. Donalds, Bill IBM, Six Flags, Jazzercise

**Services Offered:** Twelve Oaks Studio is the 24 track production facility of Sonny Lallerstedt and Randy Bugg. This provides the client a priority rank in the studio. We have been involved in non temporary Christian music since its early days, first with Dove and then the Pat Terry Group. This long association with the music ministry benefits our clients

### ALAN LEININGER

*Engineer & Producer*  
PRODUCTION SERVICES  
Hollywood, FL 33020  
(305) 920-2998 or (305) 564-2655

# INDEPENDENT ENGINEERS & PRODUCERS

**Credits:** Writer/producer "The Miami Sound" Music special (©1976 Hootco) 9 production director WHYI-FM (Y100) 1974-82, engineer/producer BRT Recording Studios, Fort Lauderdale FL 33434 14 years in the music and advertising industry

**Services Offered:** Professional 8/16/24 track recording for records, radio and TV. Fortran and BASIC programming and consultation. Remote audio recording, mixing and sound reinforcement. Custom SEK independent distribution, publishing and copyright services available. USA and international. Unique editing.

## GENE LEONE

**Engineer & Producer**

**GENE LEONE ENGINEERING PRODUCTIONS**

22 Birchwood Way, Gibbsboro, NJ 08026

(609) 346-9468

**Credits:** Double Dutchbus, Frankie Smith, platinum, Music Box, Evelyn Champagne King (gold), "Get Up and Boogie" - Freddie James (gold). Also France Joli, Fische Home, Blue Magic, Brandy Wells, F.L.B., Hi Goss, Geraldine Hunt, Mandrill, T. Lute, Peter Nero and Philly Pops Orch., Dixie Humminbirds, Drivers, Nate Chacker, Billy Tennor, Marvinettes, etc.

**Services Offered:** Custom recording, overdubbing and mixing 1/2 inches and 1/4 inch studio and/or live concert recording. Custom 1/2 inch dance-oriented mixing and post arrangement. Co-production and live concert sound mixing. Services available. Studio facilities: Alpha International, Phila. PA, Starr Studios, Phila. PA, Sigma Sound, Phila. PA, Media Sound, NYC, Record Plant, NYC, Lister Studios, Montreal, Quebec, and St. Charles Studios, Montreal, Quebec, etc.

## STEVE LISI

**Engineer & Producer**

**SATURN SOUND STUDIOS, INC.**

511 S. Olive Ave., West Palm Beach, FL 33401

(305) 832-1921

**Credits:** Jonn Phillips, Four Seasons, Barry Manilow, Genya, Haven Troop, Spinners, Iron, Mile.

**Services Offered:** 8 track facility, MC1 Recording, mixing in stereo, dubbing, sound effects, commercials, remote recording. Also stereo rehearsal facility, sound system rental, complete record pressing and packaging. Soon to come: video.

## STEVEN MILLER

**Engineer & Producer**

**CACOPHONY PRODUCTIONS**

1 Astor Place/2K, New York, NY 10003

New York (212) 777-6040, California (415) 864-1967

**Credits:** Gil Scott Heron, Brian Jackson, Andy Narell, Cheech and Chong, Terry Garthwaite, Rosalie Sorrels, No Nukes, Star, Gatz, Windham Hill Records, George Winston, Will Ackerman, Liz Story, Alex DeGrass, Mark Isam, The Toons, Dave Letterman, Michael Oculi, TONTO, Art Linn, M.S.V.

**Services Offered:** My work ranges from the sparseness of solo piano records all the way up to the complexities of 46 tracks of electronic/electronic music. I am a full production service and I pride myself in the diversity of my musical expertise as well as the diversity of my skills: engineer, arranger and instrumentalist. I am adept at working within specific budgets and with close ties to studios on both coasts. I can get the right room for the right price. P.S. I am very interested in hearing new music so I encourage artists to get their material to me.

## EDDY OFFORD

**Producer**

**EDDY OFFORD STUDIOS LTD.**

1493 Jefferson St., Atlanta, GA 30044

40 Bedford St., London, WC2E 9EN England

USA (404) 766-6143, England: 01-373-8629 or

01-836-7023

**Credits:** Yes, The Yes Album, Fragile, Close to the Edge, Yes Songs, Tales from Topographic Oceans, Relayer, Drama, Emerson, Lake & Palmer, Emerson, Lake & Palmer, Taurus, Pictures at an Exhibition, A Trilogy. All these records went gold and were high in the charts in England and America. Also, John McLaughlin, Mickey Jupp, Wet Willie, Shirley Bassey, Petula Clark, Richard Harris, Paul Anka, Levon Helm, Todd Rundgren, Alex Ligertwood, Brian Auger & Trinity, Driscoll, John Lennon, Baker Gurvitz Army, David Sancious, Andy Pratt, Billy Squier, Black Jack, Paul Butterfield, The Drecs, Art in America, The Late Bronze Age, Films at a Vision Studio, London including Zabriskie Point and A Man Called Horse.

## GEORGE PETERSEN

**Engineer & Producer**

**PROLIFIC PRODUCTIONS**

Mineola, NY 11501

(516) 249-8337 or (516) 741-6168

**Credits:** Produced TV MD, Aerial, Ben Lawson, Carol Marcuso. Album credits include: George Sarantinos (SJS Records), arranging and co-producing. Recently completed scoring for the National

Endowment of Humanities Educational Television Series. Original compositions have been published in Europe and South America.

**Services Offered:** Complete production services including arrangements, orchestrations and musician contracting. Owner of a 16 track professional recording studio which is available for both master and demonstration tapes. Many production and arrangement clients have used this facility in conjunction with their demos and releases. The relaxed environment provided by the staff makes Producer and Producer a safe company for the professional. Other musical services offered are transcriptions, copywriting and consulting on a fee basis. On the business end, Michie Morgan heads the division of public relations and record and publishing company interfacing.

## KAREN IRVING PETERSEN

**Producer**

**KAREN IRVING PETERSEN**

New York City, NY 10036

(212) 354-4289

**Credits:** Co-producer and engineer Craig Anderson's album "Down to the Wire" (have produced as producer albums throughout Europe and South America).

**Services Offered:** New wave rock and R&B production. I view production as a cooperative effort from choice of songs to mix down. I work with 2 major 24 track NYC studios and can get the best/most budget friendly A&H department of most American independent companies.

## JONATHAN F. P. ROSE

**Producer**

**GRAMAVISION, INC.**

New York City, NY 10013

(212) 226-7057

**Credits:** James Newton, dance music, Art, Tony Davis, Oliver Lake and Jump Up, Tony Duperon, many top 40 Albums of the Year, various hit records, pop, disco, music, jazz, etc.

**Services Offered:** We work and deliver pre-production planning so that it meets the artist and market needs. We record as naturally as possible for art and dance placement. Ambience and spatial qualities vary from audiophile to dance music. We have a live, 5000 Hz, 800 Hz, and 1000 Hz, and mix room (11-40) psu, etc. so that we can spend time to perfect all units.

We are in constant contact with the many national and international radio and dance club markets. We make records that fulfill your vision whether the market be narrow or large. We only do projects we believe in.

## MICHEL SAUVAGE

**Engineer & Producer**

345 West 85th St., New York, NY 10024

(212) 595-3628

**Credits:** Producer: Ernie and the Imports, Ariel, Maria Lewis, Engineer: Minkalwood, Tom Dickey and the Desires, Don McLean, Chris Hino, Invisible Man's Band, plus contributions to Foreiner, 4, Kid Creole and the Coconuts, Wise Guy, Peter Tosh, Mystic Man, Home, Hootco, "Tiger, Tiger" and Hall and Oates, The Clash, B.B. King.

**Services Offered:** Strongest asset is ability to inspire musicians and singers to reach new heights in the studio. Also helps create atmosphere of highest quality work, resulting in top performance from everyone associated with the project. Vibe oriented producer believing that if players feel positive and excited the feeling will transfer to tape, making a hit possible at any time. Musician (guitar and keyboards), composer, arranger. Also hit on technical excellence and audio art, being influenced by David Tickle, Herbert Lion, Lance Hurst, Pugham, Ken Scott, Alan Parsons. Loves teamwork and serious but fun approach to recording (with in budget).

## WILLIAM SHERR

**Engineer & Producer**

**JACKSTRAW SOUND**

New Haven, CN 06510

(203) 624-6565

**Credits:** Mystic Seaport, multi-image soundtracks, Water, Cron, Kib, many numerous choral groups and The Whitten Poet of Yale, Paul Guzzone, Little Criminal Band, Winchester Special, Iggers for the movie Times Square.

**Services Offered:** At Jackstraw we are able to offer complete services to enable our clients to realize the full potential of their artistic endeavors. Recording, production, international pressing, album design, distribution approach are all available through our facility. William Sherr and Jackstraw Studios are affiliated with Barakat Records, a fast growing independent label.

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**ED SEAY***Engineer & Producer***ED SEAY**435 Ansley Drive, Roswell, GA 30076  
(404) 321-5993 or (404) 634-0649

**Credits:** Produced and/or engineered for Paul Davis (65 Love Affair - Cool Night, I Go Crazy, Do Right), Peabo Bryson (Let the Feeling Flow), Melissa Manchester (Fire in the Morning), Digel Olsson (Dancin' Shoes), Brick (Dazz, Dusic) Commodores

**Services Offered:** A producer/engineer/musician, adept with all styles of music. Much experience with arranging rhythm tracks horns, background vocals, etc. Professional musician trombone, guitar, bass, background vocalist. A producer who can totally relate to artists/musicians, and help maximize the desired musical concept without dictatorship.

**CENTRAL****STEVEN CROFUT/ERIC R. KENNEY/STEPHEN WARREN***Producers***NORTH SUMMIT PRODUCTIONS**Hudson, OH 44236  
(216) 656-1228

**Credits:** The producers have worked on projects for WNEO/WFAO, Akron PBS affiliate, Midwest Teleproductions, WOAC-TV 67 Canton, OH, Cathedral Teleproductions; Stokes Sound and Lighting, WAKR-TV, Akron ABC affiliate

**Services Offered:** Single camera to multi (6) camera remotes, non-DVE effects, 2", ¾" 1" C formats available, complete audio capabilities with sweetening; RCA TK76, Ikegami ITC 730 minicams; Ampex VPR-20, Sony BVU 800 and 100 recorders, Quantalton Q7a character generator

**DANIEL FRESCURA***Engineer & Producer***L.P. RECORDING STUDIOS**Southgate, MI 48195  
(313) 282-9266

**Credits:** 1981 Kicks, Recording Workshop - Studio C The Trillionaires, Recording Workshop - Studio E Citadel, Recording Workshop - Studio C, 1980: Red Ram, Soundsuit Studios mastered at Masterfonics

**Services Offered:** Engineering and/or assisting (studio or live) Concert sound engineer (house or monitors) Musician (10 years) drums and trumpet

**BILL HAM***Producer***LONE WOLF PRODUCTIONS**Houston, TX 77024  
(713) 461-0530

**Credits:** Z Z Top (7 albums), Point Blank (7 albums), Jay Boy Adams (2 albums), Van Wilks (1 album)

**ROGER L. HOOVER***Engineer & Producer***SWEETSOUND PRODUCTIONS**P.O. Box 2041, Parkersburg, WV 26102  
(304) 489-2911

**Credits:** Miltenberger & Clark, Light, Virginia Pryor, Fahlgren & Ferns Advertising, Donnie Sumner, Borg Warner, WXIL, WIBZ, WCEF, WBRJ, The Carners, Pam Gordon, Tim Stutler, First Bank, Advertising Dimensions, Greenbrier Home Center

**Services Offered:** Producer of custom recording projects, radio station ID packages, radio commercials and jingles, record pressing and tape duplication, radio promotion, soundtracks, jock shouts, independent engineering and producing. Logos, promotional pictures, demo recording, remote recording. Album covers, printing, business cards and stationery, cassette duplication, radio announcer, MC, advertising packages

**DON JOBE***Producer***GHOSTER PRODUCTIONS/GHOST RECORDS**1905 Pesos Place, Kalamazoo, MI 49008  
(616) 375-2641

**Credits:** T & R Records, Ghost Records

**Services Offered:** Production of rock and roll, easy listening, country rock

**RICK KERR***Engineer***RICK KERR C/P RMJ STUDIOS**Detroit, MI 48219  
(313) 533-8511 or 437-6231

**Credits:** Mitch Ryder, Jimmy Ruffin, New York Express, Midnight Sky, Jerry Carr, R.I.'s Latest Arrival, Solomon Burke, Dramatics,

Go 4 It, Clark Sisters, Brandye, Larry Nozero, Gary U.S. Bonds

**Services Offered:** Chief engineer at the most well equipped studio in the Detroit area and featuring an MCI 528 automated console

**RON S. LAGERLOF***Engineer***DBA RECORDING SYSTEMS LTD.**5803 Velasco, Dallas, TX 75206  
(214) 826-5418

**Credits:** Artists recorded and/or mixed: Wayne Newton, Roy Orbison, Hank Williams, Jr., John Prine, Mac McAnally, Recoil, Ira Watson Studios installed: Sonrise & Sierra Recording, Ft Worth, TX, TM Productions (2 studios), Omega Audio, 1st Com Broadcast (4 track), Dallas Sound Labs, Dallas (all 24 track unless noted)

**Services Offered:** Digital recording (Sony 2 channel), Studio installation and studio accessories - echo plates, headphone cue systems, direct boxes, mike plates, production assistance, including booking of studios, musicians and singers. Active member of NARAS and Dallas Communications Council

**FRANK A. LIMBACHER***Engineer & Producer***HOT JAM PRODUCTIONS**145 Front Ave. S.E., New Philadelphia, OH 44663  
(216) 343-9669

**Credits:** Patmos, Zealous Prophet, Lynne Cassell, Steve Sayre (guitarist for City Limits, Spirit Records), Malachi, Word-Blood and Power, The Kost, D Artiano, Carson Sweet, Dave Sparkman, Hearstong, John Kirby various radio jingles

**Services Offered:** Full service production of albums, 45's, demo's and professional quality radio jingles, engineering, arranging, writing, song pitching, label shopping, artist management, tape duplication, album pressing, album cover graphics

**DAN A. LUKENS***Engineer***Elkhart, IN 46517**

(219) 522-2372

**Services Offered:** Multi-track mastering, overdubbing, remixing, editing, sound reinforcement, local or free to travel

**MICHAEL G. PETERS***Engineer***PETERS SOUND RECORDING SERVICE**

Euclid (Cleveland), OH 44123

(216) 731-4171

**Credits:** "Big Band Grandstand" Harry Hershey "Ascribe Greatness" St. Lukes Music Ministry, "Live at Rusty's" Ernie Krivda Quartet (re-p q tape for disk), Letter to Timothy & Rock of the Morningstar radio programs, Lordburcer jingle and more

**Services Offered:** Demos, albums, singles and jingles (both radio and TV) as well as radio programs, multimedia slide shows videotape editing, video camera operator, video switcher, remote recording. Equipment: Ampex MM 1100 16 track, Soundcraft 16x8x16 JH1 & EV monitors, AKG Sennheiser RCA Beyer EV and Shure mikes, PCM-41 ddr, Kepex, ADH compressor/limiter, 280b 2 track, 3340S w Dolby

**NORBERT PUTNAM***Producer***TREBRON PRODUCTIONS, INC.**

134 4th Ave. N, Franklin, TN 37064

(615) 790-8696

**Credits:** The Dirt Band, Jimmy Hall, Dan Fogelberg, Jimmy Buffet, Florence Warner, Mickey Newberry, Jesse Winchester, Kris Kristofferson, Joan Baez

**DAVID C. SHEWARD***Engineer***SCREAMS & ROSES AUDIO**

Trotwood, OH 45426

(513) 837-6350

**Credits:** Call for resume

**Services Offered:** Studio and live recording. Live concert mix jingles. Audio for video

**DONALD A. SCHOTT***Engineer & Producer***MONITOR MUSIC CENTRAL PROJECT**

Cincinnati, OH 45201

(513) 522-7349

**Credits:** Live broadcast: Charlie Pride, Radio Cincinnati Symphony Orchestra, Cincinnati Chamber Orchestra, Records Jackson Hamil, Ooh La La & the Greasers, Braxton Cann, Steve Sailer / Chns Dahlgren Project, Ra Can Row (LP), Free Drunks Blues Band, Posterity. Many various statewide rock groups, jazz ensembles, gospel quartets, and classic/contemporary orchestras and choirs

**Services Offered:** Talent development from ground zero, sound production, music and soundtracks for film/video, production and supervision/overseeing of phonorecord, compact audio-laser disc, and videodisc projects from pre-studio to press; including graphics supervision and packaging - disk mastering - independent engineer; analog and digital editing - direct to 2 track or direct to disk or broadcast as well as the standard 24 track or automated 24 track. Producer for Eye Records - publishing under Antioch Sun (ASCAP) and Day of Dharma (BMI). Well versed in music law, performance, and business - will travel

**JIM WALLER***Engineer & Producer***ROAD APPLE PRODUCTIONS**555 Cicero, San Antonio, TX 78218  
(512) 656-1382

**Credits:** Producing and arranging for Warner Brothers, Motown and United Artists. BA in music composition, UCSB Director of Santa Barbara Community College Jazz Ensembles 1976-1977. Studio work on trombone, saxophone and keyboards. Currently on engineering staff at Zax Recording Studios, San Antonio

**Services Offered:** Independent record and jingle production with 8 track studio on premises and 16-24 track available on request. Arrangements, demos, film and TV scores, musicians, engineers, music copying and lead sheets

**BRADLEY M. YOST***Engineer & Producer***OUTRAGE PRODUCTIONS**1138 Pratt 1-N, Chicago, IL 60626  
(312) 761-8213

**Credits:** Many commercial jingle and resort project credits are available upon request

**Services Offered:** This company is available and experienced in live and studio engineering, as well as music and stage production

**WESTERN****FRANK ARN***Engineer***BANTAM SOUND SERVICES**14928 1/2 Moor Park, Sherman Oaks, CA, 91403  
(213) 907-5181

**Credits:** The Rare Earth Band, Gold record "In Flight" with George Henson, Platinum record "Night Moves" with Bob Seger, Tommy Holm, Keith Carradine. AA in Electrical Engineering, certificate in recording engineering U.S.A.

**Services Offered:** Stage management, live sound engineering, independent sound engineering, consultation, live showcases, references available

**PETER M. CARLSON***Engineer & Producer***HAVE EARS WILL TRAVEL**Santa Cruz, CA  
(408) 475-1232, or (408) 425-0152

**Credits:** Alice Cooper, Babys, Bob Brozman, Buddy Miles, Chris Thompson & Night, Dave Mason, Elvin Bishop, Garcia Brothers, Mike Rugg, Moody Blues, Neal Hellman, Poco, REO Speedwagon, Score, Skip Towne & The City Limite, UFO

**Services Offered:** I will take you through your budgeting and preproduction, to rehearsals, to the making of your record, and on through the mastering process. I will travel to your studio or you can come and work and vacate in the excellent facilities to which I have access in Santa Cruz

**LOU CASABIANCA***Producer***ASTRAL ARTISTS**2430 Jones Street, San Francisco, CA, 94133  
(415) 441-7806

**Credits:** Automatic Man—LP, Island Records, Yamashta, Windwood & Shneve, Co-producer Island Records, Commercial broadcast & radio TV spots for CBS, Warners, RCA, Capitol & United Artists Records

**Services Offered:** Preproduction rehearsal & planning, recording, arranging and mixing. Special emphasis on music video production & direction. Scripting, production & editing of live or concept, film or video productions

**FRED CATERO***Engineer & Producer***FRED CATERO PRODUCTIONS**1301 Chestnut Street, San Carlos, CA, 94070  
(415) 592-2072

**Credits:** Hundreds of records produced or engineered for Columbia, Warner Bros, etc. Recorded for Janice Joplin, Santana, Barbara Streisand, Phoebe Snow, Blood, Sweat & Tears, Simon &

# INDEPENDENT ENGINEERS & PRODUCERS

Gartunkle, Herbie Hancock, Laura Nyro, Sly Stone, Bob Dylan, Dave Brubeck, etc. Soon to start his own label—Catero Records  
**Services Offered:** Engineering & producing

**JOE CHICCARELLI**  
*Engineer & Producer*  
 1565 Selma Drive, Hollywood, CA  
 (213) 654-9630

**Credits:** Frank Zappa, Poco, Oingo Boingo, Juice Newton, Red Rider, Rita Coolidge, George Thorogood, Peter Allen, Del Shannon

**ALEX CIMA**  
*Engineer & Producer*  
 P.O. Box 1594, Hollywood, CA 90028  
 (213) 662-8588; (714) 680-4959

**Credits:** Deutsche Grammophone/Polydor International (Germany), Crescendo Records, Chromosome Records, ABC's "General Hospital," Disney, Universal, Select TV, PBS, CBS Prime Time Special, plus many other commercials, TV, and film projects you have heard and seen

**Services Offered:** Music recording/production. Project troubleshooting. Computer and analog music synthesis; voice and instrument processing, special effects. Member AES, ASA, IEEE, Computer Society. Original and library music.

**PAUL DOBBE**  
*Producer*  
 c/o United Western Studios, 6000 Sunset,  
 Hollywood, CA 90028  
 (213) 469-3983

**Credits:** Albums: Greg Lake, Dolly Parton, etc. TV: Hill Street Blues. Film: Airplane II

**Services Offered:** Albums, TV, commercials, and movie scoring

**RONALD DUFF**  
*Engineer*  
**RESOURCES UNLIMITED**  
 7369 Central Ave., San Diego, CA 92045  
 (619) 697-2035 (Lemon Grove)

**Credits:** Engineer for Mission Productions "Wake Up America" TV specials, live concert engineer for Calvary Chapel San Diego, featuring groups: Sweet Comfort, Richie Furray Band, Terry Talbot, JJ Jackson, Parable, Annie Duff

**Services Offered:** 24 track engineering, MultiImage Productions, sound tracks, record demos, Pro Audio sales and service. Sound reinforcement engineering and design. Concert sound engineering and TV sound production

**KIM FOWLEY**  
*Producer*  
 600 Sunset, Suite 209, Hollywood, CA 90028

**JERRY FULLER**  
*Producer*  
**MOONCHILD PRODUCTIONS INC.**  
 13216 Bloomfield St., Sherman Oaks, CA 91423  
 (213) 872-1854

**Credits:** Fourteen gold records. Artists past and present: Mar Davis, Glen Campbell, Gary Puckett, and the Union Gap, Johnny Mathis, Nancy Williams, O.C. Smith, Rick Nelson, Al Wilson, Mark Lindsay, Telly Savell, Knickerbockers

**Services Offered:** Production, international publishing houses, in-house 24 track recording facility

**TERRY GARTHWAITE**  
*Producer*  
 Box 14, San Geronimo, CA, 94963  
 (415) 488-4778

**Credits:** Recorded 12 albums as lead vocalist (including the joy of Cockney) and as solo artist (under the name Terry Garthwaite and Orrin Knaprows). Produced Garthwaite/Hawkins/Sorrels for Flying Fish, Robin Flower for Flying Fish, and "Nippon" for Ever and Wray for NW Records

**Services Offered:** Record production and vocal guidance

**CECIL GASPAR**  
*Engineer & Producer*  
**BLACK MARKET PRODUCTIONS**  
 Box 40162, Santa Barbara, CA 93103  
 (805) 965-3949

**Credits:** Recent credits: Bel Air Bands, George Strait, Tapscott, Mark Low (Beach Boys), Norman Allen, Pranks, SPYS

**Services Offered:** Complete production services, including: sound reinforcement, rehearsal, tracking, overdubbing, mixing, and mastering

**CHRISTIAN HALABY**  
*Producer*  
**PETRA SOUNDS**  
 Menlo Park, CA 94025  
 (415) 329-9143

**Credits:** Espresso, Dan Arlie & SF Gods, Ariel, Laura Marks, Duane Day, Marina Towers, Field Effect, Steve Keating

**Services Offered:** Production, arranging, access to record company contacts, guitar, mandolin, polyphonic synthesizer; excellent rates at Music Annex, Menlo Park

**STEPHEN A. HART**  
*Engineer & Producer*  
**S. HART PRODUCTIONS/CORASOUND RECORDING**  
 122 Paul Dr., San Rafael, CA 94903  
 (415) 472-3745

**Credits:** Mathew Kelly, Tommy Tutone, Bob Weir, Hoovers, Visitors, Holly Stanton, Baldie Ray, Chris Saunders, Sons of Champlin, Human Being Men, Blake Quake, Steve Seskin, Marn All Stars, Tommy Johnston, John Mekindie, Corporate, Bechtel, Pacific Telephone, Victoria Station, Clorox, Tama Drums, Films Koko, Death in Venice, USA

**Services Offered:** Engineer/producer with 10 years in multi-track recording. I am also part owner of Corasound Recording, a fully equipped 16 track studio. I end up co-producing many of the projects that I engineer. Easy to work with, give me a call and we'll arrange a listening

**DOUG HOPPING**  
*Engineer & Producer*  
 Palo Alto, CA 94306  
 (415) 858-2039

**Credits:** Albums: The Toons "Looking at Girls" (engineer), NRG "Crisis" (engineer/producer), Robbie Basho "Rainbow Thunder" (technical assistance). Singles: Bryan Cannon "The First Time" (engineer), Dr. Robert "Make Me Smile" (engineer). Demos: Wayne Sloan Band, Michael Silversher, Joe Cannon, The Lawst, Noel McFarland. Live Remotes: SVT, Joe English (former drummer for Wings)

**Services Offered:** You will get the most for your time and money if you're well organized. What you do before you enter the studio will have a profound influence on the success of your project. I can help you maximize your time and money with the necessary pre-production planning to help make your project a success.

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mobile recording studios, yet provides total comfort for the CAT crew.

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 Scottsdale, Arizona 85253  
 (602) 991-2802

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#### ERIK JACOBSEN

**Producer**  
P.O. Box 547, Larkspur, CA, 94939  
(415) 924-4976

Credits: Lovin Spoonful, Tim Hardin, Sopwith Camel, Norman Greenbaum, Miss Abrams and the Strawberry Point Third Grade Class, John Sebastian, Tazmanian Devils  
Services Offered: Music Publishing and producing

#### LESLIE ANN JONES

**Engineer & Producer**  
Oakland, CA 94602  
(415) 530-1402 or (415) 777-4111

Credits: Herbie Hancock, Angela Bofell, The Whispers, Con-Funk-Shun, Joan Baez, Holly Near, Narada Michael Walden, Stacy Lattisaw, Jane Fonda's Workout, Chrs Williamson, Maze; three gold albums

#### MIKE JOSEPH

**Engineer & Producer**  
SEISMIC PRODUCTIONS  
San Francisco, CA 94122  
(415) 566-8207

Credits: Confessions, Verbs, Silhouette, Exposure, PC:2000, Defectors, Rakes, 07080, Nobody Famous, Little Death, Under-songs, Quess, Secrets, Varve, Pamela Rose, Elements of Style, Pam Brooks, Bill Browne Band, Richi Ray, Sheila Escovedo, Ray Miles, Golden Gate Jumpers, Northern California Community Choir, Anthony Johnson, Mellaa, Electric Toys, Cha Cha Billy, and more!

Services Offered: As a producer and engineer, I've recorded for over a dozen record labels, with over 75 record or demo releases in the past three years alone. I stretch from hard rock to live gospel, pop and new wave to acoustic, 8 track, 16, or 24. Your sound is my sound. My number one aim is to be fast, reasonably priced, and completely professional. I'm easy to work with (ask anyone) and want to make sure you're happy, above all else. I believe in saving money, and will work with you from rehearsals through to mastering. Call for references or information.

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**Engineer & Producer**  
San Francisco, CA 94107  
(415) 641-9425 or (415) 777-4111

Credits: Blue Oyster Cult, Buck Dharma, Santana, Aldo Nova, Y & T, Tubes, Apocalypse Now, Narada Michael Walden, Herbie Hancock, Randy Hansen  
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Services Offered: Total production scope: recording team and facility (new 24 track room and guest house); packaging, distribution, light and sound systems (16 Bay Area club installations), 150 radio station listings nationwide (college and independent), PR kits, European and Japanese tour, distribution and promotional packages, studio musician pool (oldest existing Peninsula studio) publicity stunts, contract service (publishing, copyright, etc.), ad campaigns, guaranteed AM/PM airplay. Our philosophy? Either believe in a project or don't take it on. That seems obvious enough. Nevertheless, the nature of the union of music and business is such that cynicism can quite inadvertently be produced into a project.

#### PITT KINSOLVING

**Engineer & Producer**  
Pasadena, CA 91103  
(213) 792-3531

Credits: I have worked on albums on the Windham Hill, Kicking Mule, Rounder, Desto, Green Linnet and Folkways labels. One album received an "A" for sound and another a "rave" review from *Audio* magazine. "Best guitar album I've heard" recording and playing. (Mastering engineer cutting "Funoff," Chrs Proctor's Kicking Mule album)  
Services Offered: Recording by and for musicians has been my motto for years. As a playing musician (with no performing aspirations) I feel that I can bring that extra measure of sensitivity to my

work with you that is beyond the capabilities of those who are merely "technically competent." I can record, mix, edit and produce. I have the experience and flexibility to use techniques ranging from "Purist" stereo mixing to full bore multitrack. Acoustic music is my forte, though I've done my share of rock. I'm free to travel anywhere in the world for studio work or live remotes.

#### DON KOLDON

**Engineer & Producer**  
North Hollywood, CA 91602  
(213) 506-8313

Credits: Former staff engineer at A&M Records. Work for most major labels. Specializing in rock, R&B, pop and jazz.  
Services Offered: Recording, mixing and editing. Custom made recording equipment available: mike pre amps, direct boxes, modified equalizers, etc. Exceptionally musical engineering (graduate of Berkeley College of Music). Expert production and co-production. Excellent studio access at all budget levels.

#### BRIAN G. LESHON

**Engineer**  
14417 Magnolia Blvd., Sherman Oaks, CA 91423  
(213) 783-8068 or (213) 508-5324

Credits: In the past five years have worked with producers such as Ken Scott, Ed Thacker, Peter Henderson with artists such as Devo, Missin' Persons, Kansas, Supertramp and Tommy Tutone. Additional artists I have worked with include Allan Holdsworth, Louis Johnson, Don Harrison, Bobby Kimball, The Romeros, Jim Hillman (Ancient City).

Services Offered: Available for all forms of recording including demos and albums, work on video and anything else involving SMPTE time code, audio sweetening for TV and film. Tapes and resumes available upon request.

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Services Offered: Ira Leslie of "All the Sound Production You Can, Ink" provides top caliber engineering/mixing services in the record, film and video mediums. Previous clients include Bill Coner, Jack Nizsche, Norman Grant, Don Costa and Steve Cropper.

#### DON MACK

**Engineer & Producer**  
Oakland, CA 94605  
(415) 635-6624

Credits: Brian Eno, David Byrne, Moby Dick, Beards, Bill Motley, Quest, Taz Devils, Pat Gleason, Disney Productions, Apocalypse Now, Chris Bose, Pleasure, Walter & Edwin Hawkins, Corn maver, Coxy, Marjye Holmes, Nancy Welch.

Services Offered: I offer fast, efficient and affordable quality engineering so you, the musician, can concentrate on your music while I'm worrying about the tape. You can be sure I'll go from basics to the final mix and to your record or demo. As a producer I can give that outside objective look at your music, so that you will not only get the product you want, but one that you and everyone will want. My rates are inexpensive and my techniques are such that I'll keep all your studio costs down to a minimum without sacrificing anything of the final product.

#### PATRICK MALONEY

**Engineer & Producer**  
61 Elsie St., San Francisco, CA, 94110  
(415) 285-6071

Credits: Engineered 20 Direct to Disc Albums for Crystal Clear Records, Co-engineered & produced Blondie, Atomic EP (European Release). Fifteen years live concert mixing for Herb Alpert, Liza Minnelli, Burt Bacharach, Monterey Jazz Festival, Blondie, etc.  
Services Offered: Specialize in projects requiring speed and efficiency based on many years of live "one take" engineering & producing.

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(213) 824-4597

Credits: The Byrds, Vikki Carr, Petula Clark, Bobby Darin, Connie Francis, The Frogs Movement, Lesley Gore, Dottie Gray, Thema Houston, Gladys Knight & the Pips, Gope McDaniels, Barbara McNair, Ann Murray, Gayle McCormick & Group, Collette Smith, The Miracles, Pollution, Ann Peebles, The Originals, Barry Earth, Lou Rawls, Sisters Love, Smoked Sugar, O.C. Smith, Diana Trask, Ta Ta Voia, Adam Wade, Dionne Warwick, Spunky Wilson, instrumental, American Bandstand Theme, Dick Clark's "Soul Special" theme.  
Services Offered: Record production.

#### JERRY RAY

**Producer**  
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Credits: I Believe in Love, Carl McIntyre, It Starts Now!, Stephanie Quick, Is It Real Love?, The Gurnas, William Pitt Jewellers, Leading Jewellers Guild, Hart's Jewellers, One More Chance, Disco, East West Journal, Living Room Restaurant, The Pro Industrial Slide presentation, Inson Publications, Alfred Publications, Fred Rock Music and Gentry Publications.  
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#### DON ROSS

**Engineer & Producer**  
3097 Floral Hill Drive, Eugene, OR 97403  
(503) 343-2692

Credits: Studio: Dan Siegel, Inner City, Don Latarski, Inner City, Jim West, MCA, Sterling Whipple, Elektra, Sneakers, City Lights, Don Norris, Pheasant, Tommy Smith, Mason Williams, Johnny and





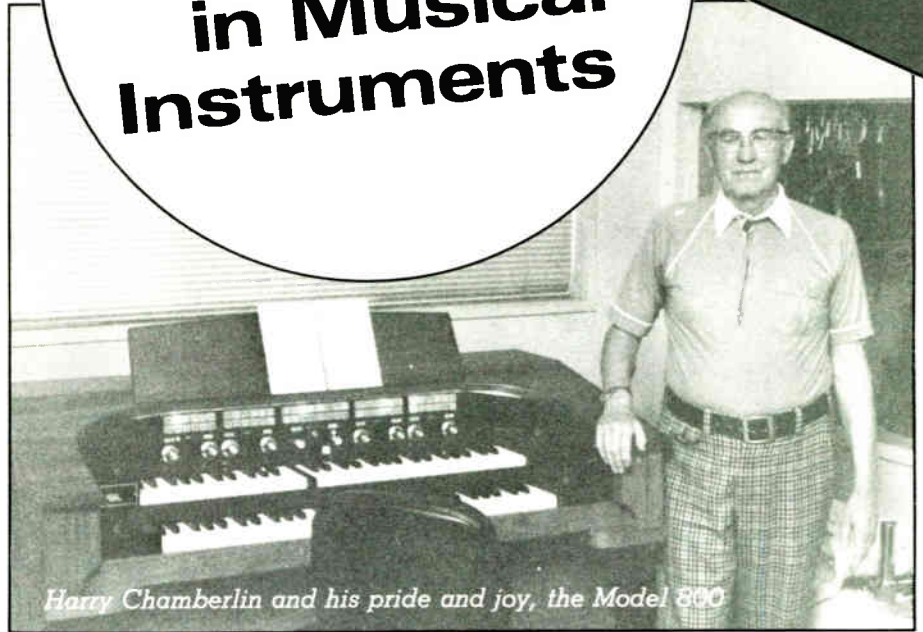
## Digital Sampling in Musical Instruments

by Alan Howarth

Getting the sound of real digitally recorded instrumental voicings at one's fingertips is a luxury that is becoming more and more common to keyboard and computer musicians. By digitally recording, or sampling, the sound of real instruments, emulation devices have begun to emerge as astonishingly useful tools for performance and production applications.

The idea of playing real sounds on a keyboard probably first surfaced with the huge theater organs, which utilized mechanical connections to slave pianos, drums, percussion and sound effects being switched in and out by tabs in the rank selection.

The first step toward a portable system of "real" sounds triggered by a keyboard was made by Harry Chamberlin. He was residing in Wisconsin when, in 1949, he bought a Hammond organ and a "paper" tape deck (paper base stock). He had been making a recording of his Hammond to send to his family in California when it occurred to him, "If I can make a tape to reproduce this Hammond, then why not *any* other instrument or sound?" Once the vision of keyboard control was added, this dream became an all-consuming project for him. In 1952 he produced the first Model 200 which offered ten



Harry Chamberlin and his pride and joy, the Model 800

available sounds with keyboard control. By 1955 the production Chamberlin Model 200 incorporated a rhythm section on the low end of the keyboard: a bass and drum pattern played at the touch of a single key . . . the first successful sequencing arrangement. Also integrated into the rhythm section was the ability to play an assortment of times, such as bossa-

nova, tango, cha-cha, and swing. This rhythm section was later developed into a device called the Rhythmate, the first drum machine using the sound of *real* drums.

Harry's crowning achievement in portability and reliability was the Chamberlin M-1, which used 8 track 1/2 inch tapes contained in a foolproof tape transport system. Exposed tape was reduced to less than 3 inches and was stored in a compact spooling system. The Chamberlin used an original recording of each note for every instrument it represented, in contrast to speeding up and slowing down the tape to modulate pitch, making natural sounding reproductions. A minimum of 8 seconds of recording was made to allow for sustained notes. If an instrument did not require sustain, holding down the key would add a strum or repeating rhythm. The Chamberlin even had special programs that included brass playing a 'doo-wah' and then an entire rhythmic figure, and sound effects including trains, animals, doors and laughter.

In 1962, one of Harry's instruments was taken to England. Soon afterwards a new product, the Mellotron, was developed. Unfortunately for Harry, his patents were only applicable in the United States.

The Mellotron was designed

Chick Corea working out with the Fairlight CMI



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very closely to the Chamberlin, using 3 track,  $\frac{3}{8}$  inch tape exposed in its entirety. Its early usage by such groups as The Moody Blues, King Crimson and Yes popularized the unit and it became a staple of the English progressive rock 'sound.'

In the following years the mechanical problems of tape storage caused the search for alternate methods to accomplish a more "solid state" solution. The Allen Organ Co. began research into an organ that could imitate any of the great organs of Europe. This was accomplished by recording these instruments and then electronically analyzing a single waveform and replicating it. This research also led to the RMI Computer Keyboard and Harmonic Computer, both of which used punch cards to recall the program. The main drawback to these keyboards was that the waveshape was repeated or "looped" over and over again for sustain, and there was no provision for filter and amplitude shaping for a more natural sound. Another improvement attempt was the Orchestron by Vaco, which used an "optical" storage similar to film sound. Its mechanical limitations, however, made it



*Roger Linn and the LinnDrum*

impractical.

As digital technology became increasingly available in the mid 60's, digital synthesis theory was being developed by people like John Channing at Stanford and by the Bell

Labs. But it was not until the micro chip and mini computer technologies arose in the early 70's that the size and expense of these approaches were reduced to a practical level.

In 1975, Tony First, an Austral-

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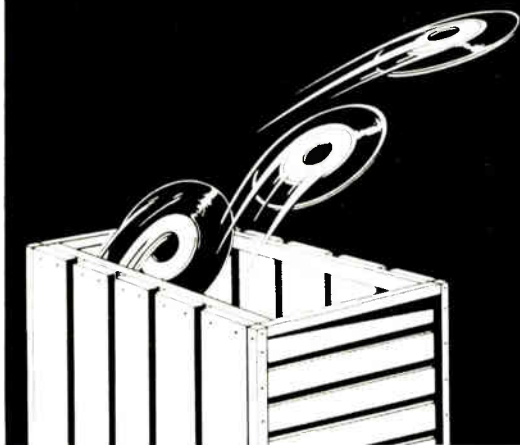
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*360 System's Bob Easton*

ian computer tech/musician, built the first digital sampling system which developed into the Fairlight CMI.

The Fairlight generates sounds digitally by taking a sample of sound from its microphone or from a tape

recorder, digitizing it, then loading it into the waveform memory of a voice module. Thus any sound can be played and manipulated, pitched to the keyboards. Any sound, a bird call, running water or a slam of a car

door can be used as the basis of synthesized sound which the musician can manipulate via the touch sensitive keyboard.

According to Fairlight's senior educator in the U.S., Will Alexander, "The Fairlight has a continuously variable sampling rate. In other words, we tune the sampling frequency to the pitch that we're sampling. The Nyquist formula says that the maximum frequency obtainable by a digital sampling system is  $\frac{1}{2}$  of the sampling rate. So if we have a 110 Hertz sample, and we used 14,000 Hz as the sampling frequency, that would give us the 64th harmonic as the upper frequency response. Frequency response at the highest sampling rate of 30,200 is 15 KHz. The sampling time at this rate is .54 seconds. That's just for the note sample, not the frequency response of the instrument. The instrument can go much higher than that."

The Fairlight employs 8 bit resolution on the audio but, according to Alexander, "We pull some neat little tricks. The idea of the Fairlight is to get as large a wave table in the memory, amplitude-wise. We even have gang control so that you can

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take small amplitude samples and multiply them to fill it, so that you can get high gain.

**F**airlight is getting ready to introduce a dbx option, whereby the software will know that a sound was encoded with the dbx on, and will set it so that every time that voice is selected the dbx will be turned on.

"The concept behind the Fairlight is that you are buying this box that you are going to be able to continually upgrade for 5, 7 years," says Alexander." The basic list price for the 8 voice is \$27,750. If you bought all the options, with music printing, analog interface, and all the software, i.e. word processing, you could probably spend \$32,000 or so. We try not to sell stripped down systems. We do offer 4 voice systems, but that's the minimum configuration.

"We have a sound library that has 450 sounds in it that comes with the instrument: 27 - 8 inch disks. Sampling is an expensive process - musicians in the studio, etc. We've probably spent \$25 or 30,000 just in studio time. We feel that our sampling is the highest quality possible right now. So when the customer buys the CMI, he already has most, if not all of the sounds he needs. You can start producing with this thing immediately."

Emu's Emulator was conceived in the spring of 1980, after Dave Rossum thought he could make



*Kinetic Systems will soon introduce a twelve voice sampling system to interface with their Prism, shown here.*

something like the Fairlight, but at a lower cost. Prior to that time Emu had survived on their modular synthesizers and consulting work to companies like Sequential Circuits and Oberheim.

The Emulator uses an eight bit system with companding to reach a 72 db dynamic range, though Emu's Kevin Monahan points out, "You sacrifice some distortion for that. In the expanding process you create larger steps, and non-linearities in the

waveform can produce quantization error in certain sounds. This error tends to be high frequency information that *can* be filtered out.

Emu's sampling rate is fixed at about 27KHz. The user can record a sound for the Emulator by sampling two seconds of it. That note can then be transposed up or down an octave. The record frequency response rolls off just above 10 KHz, allowing playback to 20KHz using the octave transposition. For sustain, the sample is looped with an electronic splice at a zero crossing point in the waveform.

The disk software for the Emulator adds features like backwards mode, sequencer control, footswitch control and doubling; and future software is designed to be replicated on the user's old disk. Emu also maintains a library of about 100 sounds that are available to Emulator owners.

*A time domain display on the Synclavier II*



**N**ew England Digital's Synclavier II is an advanced digital performance synthesizer that can convert to a high quality digital recorder and monophonic playback system with its optional Sample-to-Disc feature, bringing the system's total price to around \$40,000. Introduced by Sidney Aonzo in 1977, the updated model II came out in 1980, with the Sample-to-Disc feature on the market for about a year.

The Synclavier II's sampling unit is built around a 16 bit computer with a Winchester disk drive. Audio conversion is at a 50 KHz sampling rate, allowing a 96 dB signal-to-noise

ratio. And sampling time at this rate is 54 seconds! Various samples can only be played back one at a time, as the disk heads can only be in one place at a time... even though they can jump around very quickly to random access voices.

According to Jeff Reisberg, who wrote all of the software for the Synclavier's digital sampling option, "Concentration has been placed on long sample time and extreme fidelity. Polyphony will come along by another type of process that involves large memory or being able to control

a very accurate synthesizer.

"Playing back sound files is not as musical as being able to manipulate the sounds as they are occurring," continues Reisberg, "as, for example, a saxophone player is able to manipulate tamber by blowing harder or softer, fingering, etc. The goal as we see it is that simply sampling-based devices are not going to be musical tools of the future, but rather research tools now which lead into analysis, synthesis type tools. And for that reason Synclavier has concentrated on large capacity disks, special computer power and long samples. It is a digital sound modifier."

360 System's PCM Keyboard

was also inspired by the Chamberlin and Mellotron. Bob Easton says that he began development of the 360 PCM about ten years ago while engineering for Frank Zappa. "He had a lot of enthusiasm for it and I had to go through great pains to explain to him that it wasn't possible at any price back then." Today, the 360 PCM sells for about \$5000.

Using EPROM (erasable, programmable read only memory) chips, the 360 PCM can hold 16 preset voices, all replaceable by popping the lid and inserting new voice chips. To create the voices, Easton explains, "We go into the studio with top quality session players. We have them play all of their notes in different ways... with vibrato, without vibrato, etc. And then we sit down with a razor blade and splicing block and create a string of notes, uniform in quality, style and performance. Then we take those edited recordings and run them through an analog to digital converter and transfer them to a floppy disk. From that point on we do a lot of computer analysis of the sound and eventually come up with digital data which is stored on an EPROM chip, its final home, The 360 PCM then reads what's in the chips and does a mathematical process to reconstruct the sound. The 360's sample time is eight seconds.

Scheduled for release very soon by Kinetic Systems is a twelve voice sampling system for less than \$10,000 that can stand alone with its own Keyboard or interface with their Prism digital synthesizer. Kinetic's Rick Ariail says that it will be an eight bit companding system with storage on a five inch floppy disk and eight seconds of total sampling time available to distribute among the samples taken. User sampling will be enhanced with controllable envelope generators, eight discrete outputs and eight assignable real time controls.

The percussion progeny of Harry Chamberlin's early drum machines are also now blossoming in digital splendor in units such as the Oberheim DMX and the LinnDrum.

Roger Linn was a musician who bought a computer in 1975. He had wanted to buy a drum machine for his 4 track studio, but they were a lot of money. So he decided to write a little program that would put out electronic pulses. Soon he had gotten a drum generator board, hooked up the electrical connections to it and wrote a program on the computer that would have on-screen representation of the music. And by pushing the space bar

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he could play a representation of bass, snare, etc. He kept improving it and decided that he needed a better sound, so he focused on the sampling idea.

Says Linn, "The nice thing about drums is that you don't have to sample very long, because they don't last so long. Cymbals are 4 1/2 seconds long, high hat 3/4 seconds, snare drum is about 1/3 of a second.

"The process of programming a sound into the Linn Drum machine involves recording real drum sounds on tape, then going into the computer room and playing the tape into the digital conversion program. It loads it in, taking all the samples off the tape and converting them to a memory file. Then I'm able to play it back out of the computer's memory, and if I decide I like it I'll just store it on the disk where I can make it into a programmable memory chip."

The original drum machine that Linn produced was the LM-1. This machine had kick, snare, hi-hat, rack tom, floor tom, and various percussion; all of these sounds being sampled from the actual source and being programmed and sequenced.

In June of 1982 Roger presented his new machine, the Linn-Drum. In addition to the functions and sound of the LM-1, it had a wide range of new innovations, including tunable tom-toms, snare drums, and cymbals for a price of \$2,995, as opposed to \$5000 for the LM-1. This cost reduction was mainly possible due to the decrease in the cost of memory.

berheim's DMX also uses an eight bit companding system with a separate EPROM-DAC circuit for each sound, allowing eleven discrete outputs. Most of the drum sounds on the DMX began at the hands of Peter Erskine, a drummer well known for his work with Weather Report. Those basic sounds can then be modified using the unit's envelope filter circuitry for further tailoring. For overdubbing, the DMX can synchronize to tape. List price of this machine is \$2895.

... Digital sampling is now bringing about a rapid growth in musical products and applications. Art and technology have become nowhere more intermingled than in this area. "This is computer music," says Roger Linn. "It used to be the purpose of a painting was to capture the likeness of a person. As soon as photography happened there became abstract art. Realism was no longer needed. And this is the future of sampling.

Sampling is the photograph and, once the photograph is there, the artist can change it.

Alan Howarth has over fifteen years of synthesizer experience with programming credits for Weather Report's *Mr. Gone* and *8:30*, Tom Scott's *Street Beat*, and soundtrack and special sound effects work on "StarTrek—The Motion Picture," "Star Trek II—The Wrath of Khan," "Escape From New York," "Raiders of the Lost Ark," "Airplane II," "Halloween II," "Halloween III" and "Poltergeist."



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Sequential Circuits, in conjunction with several other manufacturers, has pioneered the development of an easy-to-use system for interlacing synthesizers with one another and with home computers. The MIDI-equipped PROPHET-600 can be connected with one cable to any other MIDI-equipped instrument. For example, when two PROPHET-600's are interfaced, either keyboard can control both synthesizers, allowing four oscillators per voice and two different programs sounding simultaneously! The MIDI is also compatible with home computers for program storage, patch print-out, music notation, sequencing, and multi-keyboard orchestration.



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Sequential Circuits, 3051 N. First St., San Jose, CA 95134

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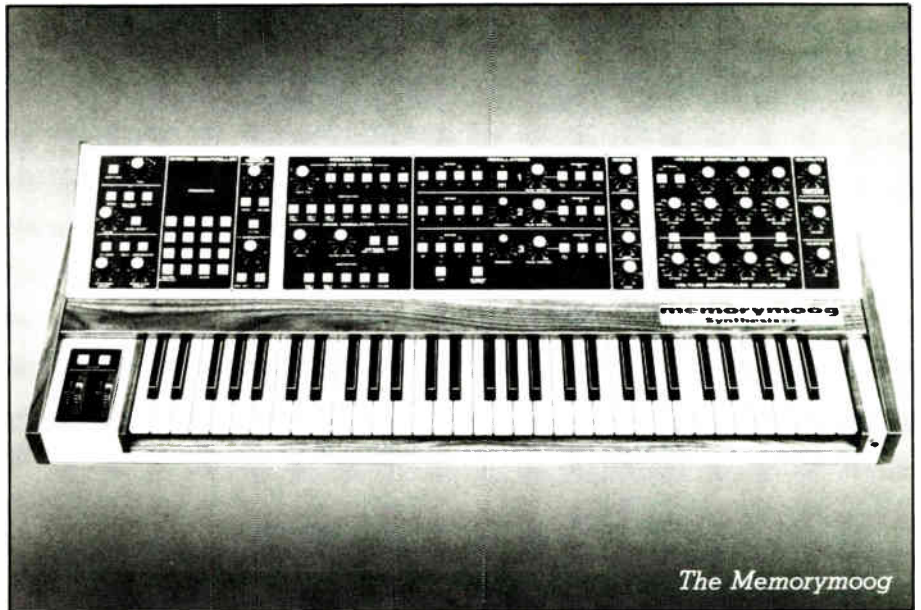
The Trident's memory contains 32 programs, with full editing capability and an 8-second cassette load/dump routine. Other features include a built-in flanger assignable to any of the three sections; 4-way joystick for pitch bend, vibrato and trill; control-voltage input for volume control of any section or combination of sections; three octave settings and "ensemble" or "solo" (clean) sound in the string section with built-in compander noise reduction on the ensemble effect; bowing effect on the strings; stereo output; LED switch indicator; and more.

The new Poly 61 is a six-voice programmable polyphonic synth with two oscillators per voice, 64 programs, arpeggiation, 8-second cassette load/dump, etc. It's got virtually no front-panel controls—a "Digital Access Control" system enables programming with eight numbered switches and UP and DOWN buttons. You select a parameter by number, then hold the UP or DOWN buttons until the desired value is displayed. The Poly 61 will retail for *less* than the Korg Poly Six—around \$1500.

Circle #038 on Reader Service Card

## MOOG

The Memorymoog is a six voice programmable polyphonic instrument, with each voice similar to the Minimoog; with three oscillators generating sawtooth, triangle and rectangular pulse waveforms, the patented Moog filter and two four-part contour generators. Each voice card



The Memorymoog

can use oscillator 3 and the filter contour for voice modulation with inversion and contoured modulation. A separate LFO modulation section with programmed amount is provided for overall modulation effects.

The Memorymoog holds 100 programs in its digital memory. A cassette interface allows storage of additional programs. The factory programs provided in the Memorymoog were developed by some of the most influential people in contemporary music: Jan Hammer, Wendy Carlos, Larry Fast, Tom Coster, Dominic Milano, Bill Wolfer, Don Airey and others to give the Memorymoog a wide variety of

programmed sounds and effects.

For easy program access during live performance, up to 20 program locations can be "linked" together to form one chain and cycled through with a single button or footswitch. There are 10 chains available.

The Memorymoog has a 61 note "intelligent" keyboard with polyphonic glide, three monophonic and four polyphonic modes of operation to accommodate a variety of playing styles and techniques. A hold button is provided that memorizes chords and allows them to be played and transposed with one finger. The keyboard is further expanded by a 9 mode arpeggiator with auto trigger that can be clocked from an external source for compatibility with rhythm machines. Other features include two programmable footpedal inputs, 5 footswitch inputs, programmable volume and an external monophonic synthesizer interface.

Circle #039 on Reader Service Card

## OBERHEIM ELECTRONICS, INC.

The OB-8 has all the features of the OB-Xa, plus several additions. The Programmable Arpeggiator plays one note at a time in the order played: up, down, up and down, or randomly; it can be assigned to either or both halves of the synth in Split or Double mode, or set to arpeggiate only notes being played on the keyboard and/or held by the Hold feature. In addition, arpeggiated notes can be transposed by up to five programmable intervals.

Three LFOs now have a range from .07 to 50 Hz and 12 waveforms—including some that reset to a



The Oberheim OB-8

# SDE-2000

Digital Delay



The SDE-2000 gives you the features and performance you demand in a digital delay, plus the quality and innovation you'd expect from Roland. Roland developed the SDE-2000 to satisfy the high signal quality standards of sound engineers, and also offer unique operating features for dramatically enhanced performance.

Delay times can be set at will from 0 to 640 mS, selected by two switches which automatically vary the delay times either up or down in 1 mS increments. A X2 switch enables any selected delay time to be doubled (up to 640 mS) for quick access.

The SDE-2000 contains a large capacity memory system (16k byte RAM) and a high resolution (12 bit) A/D converter to provide both low noise operation and high fidelity sound with full bandwidth.

A unique Modulation section on the SDE-2000 provides two waveforms where other digital delays only have one. The standard sine-wave is used for doubling and flanging effects while the triangle wave is used for the popular chorus effect. Other operating features include a highly variable input sensitivity, Feedback section with a single repeat mode, mixed and Direct signal outputs and remote jacks for control of Delay, Single Delay, Modulation and Repeat Hold.

 Roland

## Incomparable Specifications

### SDE-2000 Digital Delay Specifications

<b>Input Level</b>	+4 dBm (+29 dBm max) -20 dBm (+5 dBm max)
<b>Input Impedance</b>	56 k $\Omega$
<b>Output Level</b>	+4 dBm (+18 dBm max)/600 $\Omega$ load -20 dBm (-8 dBm max)/10k $\Omega$ load
<b>Output Impedance</b>	100 $\Omega$ / +4 dBm position 650 $\Omega$ / -20 dBm position Mixed 550 $\Omega$ / -20 dBm position Delay
<b>Delay Time</b>	0 to 640 mS in 1 mS steps
<b>Delay Accuracy</b>	-0.5%
<b>Frequency Response</b>	10 Hz to 100 kHz (Direct) 10 Hz to 16 kHz (Delay 0 to 320 mS) 10 Hz to 7.2 kHz (Delay 0 to 640 mS)
<b>Signal to Noise Ratio (IHFA)</b>	90 dB (Direct) 80 dB (Delay)
<b>Dynamic Range (IHFA)</b>	Greater than 12 dB (Direct) Greater than 90 dB (Delay)
<b>Harmonic Distortion</b>	Less than 0.05% (Direct) Less than 0.2% (Delay)
<b>Dimensions</b>	19" (W) X 1.8" (H) X 14" (D)
<b>Price</b>	\$1150.00

programmable point in their cycles each time a key is hit. The LFOs have independent envelope generators that enable delayed Vibrato or Tremelo, plus Phase Select, Keyboard Track, Quantizing and Envelope Modulation.

The OB-8's memory holds 120 Sound programs, 12 Split and 12 Double programs, and a new selectable program cassette feature. Other improvements include programmable Pitch Bend, programmable Volume, external Pan Pots and a provision for a volume pedal.

Circle #041 on Reader Service Card

## PASSPORT DESIGNS

The Soundchaser system is designed for use with the Apple II home computer system (48K minimum—with 64K, the sequencer can store up to 21,000 notes). The kit consists of a music keyboard; an interface card and Mountain Computer Music System voice card with 16 oscillators; connecting cables; and two software disks.

With Soundchaser, you can draw waveforms on the CRT screen or compute them from data stored in the Wave Table. You can also draw or compute the waveform for modulation

of each sound. Each oscillator in the system has its own octave and an ADSR which can be linear or logarithmic; each has its own programmable delay, enabling the sequencing of waveforms for more complex sounds.

The Turbotraks 16-track digital recorder, included in the Soundchaser software package, functions as a "virtual tape," but since it operates completely in the Apple's RAM it works instantly. Once a note list has been stored on a "track," it can be assigned to any voice program—meaning that you can orchestrate in real time. You can also do punch-in, sound-on-sound and overdubbing operations the same as with a tape deck.

Other Passport software includes the Notewriter system, a music editor and music printing package; and the Music Tutor, an educational software package.

Circle #042 on Reader Service Card

## RHODES KEYBOARD INSTRUMENTS

The Chroma, already equipped with its own internal computer, can now be fitted with an interface kit

enabling use of an Apple II computer. The interface kit includes a circuit board which plugs into the Apple, plus connecting cables and software disks. In fact, it's possible to control two Chromas at the same time, or the new Chroma Expander Chassis (a keyboardless Chroma which doubles the sonic power of the instrument).

According to Rhodes' inhouse keyboard whiz, John Shykun, the interface package "lets the Apple do anything with the Chroma that the operator can do using the keyboard and all the various hand and foot controls," including setting up voices, simulating keystroke velocity and pressure, and cassette load/dump.

The package includes a Sequencer program with storage of approximately 1900 notes, allowing the operator to "record" a musical sequence in the Apple's RAM and then play it back while playing a new part—and storing it all on disk, editing, changing tempo, etc.

Applesoft or assembly language may be used to write programs to control the interface. "Packets" of data may be exchanged for real-time changes in the Chroma's settings.

Circle #043 on Reader Service Card

## ROLAND

The new Juno-60 is a programmable version of the Juno-6. Features common to the two include five-octave keyboard (with a seven-octave range), digitally-controlled oscillators, VCF, HPF, VCA, LFO, Arpeggiator, Transpose, and Chorus. The Juno-60's improvements include a digital communication Buss, which enables use of the Roland MicroComposer, digital sequencers, etc.; Tape load and dump; remote-switchable Patch Shift; 56 Patches online (seven banks of eight programs each); and a price tag of only \$1795.

Roland has also introduced the OP-8 Interface, which links together the Jupiter-8 synthesizer and the Roland MicroComposer. When these two units are working together, the MicroComposer can be programmed using the JP-8 keyboard, the MC-4's keypad, or both. Up to four pairs of voices can be programmed to include pitch, rhythm, dynamics, tempo, etc. Other features of the MicroComposer include internal tape sync, digital storage, and full synchronization with other Roland rhythm machines and sequencers.

The Compu Music system, available in versions for the Apple II, NEC PC-6000 and PC-8000 computers, is a hardware and software package for computer synthesis. The hardware portion, called the CMU-800R, is a six-voice music synthesizer

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**Garfield Electronics**

# DOCTOR CLICK™

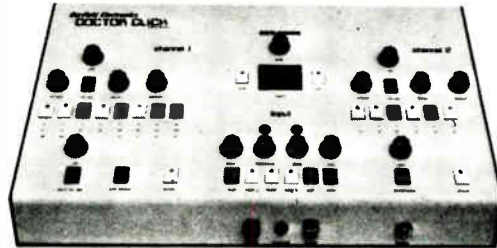
The Doctor Click Rhythm Controller makes it possible for the first time to synchronize the world of sequencer, drum machine, synthesizer composition with any one of the systems on the market or combinations of the systems on the market. Furthermore, the Doctor Click will cause sequencers, drum machines and synthesizers to play in time with a human drummer. It will also read click tracks and sync codes. The internal metronome provides both beats per minute and frames per beat calibrations.

## THE DOCTOR CLICK RHYTHM CONTROLLER BREAKS THE BRAND BARRIER

SEQUENCERS		DRUM MACHINES		SYNTHESIZERS*	
DSX	Bass Line TB303	Linn LM-1	CR5000	Prophet 5	OBXa
Prophet 10	CSQ600	LinnDrum	CR8000	Prophet 10	OB-SX
Polysequencer	SH101	DMX	CR68	Minimoog	JP4
Pro One	Emulator	TR808	CR78	Memorymoog	JP8
Model 800	Fairlight	Drumatics TR606	KPR-77	Moog Rogue	Juno 6
Microcomposer MC4	Synclavier			OBX	Juno 60
				Modular Moog	Polysix

\*(VCA, VCF, VCO, Gate, Trigger or Arpeggiator as provided on each unit.)

Measures  
17½" x 11" x 4½" x 2½".



Weight is 8 pounds.  
Warranty is one year.

## ONE DOCTOR CLICK CONTAINS ALL OF THESE PROBLEM SOLVING DEVICES

4 Fixed Clock Outputs  
2 Variable Clock Outputs  
2 Metronomes  
2 FSK Sync Code Decoders  
(Covers Linn, Oberheim, Roland)

2 Rhythm Envelopes  
Pulse Counter  
Pulse Shaper  
Gate Output

Headphone/Speaker Output  
Roland 5 Pin DIN Sync Output  
External Clock Input  
Footswitch Controls

The brand to brand problems of timebase, voltage level and polarity are solved by the Doctor Click's diverse output capability.

The ability of the Doctor Click to connect to many units at once coupled with its footswitch control capability makes it ideal for multi-sequencer, drum machine, synthesizer live applications.

Since the Doctor Click metronome produces beats per minute and frames per beat calibrations it is always convenient to get just the tempo you need. It is even possible to get fractional tempos such as 118½ beats per minute.

The Doctor Click's two independent rhythm actuated envelopes allow VCF, VCA and VCO parameters of synthesizers to be modulated in 32 rhythm values ranging from four measure cycle to 64th note triplet with variable attack, decay, sustain and amount. This eliminates the problem of rhythmic drift when using a conventional LFO.

The ability of the Doctor Click to transform metronome click tracks into timebase clocks allows frames per beat music film work to be

done with virtually any sequencer, drum machine or synthesizer. The ability of the Doctor Click to read live tracks allows sequencers, drum machines and synthesizers to play in sync with the varying tempos of a human drummer or a built click track. The ability of the Doctor Click to accept external clocking or either of the types of FSK sync to tape codes allows sequencers, drum machines and synthesizers to be synced to any existing track. The pulse shaper circuit turns a pulse from an instrument into a trigger waveform allowing synthesizers to sync to a drum fill. The headphone output allows click tracks in multiples of the tempo to be generated and is capable of driving a speaker. The pulse counter can be used to program sequencers in higher timebases, quickly combining greater rhythmic resolution with step programming accuracy. The step programming switch can be used to step program sequencers that normally do not have this capability.



DESIGNED & SOLD BY GARFIELD ELECTRONICS, P.O.B. 1941, BURBANK, CA 91507 (213) 840-8939

and seven-voice drum synthesizer. Programming is done with the host computer using Compu Music Software, which breaks music down into basic elements of timing, pitch and

phrasing. Music is entered note by note, then edited and arranged. The CMU-800R hardware retails for \$495.00, the Compu Music software disk for \$70.00.

Circle #046 on Reader Service Card



The Roland Juno-60

## SEQUENTIAL CIRCUITS

The new T-8 is a touch-sensitive, eight-voice programmable polyphonic synthesizer with a 76-note wood keyboard and 128 presets in a unit that weighs less than 60 pounds. A chord stacking function enables the player to build a chord of up to eight tones, then get the same intervals with a different fundamental by pressing just one key; the programming section layout is the same as the Prophet synths, but the filters have been changed to make the low end a little richer sounding. Other features include polyphonic glide and a built-in 600-note sequencer.

The velocity sensitivity area of the T-8 has four controls: Attack/Decay, Release, Filter Envelope, and VCA Envelope. The two Envelope knobs can be adjusted for either positive or negative voltages, because each keystroke can call two programs. You can set the T-8 up so that a light touch plays one sound and a harder stroke crossfades another patch with different characteristics.

The pressure sensitivity feature of the T-8's keyboard can be used to control Pitch Bend; detune one or both oscillators; vary the Filter's cutoff frequency, VCA amplitude, modulation, or LFO speed.

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## THERE'S MORE THAN MEETS THE EYE!

Beneath the familiar exterior of the OB-8 lies an assortment of very useful and unique features which we call "Page Two." By pressing a button, over half of the front panel controls assume a new identity allowing access to many features previously unavailable. Take Page Two, and combine it with the already proven features of its predecessor the OB-Xa, and you have one of the most versatile eight voice polyphonic synthesizers available. It also happens to be the lowest priced.

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- Intelligent Arpeggiator
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- Programmable Volume
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  - LFO's are triggerable from Keyboard
  - LFO's can have Envelope Modulation
  - LFO's can track Keyboard
  - LFO's can be quantized
  - LFO's can be set out of phase
  - VCA Modulation
- Volume Pedal Input
- Quantized Portamento
- Programmable Pitch Bend
- And more.

Suggested Retail Price: \$4395.



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# Getting That Drum Sound

by Gary Platt

Gary Platt is a freelance session engineer and producer. Among his many credits include: Adrian Belew, Ohio Players, Spyro Gyra, Slave, Midnight Starr and Sun. Mr. Platt is a guest lecturer for the Full Sail Recording Workshop.

"I WANT THAT BIG, LIVE DRUM SOUND" seems to be the epidemic comment of drummers, producers and engineers these days. You can go crazy reading articles and interviews dealing with the subject and yet seldom are the real specifics included. This article deals with a specific method for going about getting a big, live drum sound and more.

## DRUMS

Okay, a little common sense will get you a long way, so make sure the shells are of good quality and in good shape. Fiberglass, plexiglass, wooden and metal shells each have their own tonal influences on the sound. Most commonly used are fiberglass or wooden or a combination of the two for kick drums and tom-toms. Metal snare drums are popular due to their lively sonic quality; wooden snare shells tend to be mellower with a very solid fundamental tone quality. The main thing is that the shells are of good quality and are as true to round as possible.

Large-sized tom-toms are not always the best for a "big, live drum

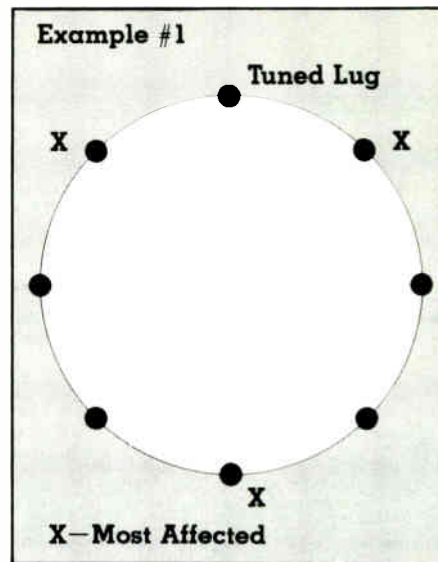
sound." Each drum has its own tonal register and needs to be tuned within those confines. Tuned too high, the drum can sound ringy and ill-defined; tuned too low, a flabby almost distorted sound occurs. Often drummers tune large toms too high and then tape all kinds of garbage to the head to compensate for the ringing. In fact, smaller rack toms ranging from 8" to 14" can be tuned lower and often achieve a larger sound, for example, than a 16" rack tom. If a large 18" or 20" floor tom is used instead of the commonly used 16" floor tom, the tonal register may be so low that in a recording the tone may be totally lost... all that is heard is attack.

## HEADS

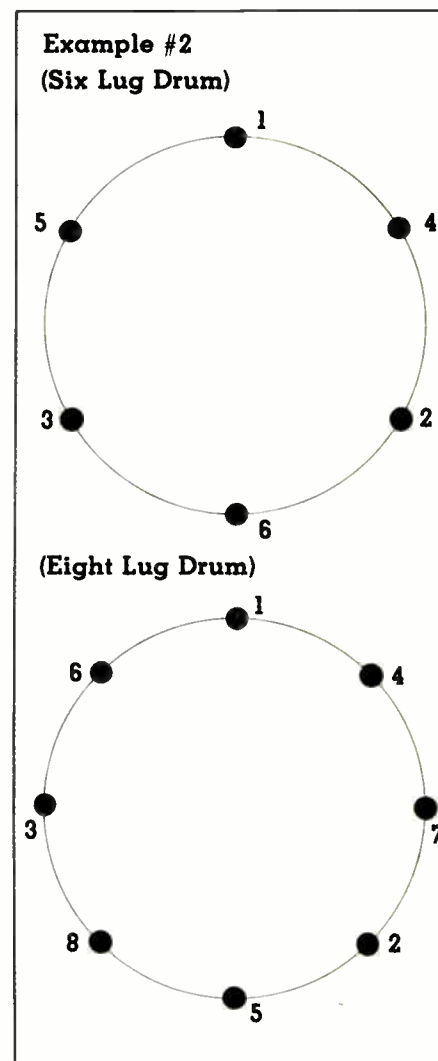
The most important single element of achieving a particular drum sound is the weight and style of drum head used. Above and beyond the microphones, console EQ, room placement or the drummer, is the importance of the proper drum head.

What's a real good choice of drum head for a big, live tom-tom sound? I suggest using a Remo clear Ambassador drum head. Nothing is attached to the head to dampen it so you can change the sound any way you'd like. Remember, it's easy to dampen the sound of a lively head but virtually impossible to liven up a commercially dampened head.

Black dot heads have an extra black polyester dot (about 3") laminated to the clear head for strength and dampening (no, it's not a target—if you need a target then it's time to



put the drums away). The attack is not as bright as a clear head but will work well for a lively sound. White coated heads, originally designed for brushes, have a sharp attack but don't always wear well on toms, though they're usually excellent for snares. Pin Stripe and Evans oil-filled are both double laminated types of heads, the latter using oil between the double plys. These work well for live stage playing



since they are well dampened, strong and easy to tune. These are a bit dead on toms for most studio use. Cowhide is a very elastic, natural sounding material with a soft attack. Unfortunately, cowhide heads are expensive, hard to find and very susceptible to heat and humidity changes. To simulate this sound, Fiberskyn II heads by Remo were developed. These are perfect for a very dull, dead sound. Duraline heads are made from a bullet-proof woven material called "Kevlar" which is shaped into a head with a hoop attached. To say the least, they seldom if ever ring and are very dull and dead. Duraline heads are most often used for live stage snare drums. PTS or pre-tensioned heads are new from Remo and come already tensioned to a particular tone for easy tuning. There are no lugs used with these heads. Instead, a tensioned clip is attached to the shell and rim.

**H**eads usually come in three weights. Remo divides them into a) Diplomat (lightweight, delicate); b) Ambassador (medium, most commonly used); and c) Emperor (heavy, gorilla-proof).

Change heads as often as needed and then some. If you see dents, cracks and sagging or hear

ringing that can't be tuned out or the sound is lifeless, then get a new head immediately. Changing heads can seem expensive but so is the studio time it takes to wrestle with an old worn-out head. The sonic difference can be amazing. Be sure to use heads that have a metal hoop instead of plastic. Metal hoops help keep the head consistently round and that is important for a good tonal quality.

As a session progresses keep checking the tuning and sound of the drums—what starts out as a great sound in the sound-check can deteriorate significantly by the time the tune gets onto tape.

### TUNING

Drums are meant to be tuned to tonal pitches. You'd be surprised how often they are not. How the head is initially tensioned greatly affects the tonal quality and ease of tuning the drum later. The object is to tension each lug evenly around the head, at least initially. To do this, a proper tensioning technique must be used. Most drummers tune each opposite lug. While this technique isn't wrong, a better one exists. When each lug is tensioned, three other lugs are most affected; both on each side and the one opposite (see example #1); therefore, try tuning around in thirds where

the head is less likely affected by each lug tuned (see example #2 for an eight and six lug drum). Tap inside the head about 1 1/2" in from each lug to fine tune. Each lug should give relatively the same pitch around the head. This method insures a truly even tuning.

Later, after the tone desired is evenly tuned across the head, try detuning a couple of lugs next to one another for a more "diving" tom sound.

### TONALITY

Now for the main objective. The idea, according to the Plattski method, is to get the toms tuned to pitches and tones that best complement the music recorded. The drum set can sound absolutely incredible by itself and positively lousy once music is added. No matter what style of drums a producer may want, the tuning of the toms can make a good drum sound even better. Remember to keep the pitches within the tonal range of the drum.

A practical approach to getting the toms in tune with the music is to ask the piano or guitar player to play the verse/chorus of the song you are going to record while you tune each tom-tom. Toms are normally tuned each high to low from the drummer's

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left to right. Be sure to tune each to a different note or octave. Also, try putting a towel over the other toms not being tuned so that the sympathetic ringing doesn't fool your perception of the pitch. Keep tuning until a pitch and tone quality is reached that is even and "in tune" with the music.

Another approach is to ask the guitar or piano player to hit the root or "I" chord of the song. As he plays that chord, tune the toms to the general area that sounds the best to your ear and the chord, then fine-tune on your own.

Now, let's assume you know a little about music theory. Ask the musicians what key the song is in and walk to the piano and play that chord for yourself. Then, realizing what notes are in the chord, tune the toms so they are in consonant pitches relative to the key. Usually toms are tuned to roots and octaves, perfect fourths or fifths, sixths or thirds. Try to stay away from seconds and sevenths since the sympathetic ringing can cause problems when a fill is played.

Kick drums are best if tuned as low as possible but be careful not to lose the tonal quality. You'd be surprised how low they can be tuned. Very often the kick drum is tuned too high. Since the kick is usually of indefinite pitch, it's not necessary to tune to a particular note, just low and gutsy.

**S**nares are infinitely variable in tuning, crispness and width. The most important thing to remember is that no matter how high or low, wide or tight, the "life" should always be in the drum. The top and bottom heads work together with the snares to give the sound. The snare's tightness regulates the width and can effect the pitch by dampening the bottom heads if they are tight. Very often the top head will be de-tuned almost totally at a couple of lugs to help eliminate ringing. Be careful to constantly check the heads of the snare drum since it is beaten most often. It is very important to change the bottom head and snares occasionally because they wear out sooner than you'd think. If the bright, crisp snare sound is not happening, change those snares and heads immediately. Often the snare drum will buzz sympathetically when a tom is hit. Instead of putting all kinds of tape and cloth everywhere, retune the tom that causes the buzz or retune the snare heads until a tolerable sound is achieved. Never put tape on the bottom head of a snare or across the snares. All that junk just adds mass to the head and takes the life out of the drum. Use the tuning key and dampen correctly.

## DAMPENING

Depending on the session, the toms and snare may need to be damped more or less to suit the producer's taste. This helps to check ringing, tonal bleed and can be used to make the duration of each tom equal.

**T**o dampen a drum effectively you'll need to find the most optimum spot to place dampening material. Placing tape randomly around the head only adds mass and doesn't necessarily do the job properly. To find the best dampening spot, run your thumb around the inside edge about 1½" in from the rim, apply consistent pressure and strike the center at the same time. You will notice that certain areas dampen the drum more than others. It is these places that are the most effective in dampening. Place a small amount of duct tape and/or cloth near the very rim at one of these areas. Don't use paper towel, masking or adhesive tape since they create their own problems.

## DEALING WITH DRUMMERS

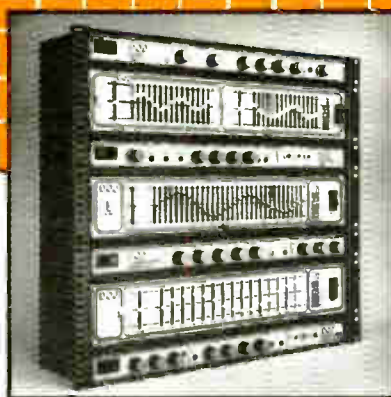
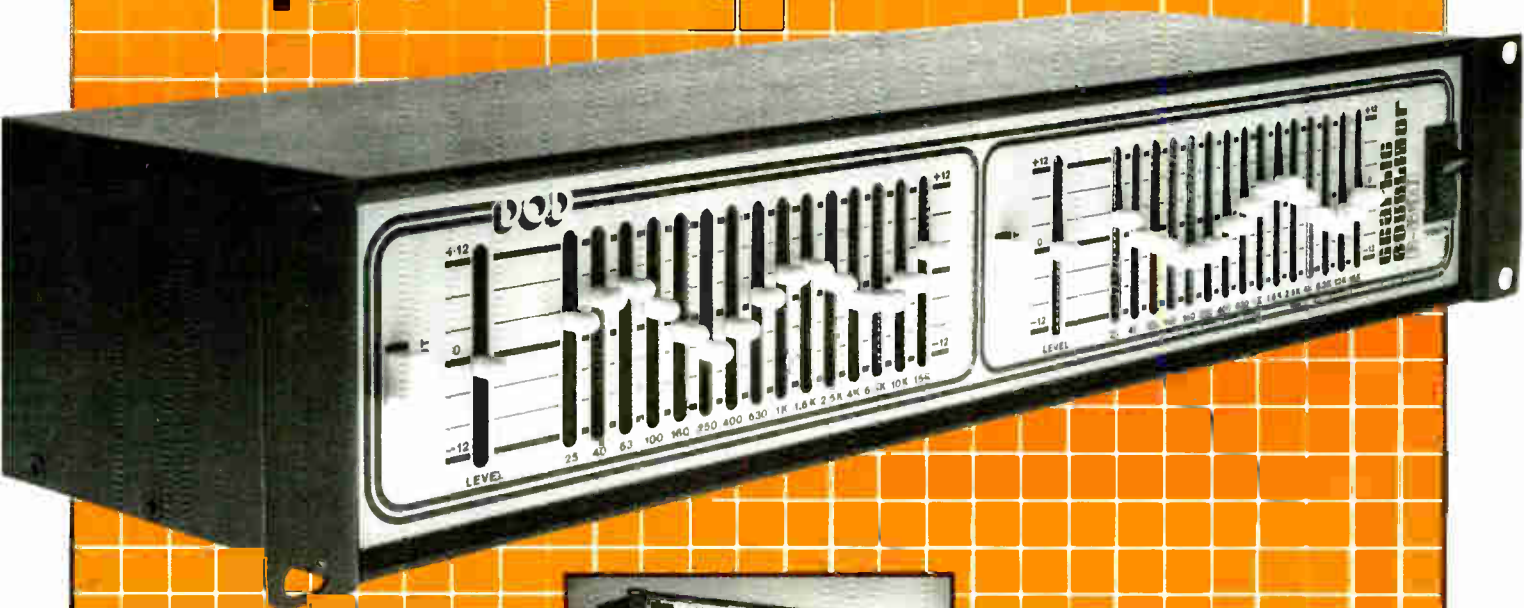
Okay, so far only the drums have been discussed. What about the drummer? As an engineer, the most important job (aside from getting great sounds) is to get along well with everyone. If you are working with drummers like Larrie Londin, David Kemper or Steve Gadd, forget about touching the drums; they'll get a great sound on their own. Often, though, self-contained bands have drummers who could use a little help in the studio. The first order of business is to make friends with the drummer. If the sounds are not happening from the drums, find a tactful way to suggest that maybe he or she might consider a few suggestions (usually changing all of the heads). Often I'll change one tom head to a new clear Remo and let the drummer hear the difference in the recorded sound. Ninety nine percent of the time that's all it takes. Once you establish yourself as an engineer known for good drum sounds, most likely your clients will be delighted to let you set the drums. Just don't be pushy—it'll get you nowhere.

Secondly, the drummer should really pound the drums; whimpy drummers get whimpy sounds. The drummer's stroke can make or break the drum sonics, so let the drummer know it's okay to "get down" on the kit.

Coming up in the second half:

- Microphone Technique
- Room Placement
- Console Techniques
- And More

# Dual 15 Band Graphic Equalizer R-830



## Description

The DOD R-830 is a solid state dual 15 band graphic equalizer which is designed for mounting in a standard 19" rack. The DOD R-830 is intended for acoustic and room equalization to minimize unwanted resonance and compensate for specific frequency sound absorption.

The R-830 is mounted in a rugged, extruded aluminum case with heavy top and end panels to resist warps and dents.

Two sets of 15 bands on 2/3 ISO centers with 12 db of boost or cut... in-and-cut switch which does not disturb the balance condition... level control with 12 db of boost or padding... 1/4" balanced and unbalanced input and output jacks... illuminated power rocker switch.

## Specifications

Frequency Response:  
10-40 KHz.  
Total Harmonic Distortion:  
Less than 0.01%.

Intermodulation Distortion:

Less than 0.01%

Signal to noise ratio:

95 db.

Maximum Output Level—Balanced:

20 dbm (ref: 1mW/600 ohms).

10 Vrms into 10K ohms.

Maximum Output Level—Unbalanced:

17 dbm (ref: 1mW/600 ohms).

5 Vrms into 10K ohms.

Output Impedance—Balanced:

940 ohms.

Output Impedance—Unbalanced:

470 ohms.

Maximum Input Level:

+20 dbm (ref: 0.775 V).

Input Impedance—Balanced:

66K ohms.

Input Impedance—Unbalanced:

33K ohms.

EQ Control Range

± 12 db.

EQ Center Frequencies:

15 bands: on standard 2/3 octave.

ISO centers (25 Hz 16 kHz).

Level Control Range:

± 12 db

In/Out Switch:

EQ bypass, does not disable balanced input and balanced output.

I/O Connectors—Input:

One 1/4" phone jack (balanced).

One 1/4" phone jack (unbalanced).

I/O Connectors—Output:

One 1/4" phone jack (balanced).

One 1/4" phone jack (unbalanced).

Dimensions:

3 1/2" x 6" x 19"

**Electronics Corporation**

2953 South 300 West  
Salt Lake City, Utah 84115  
(801) 485-8534

# LUNCHING WITH BONZAI



PHOTO MARTINI

## by Mr. Bonzai

This was a fast-food-for-thought lunching. Usually, I uncork a bottle of Beaujolais and mingle with a person's thoughts before engaging in the main course. With Kim Fowley, the situation was different.

As a recording artist, Kim Fowley gained recognition long ago for "Alley Oop," the 1960 hit by the Hollywood Argyles. Since then he has published stacks of lucrative songs and produced such diverse artists as The Runaways and Helen Reddy. He was the first white artist on Island Records with "The Trip," a drug related record which was debated in the Houses of Parliament as immoral. He was consultant and master of cere-

# KIM FOWLEY

---

# STUDIO GUNNER

monies at The Toronto Rock Festival, which featured The Plastic Ono Band. He has worked with Leon Russell, Paul Revere and the Raiders, produced the new music for "American Graffiti," wrote "Nut Rocker," which was recorded by B. Bumble and the Stingers, as well as Emerson, Lake, and Palmer, and he recently added his spoken words to an album which includes Allen Ginsberg and Charles Bukowski. The guy gets around.

I was expecting a phone call which would direct me to a recording studio where I would meet Kim on the job. Instead, I received a call from his home in Las Vegas and he informed me that he was leaving momentarily for Australia to score a film about the missing years of Jesus Christ. Grab

your Alka-Seltzer and get ready for some staccato burst of record industry insights and machine gun philosophy.

### ARE YOU AN ARTIST?

No, I am not an artist—it isn't my job to be one. I am a person who works with a recording artist and delivers a tape so that it can become product. It's a job like cleaning bathrooms and I clean a lot of tile. I am a mechanical craftsman. Let the person making the record be the artist. It's like being a hit man. "Here is a list of victims—make sure they die by the weekend." Making hit records and being a hit man are the same thing.

### HOW DO YOU CHOOSE THE PEOPLE YOU WORK WITH?

They choose me—they hire me.

### DON'T YOU EVER GO OUT OF YOUR WAY TO PRODUCE AN ARTIST WHOM YOU FEEL NEEDS YOUR PARTICULAR TALENTS?

No, because my particular talents are shared by the entire record industry. My abilities are no different from anybody else's. I just produce hit records consistently. I've been charting every year for 23 years. You take someone who plays well and put them on tape. There's no mystery. I don't discuss motives with people; I make records.

### YOU FOUND THE RUNAWAYS, DIDN'T YOU?

Apparently.

### WASN'T IT YOUR CONCEPTION?

No, it was the public's. I interpreted the public need and the fact that the girls needed to meet the public. I was the pipeline that they flowed through.

### HOW WOULD YOU DESCRIBE YOUR JOB?

My job is providing people with a dream fulfilled.

### WHO HAS INFLUENCED YOU MUSICALLY?

No one. I am only influenced by the need to make a living. My only criteria is making records.

### WHAT IS THE MOST FRUSTRATING ASPECT OF RECORDING?

RDF: Record Deal Fatigue.

### WHEN YOU PASS ON, WHAT WILL SURVIVE OF YOUR WORK?

Repackages.

### WHO IS YOUR BEST MUSICAL FRIEND?

Billboard.

### WHERE DO YOU INVENT SONGS?

I write records, I don't write songs.

### DON'T YOU EVER COMPOSE FROM

### ENTHUSIASM AND INSPIRATION?

No, it is a utilitarian art. If somebody needs a pipe fixed in their bathroom, fix it—don't go into their kitchen and do something else.

### WHAT DO YOU DO THAT IS ENJOYABLE FOR YOU?

I survive—I'm a survivalist. I do everything from a military point of view. I was a juvenile delinquent in high school, which I didn't finish. I enlisted in the army and acquired skills with weapons and was hired in my early adult life to teach people how to use weapons. I drifted into the music business, but my formative work habits were all in the military. I am interested in discipline and orderliness. It helps in my business, because I approach my projects from a militaristic position. Band rehearsals are supervised like boot camp. Airplay is like dropping troops into a territory. I think in terms of military objectives: winning, taking territory, establishing colonies of performing artists for BMI and ASCAP. The platinum record presentation is like a military parade. This interview is propaganda, letting people read this and know that Kim Fowley merely records people, writes and publishes music, directs video. All I do is serve

the artist, the public, and the record companies. I have a total non-biased opinion. I merely enhance the person's dream and I execute it in a precision military way.

### YOU HAVE A HIT NOW WITH THE GROUP, STEEL BREEZE, DON'T YOU?

I have four hits: the Steel Breeze single and album, and there are elements of Joan Jett's albums which I published. May I put myself on the soapbox for a moment?

### CERTAINLY...

We are at the tail end of the vinyl art form. We are coming to a juncture and a transitional time very similar to when the silent film turned into the talking picture. The vinyl record and all that it implies are going to give way to the video—visual experience with sound, a musical performance that is visualized. This is the new art form, if you want to use the word *art*. It is going to be the standard for the rest of the 20th century. I advise anyone attempting to remain in, or enter, the music industry to forget the word *record*. Acquire the knowledge of the visual arts: film editing, lighting, continuity, the difference between video and film, the broadcast requirements, the new technology. Those of

you who don't will fall by the wayside, just like those who didn't know what The Beatles brought—when music changed and suddenly musicians and singers were in the same band—or when FM radio came along with album cuts and album-oriented rock. Charles Chaplin and Buster Keaton didn't heed the warning and when sound came along their art form stopped. They didn't make the transitions, but other people did. The video reality is the new outlet.

### WELL, IS THERE ANYTHING ELSE...

Yes. My mail drop is: Kim Fowley, 6000 Sunset Blvd., Suite 209, Hollywood, California 90028. I listen to every tape, I read every letter, and if there is something I can contribute, I offer you the world. Or if you offer me the world, I am for hire. Have Track Record, Will Travel.

### ONE LAST QUESTION BEFORE YOU GO DOWN UNDER—IF YOU COULD STAR IN ANY FILM, WHAT WOULD IT BE?

The Invisible Man.

(INCIDENTALLY, STEEL BREEZE'S DEMO TAPE WAS ONE OF 1200 DELIVERED TO FOWLEY BY A WAITRESS FROM MADAME WONG'S, A LOS ANGELES SHOWCASE NIGHTCLUB.) ■



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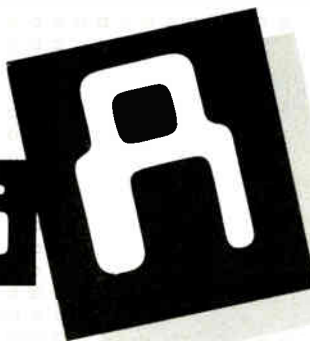
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# DIGITAL DISCUSSIONS

PART VI

## THE 8085



# MICROPROCESSOR

by Ken Pohlmann

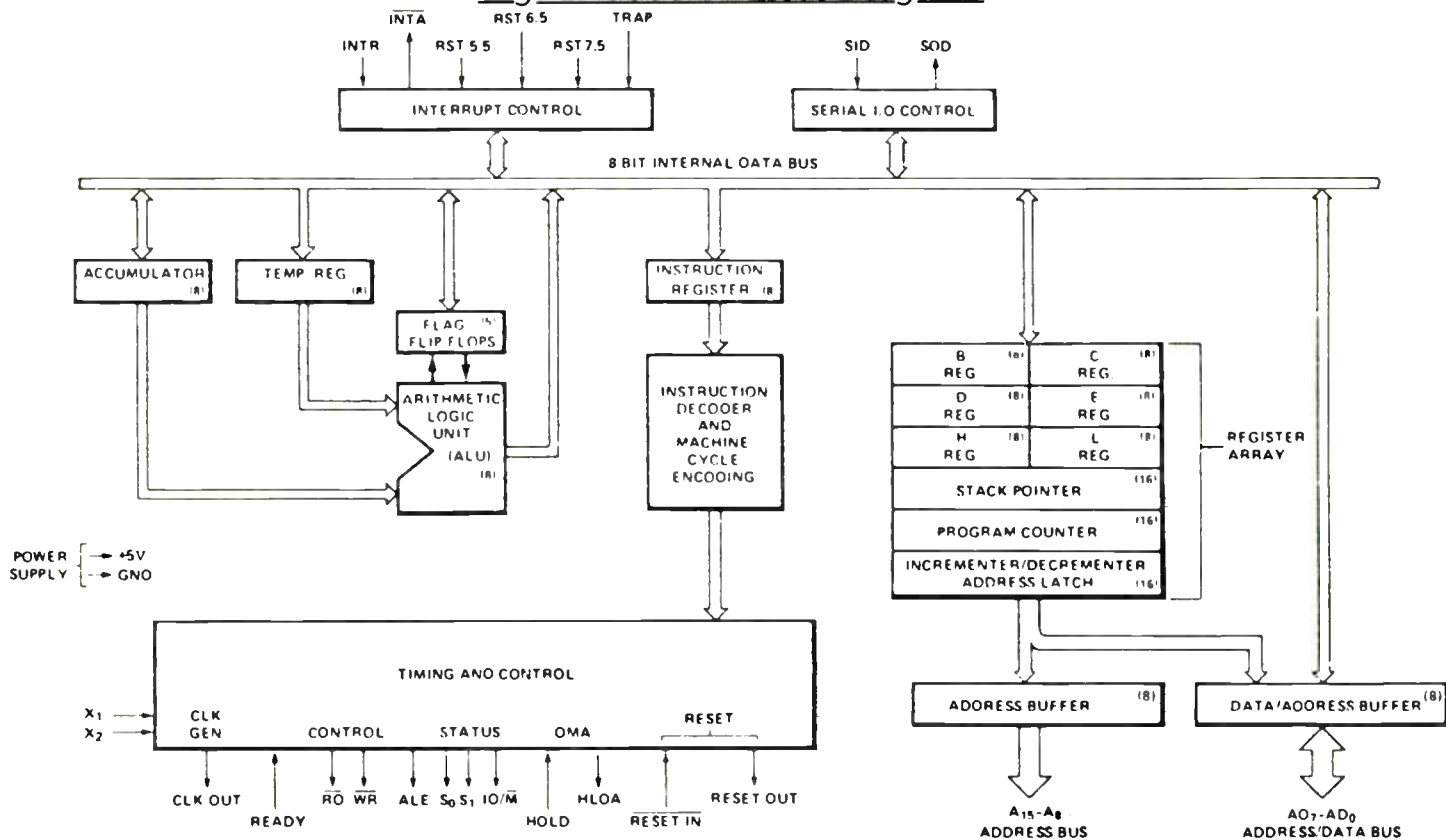
I wandered through my house last night, counting my microprocessors. There are two of them in my

downstairs computer room, and six more in my upstairs computer room, not counting the impatient ones still in parts drawers. For now, eight is probably enough for one person, but on the other hand, I sincerely feel that the

quality of my life would suffer if I had to relinquish any of them. Without the interrelated tools they create, my information processing capacity would probably be cut by two-thirds.

What about you - what's your microprocessor count? You don't have to be stuck in low-paying jobs like teaching or freelance writing to need the information processing capabilities of microprocessors. You don't have to be a sociopath hacker who has painted the walls and ceiling of his upstairs computer room black, and covered the windows with heavy tapestries so he can stare more intently at the video screen. Microprocessors have probably more inconspicuously infiltrated your life. Consider your personal computer, video game, dishwasher, or automobile - they all use microprocessors. And if you work in a recording studio there are certainly handfuls in there, in everything from automated consoles to tape counters/displays. Microprocessors are everywhere because they provide an extremely efficient way of accomplishing sophisticated tasks, and that means almost any task from carburation to return-to-zero. In fact, 1982 was a historic year because during that year we passed an almost unnoticed but remarkable milestone. During 1982 the number of microprocessors in the

Fig. 1: 8085A Pinout Diagram





# WHY OUR SHELVES ARE LOADED WITH AMPEX TAPE, ALWAYS HAVE BEEN, AND PROBABLY ALWAYS WILL BE.

## Consistency. Consistency. Consistency.

Three beautiful words that keep car doors from slamming in our parking lot, phone calls from becoming abusive, and mail from growing hostile.

Words we hear about Ampex tape. Consistently.

Words we hear from extremely reliable sources — our customers.

Time and again.

The professional recording world has a blizzard of tapes to choose from. All with similar base film, magnetic material, binder system and backcoating.

Looking at the specs, it's hard to tell one brand from another. So price and availability make the sale more often than data sheets.

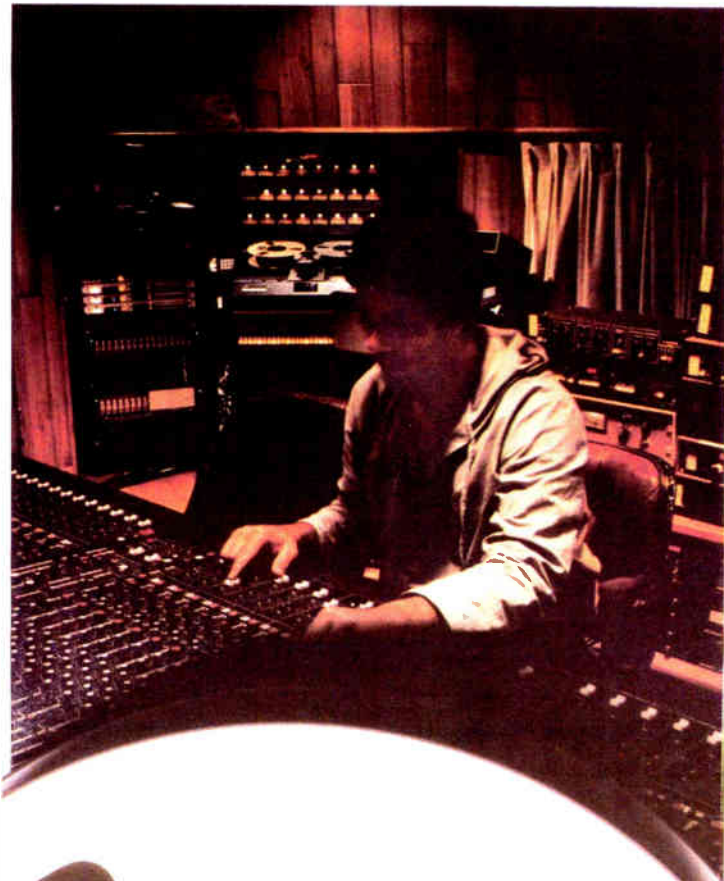
A big mistake.

They're all pretty much the same, but they're not all pretty much consistent.

We've heard too many horror tales about some track on a master tape having to be doctored ever so carefully back to life. Sure he should have been paying attention. But in the middle of a recording, with 24 tracks going, who really has time to reach over and adjust a needle that's suddenly making funny with the VU meter.

With Ampex tape you decide the levels, not the tape. It's consistent.

It has been for years.  
It would be nice if a lot  
more things were



from acoustic design  
to down beat

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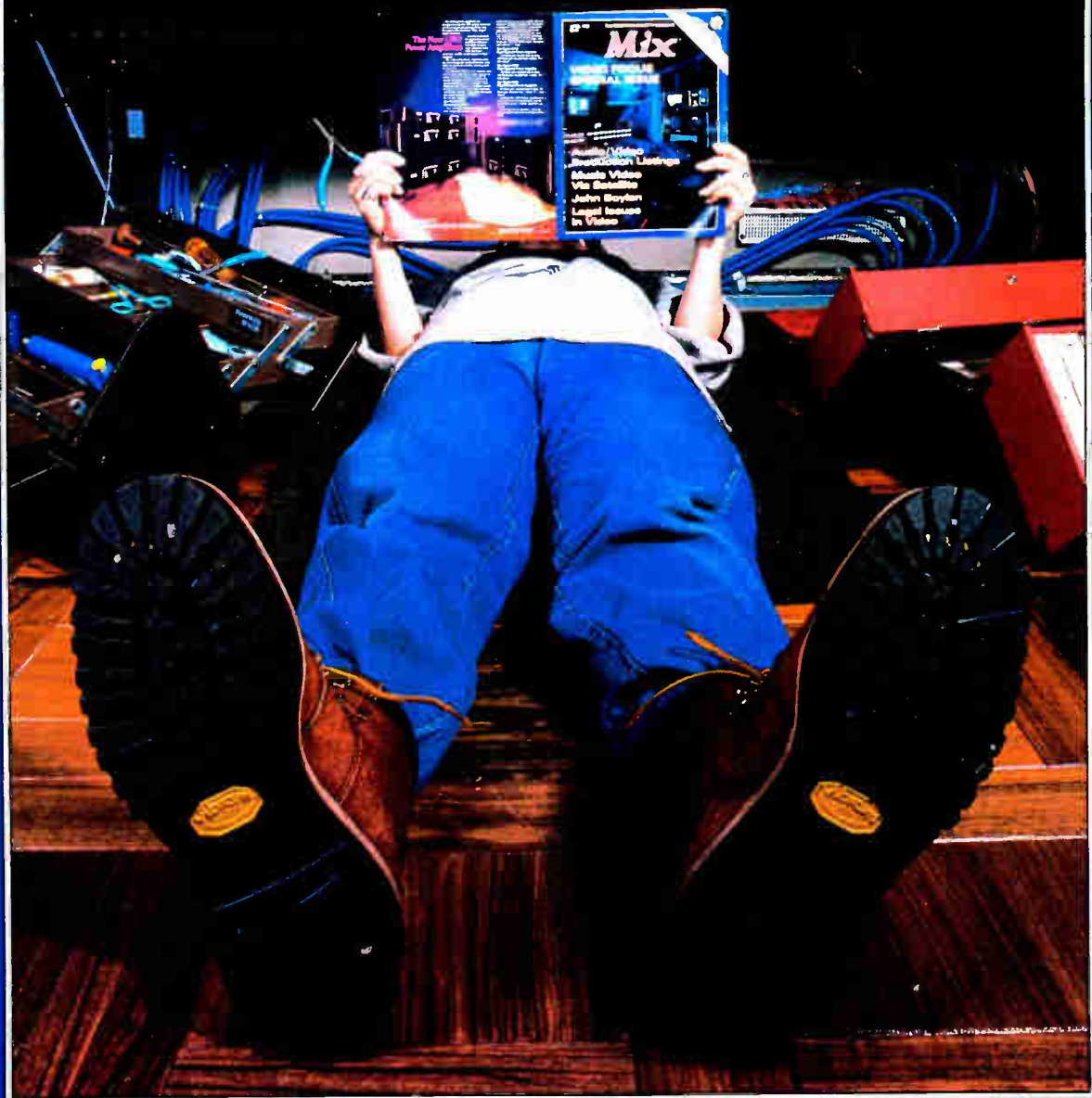
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# Get To The Source!



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shown in Fig. 3. An optical transducer in the tape path supplies pulses to the RTZ III, the 8085A displays position in the form of minutes and seconds. The calculations are normalized for tape speed such that timings are always true. Timing of pulses from the capstan tachometer are processed by the 8085A to determine tape velocity for display in inches and hundredths of inches per second. Tape can be positioned to zero, or any of four stored locations. The autolocator returns the tape to either a positive or negative direction. Front panel switches are used to store locations, and to select return-to-zero, tape position or tape velocity display.

The hardware for the system is contained on two circuit boards, a processor and display board; the 8085A, its memory, and I/O ports are contained on the processor board. The multiplexed data and address buss links the microprocessor to its memory and I/O ports; an address latch stores the low order bits while data is on those eight lines. Using control signals, the latched address bits, with the real-time address bits, are used to fetch an address or instruction from memory, and the 8085A acts according to the data. Using the READ, WRITE, and I/O command signals, the 8085A reads and writes data to the I/O ports. Control data is input from the I/O ports from the tape transport, and front panel buttons, and data is sent to the I/O ports and thus to a display encoder for LED display, and to a DAC to operate the reel motors for the locate function. The entire system on the processor board is contained on 15 chips, including the 8085A, timer and I/O, display encoder and keyboard encoder, DAC, and program memory.

The firmware PROM contains the program which controls the system's operation. The program is organized as a loop which reads speed information, poles flags, and updates the display. If any flags appear, the program jumps to the appropriate subroutine to calculate velocities, distances, and to store data in temporary memory. An interrupt caused by front panel switches, and tape guide and capstan tachometer pulses causes the program to vector to an interrupt service routine to process the information before resuming its path through the loop. For example, if the tape velocity indicator button is pushed during normal operation, the flag will cause the program to leave its loop and jump to the TVI subroutine. A timer is initiated and capstan tachometer pulses interrupt the processor, and cause jumps to the capstan interrupt routine which counts the pulses to determine tape velocity. At the end of the timer's duration, the velocity is calculated, displayed, and the program resumes normal looping operation.

Thus the MCI RTZ III circuit is a good example of how a microprocessor greatly simplifies a system design, and thus lowers its cost and increases its sophistication. But the example also points out that a microprocessor alone is incapable of performing such miracles. Support chips such as I/O, buffers, and memory are needed. Without I/O the microprocessor would not be able to input or output its information. Similarly, without the looping program contained in the RTZ's memory, the circuit would have its plug pulled.

While microprocessors like the 8085A have expanded the functions of the microprocessor, they are not complete computers unto themselves. We should thus carefully note the fuzzy distinction between a microprocessor and a microcomputer. Strictly speaking, a

microprocessor is the central processing unit of a micro, or sometimes, mini-computer. A microprocessor classically contains its instruction set library, ALU, and control unit; to complete the computer system, I/O, clocks, and memory must be added. Since it contains all of these elements, the MCI RTZ III is thus essentially an 8085A-based microcomputer. However, it is a dedicated device with very limited flexibility. Next month we'll consider general purpose microcomputers with much broader applications.

#### REFERENCES

Intel MCS-80/85 Family User's Manual, October 1979  
MCI JH-110 Series Professional Tape Recorders Manual.

# UNCOMPROMISED Digital Delay

## Audio processing your ear will appreciate

Listen to the Audio Digital TC2, and you'll hear less coloration than in any other digital processor in its price range: < .2% THD + noise; 90 db min. dynamic range; 20-16 KHz (+1, -3 db) freq. response.

Not only this, but the TC2 also

offers 2 delay taps, digital I/O port, and over 1 second full bandwidth delay (internally expandable to over 2 seconds full bandwidth delay).

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**“Never before have I seen a keyboard look so inviting, so professional, and downright beautiful.”**

“...the most professional and perfectly designed synthesizer ever.”

“...the most intelligently organized for human interface of all the keyboard computers on the market.”

“...an outrageously flexible instrument.”

“...10 years ahead of today.”

“...a synthesizer that is both innovative and classic.”

“...this opens a whole new world for me and my music.”

These are just a few of the rave reviews the *PRISM* is receiving from professional musicians these days, because the *PRISM* doesn't stop at delivering technological wizardry to the musician. Instead it is a musical instrument that is altogether user-friendly: user-friendly in the way you create sounds, in the feel of the instrument when you play, and in the warm and full sounds that are so easy to obtain and so pleasant and stimulating to hear.

#### THE FINEST CONCEPT

The *PRISM*, designed for maximum creative efficiency in the recording studio and for the rigorous demands of stage performance, is now the finest concept in polyphonic digital synthesizers.

You can use the Waveforms stored in the *PRISM*, or you can create your own, to produce sounds called Instruments. Organize one to eight Instruments into groups called Ensembles. Use Devices for automatic and manual control of Instrument

and Ensemble parameters and add Sequences to really extend your abilities as a musician.

You can store up to 168 Waveforms, 424 Instruments, 128 ensembles, 128 Device Configurations and numerous Sequences in **Bubble Memory** without having to worry about moving parts that break down or become mis-aligned. You can immediately use the dazzling wealth of factory supplied sounds, modify them at will or create new sounds purely out of your imagination and experience.

#### INSTRUMENT SOUNDS

One of the joys of the *PRISM* is the ease with which you can create new Instrument sounds. At your fingertips is the ability to quickly create or modify an Instrument's four envelope functions --- Volume, Timbre, Pitch deviation, and Output channel --- by specifying the transition times and values for seven points per envelope (5 points before key release, 2 after).

Generally, interesting sounds are interesting because their timbres change dynamically. You can use the timbre envelope of an Instrument in any one of several ways for achieving smooth timbre changes: (1) Waveblending, where you specify up to seven Waveforms; (2) QM™, where you specify up to seven QM parameters to provide FM-like sound; and (3) Wave-shaping, where you specify a driving Waveform, a shaping table, and up to seven scaling factors.

There are variations on these modes as well. For example, Waveblended timbres can also be Waveshaped.

#### ENSEMBLES

Another joy you will experience is the ease with which you can organize Instruments into groups called Ensembles. Ensemble parameters allow you to adjust relative loudness, tuning, placement in space, and placement on the keyboards for each Instrument. An Instrument can be used in as many Ensembles as you wish.

Once stored, Ensembles can be recalled instantly. You don't have to hunt for the right disk or wait while the data is found and transferred from the disk.

#### WAVEFORMS

To create new Waveforms you can specify: (1) Harmonic content of the Waveform (up to 64 harmonics); (2) QM parameters --- QM Index, Carrier Waveform, Carrier Relative Frequency, Modulator Waveform, and Modulator Relative Frequency; or (3) Magnitudes of 256 points that describe a plot of the Waveform.

When you have saved a Waveform you have created, you can use it in as many Instruments as you wish.

#### PERFORMANCE-ORIENTED CONTROLS

Pedals, footswitches, sliders, joysticks and thumbwheels are examples of Manual

Devices available on the *PRISM*. You can use up to sixteen Manual Devices at any one time. The Automatic Devices built into each *PRISM* are four Low-Frequency Oscillators and four Random Number Generators.

The *PRISM* keyboards are pressure-sensitive. You can use the overall pressure applied to a keyboard as you would use any Manual Device.

With Manual and Automatic Devices and keyboard pressure, you can control the following parameters independently for Instruments within an Ensemble:

- Relative volume
- Output channel
- Relative pitch
- Portamento glide time
- Timbre
- Envelope time values
- QM parameters
- Amplitudes and cycle rates of Automatic Devices

Pedals and footswitches can be plugged interchangeably into the four jacks on the *PRISM*'s back panel. Modules containing four sliders, two thumbwheels or one 2-axis joystick can be installed in the three manual device areas at the left of the keyboards in any order or combination.

When you have connected one or more Devices to one or more parameters, you have created a Device Configuration. A Device Configuration that has been saved can be used with any Ensemble.

### PLACEMENT OF INSTRUMENT SOUNDS AND DYNAMIC ALLOCATION OF VOICES

Much of the power of the *PRISM* comes from the fact that you can place the eight instruments of an Ensemble anywhere on the *PRISM*'s keyboards with no restrictions. Instruments can be separated into different areas of the keyboards, they can overlap, they can be stacked together. Instruments can be individually turned on and off during performance.

A Voice is the electronic hardware that produces the sound of an Instrument in response to a note being played. The *PRISM*'s high-speed microprocessors dynamically allocate up to forty Voices, automatically putting the digital hardware to use where it is needed. You allocate Instruments to the keyboard areas; the *PRISM* allocates Voices.

### FOUR-CHANNEL OUTPUT

Four output channels allow you to place sounds in real space for creating unique as well as natural effects. Channel Mixing is an Instrument parameter for specifying output channels for an Instrument sound. Through this parameter you can define an Instrument's Output-channel envelope by specifying one or more output channels for each of the seven envelope points. In this way you can build dynamic Instrument sounds that move from channel to channel when notes of the Instrument are played.

Channel Offset is an Ensemble parameter that allows you to modify the output channel(s) used by an Instrument and redirect sounds for optimum effect in an Ensemble. One benefit is the ease with which you can produce full, warm sounds through acoustical mixing of Instruments slightly detuned from one another.

### OTHER BENEFITS

The *PRISM* provides keyboard triggers, gates and control voltages for control of other monophonic and polyphonic synthesizers. Up to eight sets of outputs are available.

The *PRISM* is known for its quiet operation and its clean sound. You can use it for hours without becoming annoyed and tired by the sounds that normally accompany keyboard computer systems... such as disk drives clanking and whirring, blowers humming and whooshing, and speakers hissing and buzzing. An adjustable stand allows you to place the *PRISM* at the right height for your comfort.

In terms of digital technology, the *PRISM* contains five high speed 16-bit microprocessors, 74 kilowords of Random Access Memory (RAM), 204 kilowords of Programmable Read-Only Memory (PROM), and two million bits of bubble memory. Waveforms are stored as tables of numbers, each number being represented to the precision of twelve bits. These technological entities, together with performance oriented real-time controls and pressure-sensitive keyboards, 4-channel sound, a versatile sequencer, a dazzling wealth of preprogrammed sounds and additional features like portamento, latch mode, and solo mode, give you a musical instrument that will thrill you today and a generation from today.

### COMING NEXT FROM KINETIC SOUND:

... A State-of-the-art sampling system that can stand alone as well as be driven from the *PRISM*, featuring:

- *PRISM*-like controls and user interface
- Twelve voices with dynamic allocation
- Control voltage inputs
- Three modes of release
- Two modes of looping during sustain
- Microprocessor-assisted looping for glitch-free sound
- Up to eight samples on the keyboard at any one time

... Software for use with personal computers that will allow your computer to access *PRISM* parameters for CRT display and modification purposes as well as for auxiliary storage and control of functions.

The *PRISM* is a product of Kinetic-Systems Corporation, a company with over twelve years of experience designing and building high-technology automation systems for the scientific, defense and aerospace, and industrial marketplaces.

The *PRISM* is available in four basic systems starting at a list price of \$29,950. Many financing options are available. Call or write us for details.

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- the *PRISM* brochure
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# HOLOGRAPHIC APPLICATIONS IN MUSIC

by Lou Breinholt, Bluebelle Holographics, Long Beach, California with technical editing by Mark Slater, McDonnell Douglas Astronautics, Huntington Beach, California.

Though the optical concepts surrounding holography were created over a hundred years ago and finely elucidated in the middle of this century by holographic Nobel Prize Laureate Dennis Gabor, it was the birth of the laser in the early sixties that really marks the age of the hologram.

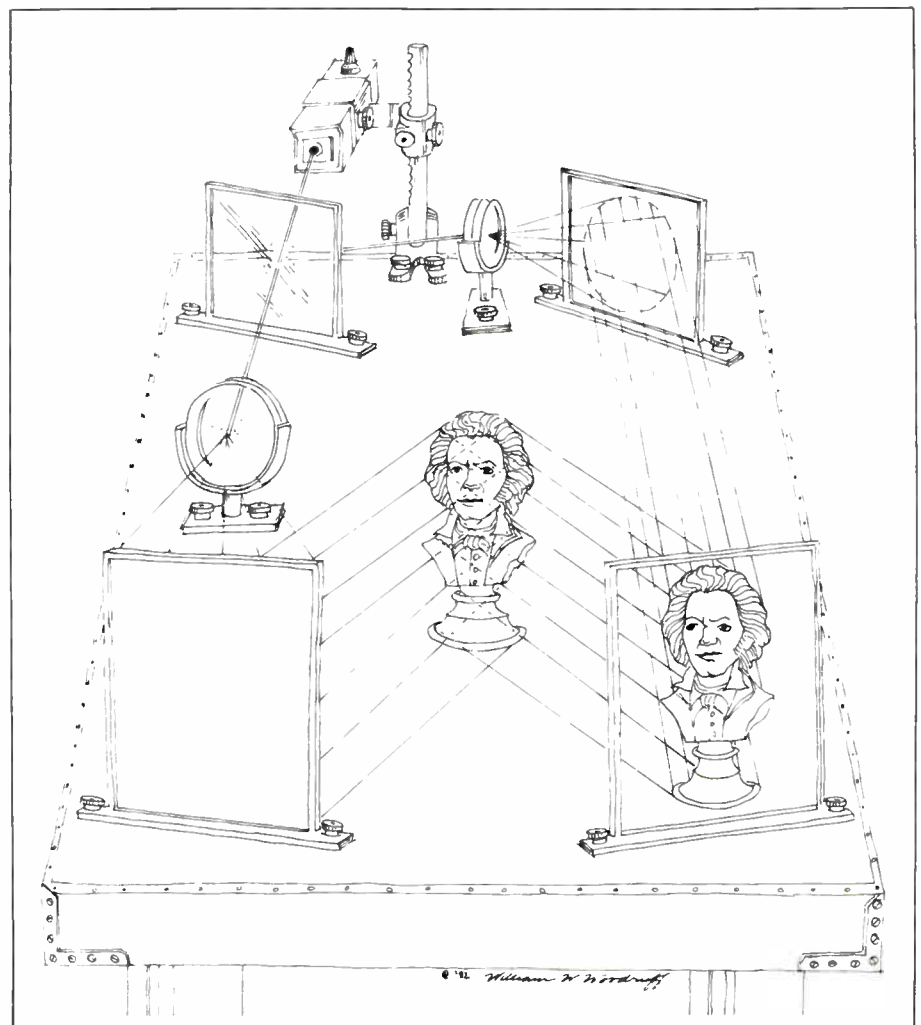
First practically fulfilled by two electronics scientists, Emmet Leith and Juris Upatniks, the combination of optics and electronics changed the terms and analysis used to develop the young field. Terms which had been the mainstay of such technologies as FM radio and radar were tied into holography hand in glove, e.g., filters, Fourier transforms, frequency modulation. It was discovered that light could be treated as any other electromagnetic radiative source and in many frequencies and amplitudes. It can be handled in an optical system in such a way as to filter, modulate, or mix the optical waveform (or wavefront).

Early holography took two directions then: this optical-electronic parallel processor application and an artistic direction. It turned out that some of the early pioneers of the field were artists in engineer's clothing who left their creatively confined 9 to 5 positions to explore the esoteric boundlessness of three-dimensional imagery. So while technical corporate interests turned to develop holography for use in communications processing, non-destructive test analysis, medicine, and navigation, a new breed of scientist-artist pressed the applications of imagery and effect.

The pure gaussian coherent nature of laser light is limited only in

its use and manipulations by the materials and processes of its surrounding technologies. Lenses, mirrors, and methodologies developed to handle less rigorous forms of electromagnetic energy greatly restrict the growth of laser applications. Either very expensive material processing must take place to provide high performance

optical components, or a laser application itself may provide access to further expansion. This application uses the laser itself to create an exact and highly corrected optical interference wavefront, and produces a hologram through very high resolution photographic-type processes. By using the laser source directly and mixing the



"Ludwig" as a Classical Transmission Hologram

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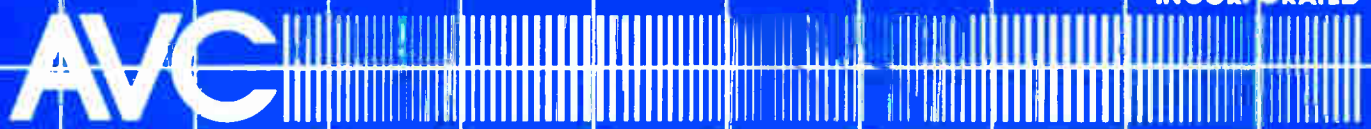
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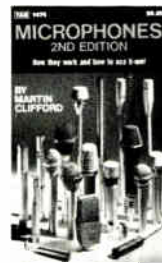
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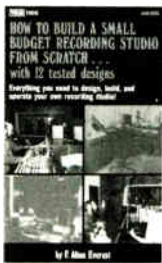
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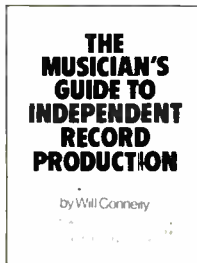
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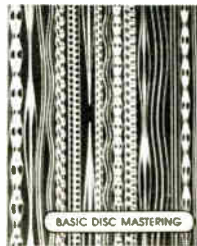
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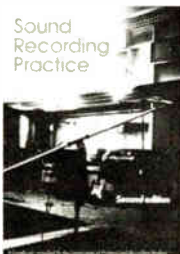
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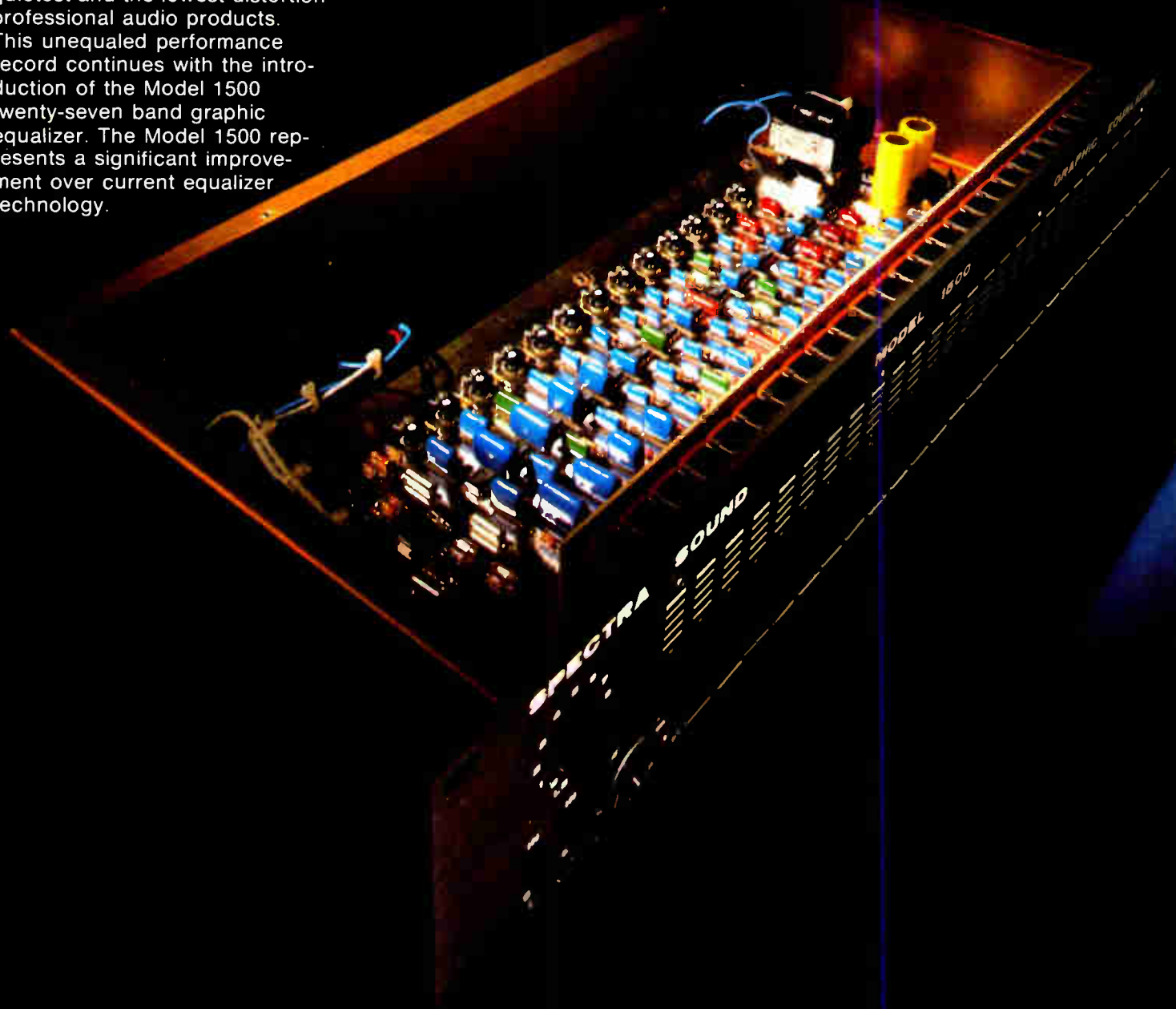
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(continued from page 80)

error compensations on the holographic plate, the hologram allows optical components to be constructed which rival the performance of any other optical processing techniques for low costs.

Holograms can not only synthesize any lens or mirror function but also filters, polarizers, splitters, processors, corollators, mixers, converters, and to top it off – many of the components can be combined into the same hologram at once. These versatile and cost efficient characteristics combined with the ability to change the complete optical encode anywhere in three-dimensional space within a resolution of a couple of microns, yields the technology to create a complete three-dimensional parallel processing device with speed of light access. All that appears necessary now is memory. Today, multi-gigabit memories the size of sugar cubes are under development in many laboratories around the world. Few technical, but more production problems remain between the introduction of these products in the marketplace.

Meanwhile, other laser applications are daily touching our lives. And none seems more enthusiastically reinforced than those combining our sacred arts with the new technologies. Enthusiasm translates to demand, and the laser applications which tie art to man have started to supply the marketplace.

Two directions have become quite popular: image holography and laser shows. The laser as a light source is attractive to artists producing

special-effects light shows because of its brightness and spatial coherence. Of the main techniques used in laser shows, one is the technique of reflecting a laser beam off a moving mirror onto a screen to produce a small cursor dot. The mirror is rotated either fully by a motor or partially by a galvanometer. These electromagnetic devices are driven by amplified, feedback-controlled function generators and in some cases digital to analog converters from logic devices. Another technique involves passing a beam through a diffraction grating which bends the light waves, producing controlled locations of color and shape when projected onto a screen.

Live laser effects have been featured at rock concerts of such groups as Tangerine Dream, the Who, Led Zeppelin, Genesis, and Pink Floyd. Typically the lasers are placed behind the group and are used to scan patterns over the auditorium. These effects are generally used for a few 90-second bursts during each performance.

The forerunner in the laser entertainment industry is Laserium, which has shows in the United States, Canada, and Japan. Ivan Dryer, a film maker and photographer, developed Laserium as a new entertainment medium in 1971. Laser Images, Inc. first presented Laserium at Griffith Observatory in Los Angeles in November 1973. The response was immediately favorable, and the laser concert was scheduled on a regular basis. They use a one-watt 4-color Krypton gas laser and a sophisticated

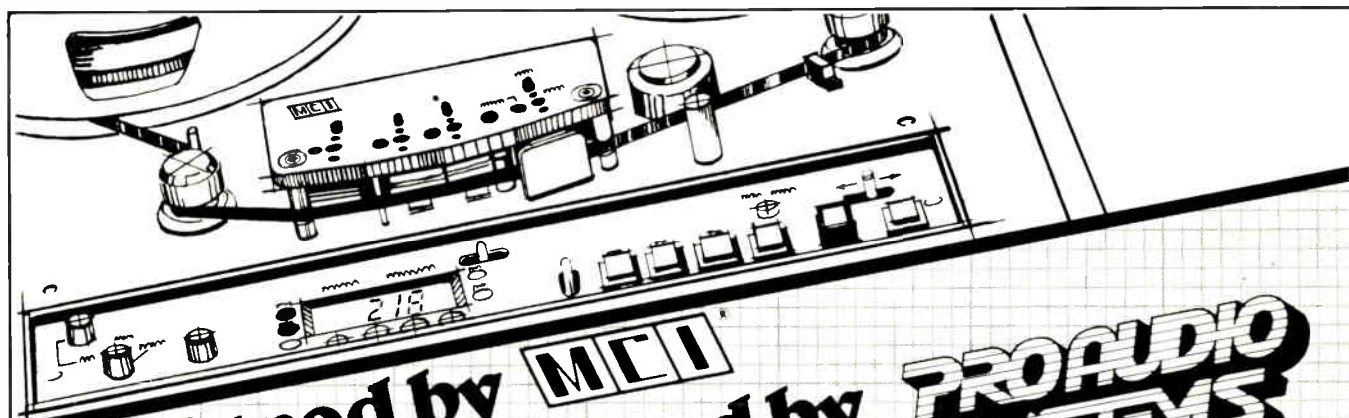
electronics system to produce the shows. New shows will feature HOLODISC® diffraction grating holograms.

Stock laser effect footage has also been used in the television and motion picture industries. Laser shows are now performed at theatres, discos, and even in people's own homes.

Diffraction gratings are not only used to create beautiful patterns in laser light shows, but are an asset to creative photography. When shooting a scene containing a point light source (sunset, glares, auto headlights, Christmas tree lights, candle flames, etc.), a colorful rainbow spectrum occurs. Diffraction gratings are used for publicity and advertising photos and in the incentive markets. Bluebelle Holographics and SpectraStar gratings have been used in the films, "Time After Time," "Ice Castles," and the "Star Trek" movies.

Low spatial frequency response image holograms and diffraction gratings have been placed on a record mother by Bluebelle. Since holograms reconstruct the entire image from each viewpoint, even the cutting of the lacquer leaves enough hologram behind so that when the master is pressed an image or diffraction grating will still reconstruct. Record surfaces, covers, and promotion is readily enhanced by such exciting and eye-catching images and shapes.

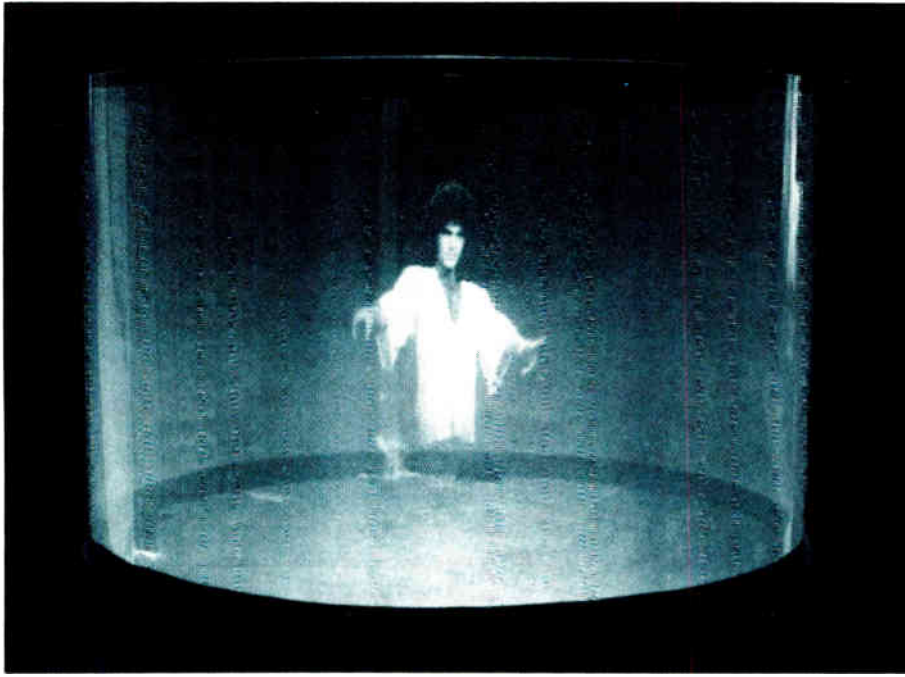
In the specific direction of image holograms, there are three popular types: reflection, transmission, and a special case of the transmission-type hologram – the multiplex holo-



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*A 360° multiplex hologram of Gino Vannelli. The ability to show movement has made this type of hologram one of the most popular particularly for personal portraiture and advertising/promotion.*

gram.

The multiplex or moving hologram was developed by Lloyd G. Cross, a founder of the Multiplex Company in San Francisco. The two step process begins by filming the subject with a motion picture camera. This can be a fixed camera filming the subject on a turntable, or the subject can be fixed and the camera moved at a constant speed. A 360° hologram requires exposure of 1,080 frames as the subject revolves, and the 120° angle holograms require only 360 frames. The second step is converting the film to a hologram by using a laser to project each frame onto a narrow slit of photographic film. This is illuminated simultaneously by a reference beam, which causes interference producing a hologram.

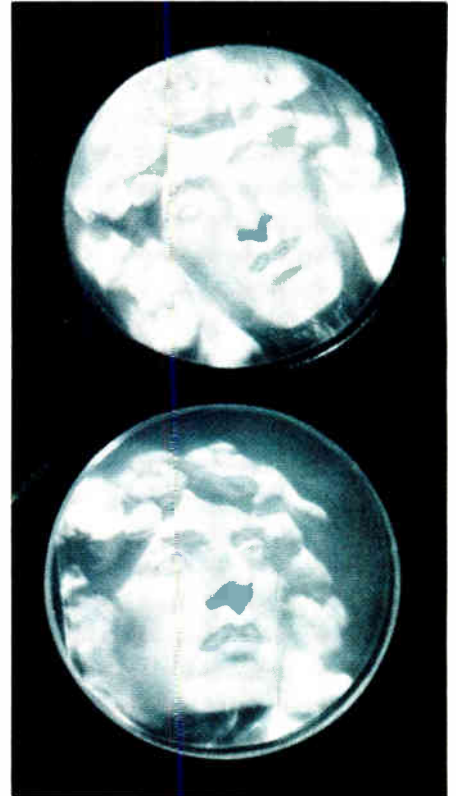
The ability of the multiplex hologram: to show movement and its eye-catching quality is important for many applications. Advertising, promotion, and video games are some of the uses. Personal portraiture has been quite popular even though costs vary from \$500 to \$1,000. Performers who have posed for holograms include Herb Alpert, Styx, Gino Vannelli, Supertramp, Peter Frampton, Maynard Ferguson, and the Who. Multiplex holograms were also seen in the films "Logan's Run" and "The Man Who Fell to Earth."

While the multiplex hologram presents a three-dimensional effect through the use of vertical slit stere-

opsis, a regular transmission hologram contains the three-dimensional information spread throughout the plane. Also, due to the diffraction grating nature of holography, very narrow bandwidth sources, e.g. laser, arc lamps, are necessary in order to reconstruct the image without color smear. Stephen Benton of Polaroid Corp. developed a method whereby the vertical parallax is sacrificed, leaving only the horizontal parallax necessary for viewers with both their eyes in the same plane. This method creates a slit with narrow band sources, but with wideband sources such as filament bulbs, xenon lamps, and tungsten halides, this slit reconstructs as a rainbow. The hologram thus retains the essential three-dimensional effect while being able to be played with white light. The multiplex hologram also uses this Benton "rainbow hologram" technique.

Full color holograms are made using multicolored laser sources recording color modulation by half wavelength fringe interference in the Lipman tradition. Color can also be encoded by the overlapping placement of the "rainbow hologram" by additive or subtractive relationship, but has distinct viewing angle deficiencies. Major technical problems have been resolved, while issues such as production and patent rights continue to stagnate the development of this exciting marketplace.

The reflection hologram uses the same half wavelength interference as the color hologram to record information fringes. Multiwavelength sensitive films will record color reflection holograms yet seem to lack the brightness and energy of the transmission hologram. On the other hand, if a single color reconstruction is acceptable to an application, there exists a type of hologram that is blazingly visible in almost any light under most



*The dichromate hologram is the clearest and most easily viewable three-dimensional image. This photo of the Roger Daltry hologram shows two viewpoints of the same piece.*

conditions. This is the dichromate hologram.

Dichromate holograms provide the clearest and most easily viewable three-dimensional reconstructed images. Each dichromate hologram is made by exposing dichromated gelatin (the protein of the endodermis of fish) with blue laser light. Dichromated gelatin is an almost ideal holographic recording material as it approaches 100% efficiency. They are not true color, but appear gold, white, silver, and pastel. Gold colored holograms leaning toward green are the brightest and usually most desirable.

These volume holograms are available on a stock or custom basis.



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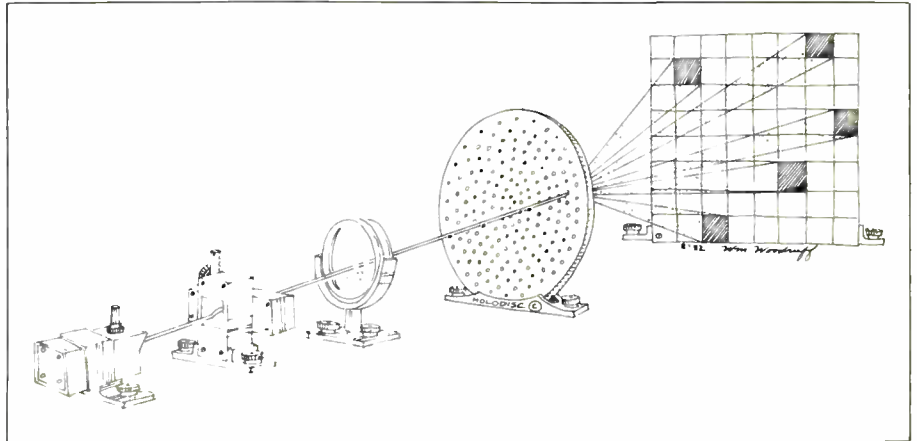
"Gem" pendants are the most common and easily obtainable. Subject matter includes such things as roses, watchfaces, coins, eagles, and statuettes. One of the most striking is the limited edition Roger Daltrey promotional hologram made in 1976 for the opening of a New York show.

Aside from the types of holograms possible, there appears to be an application which is waiting off stage ready to take the center lights — the holographic video disk.

In the last few years, Videodisk

major restrictions of the Videodisk.

They wanted a system which was literally self-tracking with a minimum of mechanical hardware and was much more drift-free than the analog Videodisks are. They also wanted a system which could be switched to an extreme density parallel mode, which had over 10 times the memory of the Videodisk and could operate at over 300 megabits per second. They have achieved their goals, and HOLODISC® is patent pending.



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has provided a means for replicable, high density storage of analog formatted, digital information. The storage of 1.2 gigabits or 54,000 frames on a 12" disk is truly a staggering breakthrough. But the Videodisk was developed at Philips after a feasibility decision that the holographic parallel alternative was too difficult to obtain and mass reproduce.

In order to compete with the Philips market predictions, two other major corporations entered the high density disk race. RCA developed the capacitance disk after failing to prove their holographic HOLOTAPE® was a feasible product, and Hitachi of Japan gave up their holographic disk after they had developed a very sophisticated, complex, and uncompetitive cost package. The only marketed choice became that of Philips/Pioneer optical disks and RCA capacitance disks. Hitachi and other Japanese companies have now jumped on the somewhat standardized Philips specifications.

In 1977, Bluebelle Holographics approached the high density disk market from another point of view. They felt that the serial optical hole burning method would become the most popular system (which it since has), and so aimed at a product which would be compatible yet solve the

This application has obvious potential impact to an industry just learning the power and marketability of composite video/audio. It is also obvious that particular tradeoff studies accomplished during periods of vague risk assumptions by corporate interests may have to be reassessed and seriously re-studied.

After twenty years of development, the laser is still a solution looking for problems, and the tradition of non-conventional scientist pounding at new and innovative alternatives is still the name of this high technology "game."

Recent technological developments have assured that the next century will see continued funding and efforts in this direction. More and more the laser presents an unusual dichotomy in applications. Gas dynamic, solar pumped space lasers capable of vaporizing exotic warhead materials from a thousand miles may soon be orbiting above our heads. But the cool green color of the Argon laser will still be mixed to rhythm and beat in our concerts on the planet's surface. From nuclear fusion to eye surgery, from genetic scalpels to acupuncture, the laser will always symbolize the type of energy manipulation solely reserved for gods and sorcerers in the past. Romantically viable yet

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pragmatically blatant, the laser and its related technologies seem to echo the mood of the people and the vision of our future. ■

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Helium Neon - red atomic laser with .005 milliwatt through 50 milliwatt power outputs. Typically single phase and air cooled.

Krypton - basically red ion laser with lower power multicolored capabilities. 75 milliwatt through 6 watts power outputs. Typically 3-phase and water cooled.

Mixed Gas - Krypton and Argon together in a stabilized tungsten plasma tube will give high efficiency multicolored outputs. Average power is 3 watts. Typically 3-phase and water cooled.

## HOLOGRAMS

Volume Hologram - a case in holography where the information is recorded in a photosensitive emulsion thicker than the wavelength of the source (multi-holograms on top of each other).

Planar Holograms - a case in holography where the information is recorded in a photosensitive emulsion comparable to the wavelength of the source (a singular hologram recording).

Diffraction grating - a periodic interference structure in the form of amplitude or phase modulations which diffract light into "beamlets" or orders.

Lippman Holograms - a case in holography where a volume hologram is formed with its information stacked parallel to the plane of the recording plate. These holograms are interactive at half wavelength intervals. This method of recording information was developed by French scientist Gabriel Lippman in the late 19th century in order to obtain color. Three dimensional information was first recorded using Lippman's concept by Russian scientist Denisjuk during the 1960's.

## SOURCES

### LASERS, OPTICS, & SUPPLIES

Control Laser Corp., 11222 Astro-naut Blvd., Orlando, FL 32809  
Tungsten ion tube lasers.

Edmund Scientific, 101 E. Gloucester Pike, Barrington, NJ 08007  
Variety of experimental materials.

General Scanning, Inc., 500 Arsenal St., Watertown, MA 02172  
Galvanometers and drivers (scanners)

Melles Griot, 1770 Kettering St., Irvine, CA 92714  
Helium neon lasers, optical components.

Newport Research, 18235 Mt. Baldy Circle, Fountain Valley, CA 92708  
Optical tables, helium Cadmium lasers, optical components.

Spectra-Physics, 430 Ferguson Dr., Mountain View, CA 94042  
Lasers and laser systems.

## HOLOGRAMS

Bluebelle Holographics, Box 14466, Long Beach, CA 90814  
HOLODISC® diffraction gratings, custom and mass-production.

International Dichromate, 12277 S. 700 W., Salt Lake City, UT 84020  
Dichromate holograms.

McDonnell Douglas Astronautics Corp., 5301 Bolsa Ave., Huntington Beach, CA 92647  
Will be producing extremely complex scientific holograms for industrial and robotic application.

Multiplex Co., 454 Shotwell St., San Francisco, CA 94110  
Stock and custom integral multiplex holograms.

## OTHER SOURCES

Museum of Holography, 11 Mercer St., New York, NY 10013

Laser Focus Buyer's Guide, 1001 Watertown St., Newton, MA 02165



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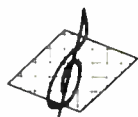
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# SOUND ON STAGE

by Patrick Maloney

PART  
PART  
1

## Stage Monitors



Because of the great importance and high reliance being placed on good stage monitors these days, I'm going to devote this column, as well as next month's, to highlighting some of the more recent products and ideas from some leading manufacturers in the field.

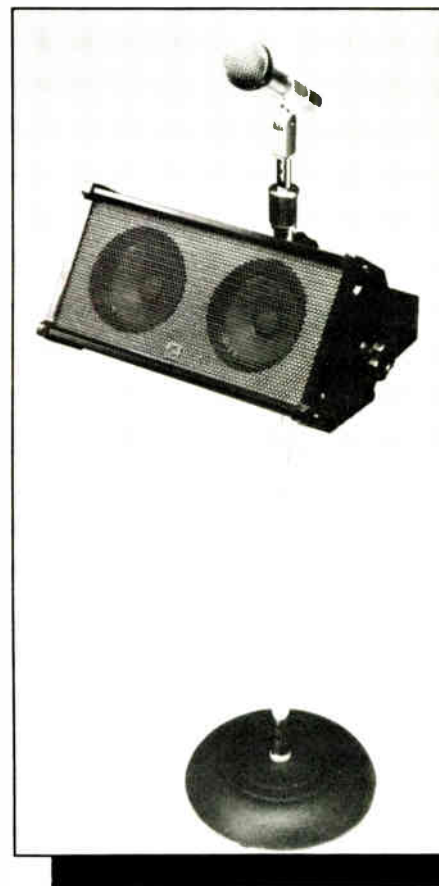
One development that I'm seeing more of lately is the proliferation of the small "spot" monitor, or what I like to call a "box-on-a-stick." Since they can be screwed onto mike stands or set on top of keyboards, they can be placed close enough to a performer's ear to really do some good—if they're robust enough to withstand road abuse and reasonably high SPL requirements.

Terry Green of TOA reports that his company's emphasis right now is on these smaller speakers, although full size stage monitors are being used in Japan at the moment and should be available in the USA later this year. One such speaker, the SM60, contains a pair of 5" speakers in an extruded aluminum case and is covered with a strong metal grill. According to Green, "It's virtually indestructible!" Not only will this speaker screw onto a mike stand, it can also mount anywhere on the shaft of the stand thanks to a unique clamping arrangement. The SM60 lists for \$150 and by the time you read this TOA hopes to have a powered version

of the same speaker available. Driven by an internal amp capable of delivering at least 25 watts, the new monitor will accept a high level unbalanced input on a standard phone plug. The amp circuitry will include a soft limiting compressor circuit designed to protect the drivers and minimize distortion. The powered version is expected to retail at about \$200.

Klipsch and Associates, well known for their home entertainment loudspeakers as well as for their professional line of products, have a single sound reinforcement monitor available at the moment. "It's a three way system crossing over at 700 and 6KHz," Klipsch's Chuck Mulhearn informed me, "and it utilizes horn loaded drivers in both the midrange and treble sections." The speaker has an efficiency rating of about 98 dB SPL, one watt, one meter. Cabinet angles of 90 and 68 degrees allow the unit to be optimally positioned as a floor wedge or permanently mounted in the ceiling or on a wall. The cabinets themselves are constructed from nine ply 3/4" domestic birch and then covered with fiberglass. The addition of zinc plated diecast aluminum corners and extruded aluminum side rails completes the package

and makes for a very roadworthy



Right: TOA SM60 Stage Monitor

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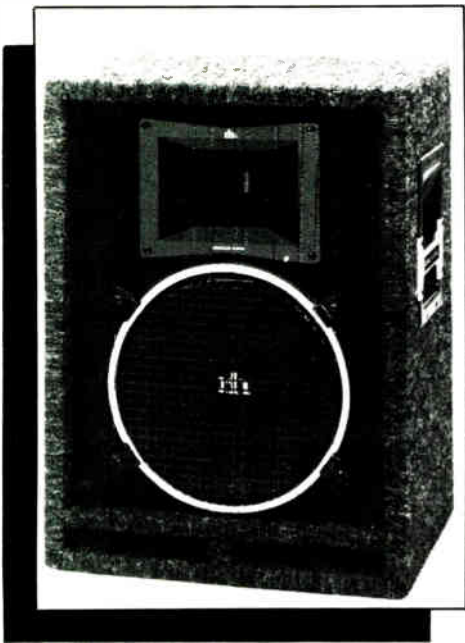
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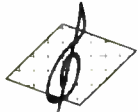
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product.



Renkus-Heinz, known as a manufacturer of quality loudspeaker components for many years, started building complete speaker systems a little over a year ago. "Renkus-Heinz's basic design goal,"

stresses Bill Gelow, "is that all of our products have as low a distortion as possible—and that includes our drivers, horns, crossovers, and complete systems as well. We also try to make everything as compact and easy to carry around as possible." Another one of their philosophies is to keep things simple, so all their monitors are two way systems with either single 15" or 12" woofers and 2" or 1" compression drivers. Bill specs their 2" drivers out to 16 kHz and the 1" units to above 20 kHz. Vented cabinets were introduced to the line in mid '82 to extend the low end. The Model 1581L is an example of this new design and contains a 15" woofer crossing over to a 1" driver at 800 Hz. Frequency response is rated from 50 Hz. (minus 3 dB) to above 20 kHz. By comparison, an earlier sealed-speaker, the Model 1281, was designed strictly as a vocal monitor and contains a 12" woofer with a 1" compression driver and has a 3 dB down point of 90 Hz.

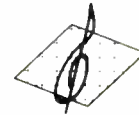
All cabinets are covered with nylon indoor-outdoor carpeting and fabricated out of nine ply maple plywood. "Maple is a harder wood and a lot stronger than the domestic birch," Gelow believes. "It's also a lot lighter than the Finnish birch and it's a very, very rigid." Internal bracing is with 2x4's and a mesh covered cotton bat-

ting type material is used for internal damping instead of fiberglass. "Fiberglass can damage your lungs over a period of time if you work with it a lot," he says. I would imagine the same hazard exists for someone singing in front of a monitor whose bass port is blowing particles of the fluffy pink stuff back up at him.

Renkus Heinz monitors are all rated at 200 watts and have a sensitivity rating of 105 dB SPL at one meter with one watt of white band noise input. The crossover is an 18 dB per octave third order Butterworth filter that contributes a great deal to the power handling capability of the system, according to Gelow.

The company is currently working on an electronics package that will combine a limiter, equalizer, crossover, and time compensation circuitry in a single 34" rack mounted case.

Available later this year, the device will be calibrated to optimize the performance of Renkus-Heinz's systems. The overall distortion figure of a complete monitor channel is projected to be under 1% from electronics through speaker output at full power.



Fairly new to the stage monitor scene is Interna-

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tional Music Corp. from Ft. Worth, Texas. After taking over the Ross Company, better known for a wide line of footswitch effect boxes, IMC went into the design and manufacture of professional audio gear. They've only been manufacturing stage monitors for about a year and a half and have just recently come out with a line of amplifiers to go with them. So, according to Pete Wood, the line is just now taking shape and getting into the marketplace. "We now have available a relatively small cabinet that contains a Foster (parent company of Fostex) conical horn and a 12" 180 watt woofer with a 60 oz. magnet and 2 1/2" voice coil." The dispersion is said to be 45 degrees from center in all directions or 90 degrees total. Pete feels that the horn's conical pattern results in a higher feedback threshold than that which is usually attainable from a more conventional radial-type horn. He explained that the pattern also allows for a more flexible system setup. "For example, if you set the speaker up with the horn on the top you can use it at close range with a narrow dispersion. Or you can take the same speaker, turn it upside down and move it further away and you'll get a wider pattern due to the shallower angle of the cabinet and the fact that the horn now utilizes the reflective surface of the floor." Wood states that the enclosures are all tested with a 1000 watt transient signal and are capable of putting out 100 dB at one meter from one watt input. Constructed from five ply birch covered with a three step epoxy coating, the cabinet is designed to tilt at three different angles. The bass ports are cut out of the sides of the box where they also serve as carrying handles. Frequency response is rated at 100 to 22 kHz and the monitor lists for \$289.

As I mentioned in last month's column, PAS or Professional Audio Systems is a newcomer to the pro sound market and is yet another company which utilizes some sort of time offset correction technique in its design. It's nice to see an emerging emphasis being placed on coherent sound—a factor that's just as important in difficult monitoring situations as is sufficient level. And while we're on this subject, one sure-fire way to mess up an otherwise coherent signal is to face multiple spaced speakers at a single performer. According to John Meyer of MSLI: "The most important thing that I've found in my research on monitors is to keep the number of speakers aimed at the same area to a minimum. Therefore each speaker that IS used should necessarily be powerful enough to give the artist all the level he needs." He says his UltraMonitor will produce 125 dB at one meter on music program easily and 135 dB short term above 1000 Hz. And as John states, "Nobody has ever asked



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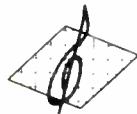
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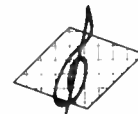


Another company manufacturing an extremely loud single speaker that's designed to replace multiple boxes is Community Light and Sound. "Of course what everyone wants nowadays is something that's louder and cleaner and smaller and lower priced!" exclaims Community's Chris Foreman. "We are addressing the 'louder and cleaner' problem with our M4 midrange unit which was originally introduced in 1981 as a house PA component, but is now being incorporated into monitor systems that a few sound companies are designing and building themselves. According to Foreman, the M4 puts out as much midrange sound as approximately four high quality 12" speakers while taking up much less space. The M4 consists of a compression horn/driver with a 4" throat and a 7" diaphragm constructed from thin aluminum skins sandwiched onto a foam core. "You can couple it to a single 2" high frequency driver such as a JBL 2441 or a 2445, add a pair of 15's for the bottom and you've got a device with a cleaner midrange and more headroom than you've probably ever heard before!" Foreman believes. "In a monitoring situation it can put out something in the neighborhood of 130 dB SPL, and that's pretty conservative." Even though an M4 driver retails for \$949 and you still have to put a horn on it, Chris feels that the final product would be less expensive than the four cabinets it can replace. If Community were to manufacture a complete monitor speaker incorporating the M4, Foreman estimates the cost would be around \$2000. "An ideal application would be in a side fill situation where you are using several speakers to cover essentially the same area." And as was mentioned earlier, the fewer speakers aimed at the same spot, the more coherent the sound and the higher the intelligibility.

Speaking of spots, Chris re-

mind me that the old familiar Community NC12 fiberglass slant monitor was specifically designed to have a very narrow 40 degree 'spot' coverage. "This speaker can be set for someone who doesn't move around too much and will let the artist hear a specific mix without having to worry about the sound bleeding into other performance areas. It's not a new product but we feel it still addresses today's needs. It's very small and compact and you can get a lot of sound out of it with the right drivers."

Having addressed the problems of 'louder and cleaner' with the M4, Chris went on to describe how his company is handling the demand for 'smaller and lower priced'. In the past, he says, they've made monitors with an emphasis on roadability and this was accomplished by making the cabinets out of fiberglass instead of wood, a somewhat more expensive technique. "So to some extent we are beginning to stray away from the fiberglass," he explained, "while trying to maintain a roadable enclosure. One of the ways we are doing this is by offering kits that allow you to build your own cabinets using our faceplates preloaded with the correct horns and drivers. You don't even have to cut holes for a port, horn, or woofer since that's all premolded into the fiberglass faceplate as well. Our Model RS440 four-way speaker kit is space efficient as well, since all the drivers and cutouts are molded tightly together in one integrated unit." According to Foreman, the overall cost reduction can be as much as 20% depending on what kind of cabinet the user builds. "We can also supply a kit of handles and corners since the right hardware is sometimes hard to find in some areas of the country," he added.



One of the most talked about monitors in the field these days is also one of the most ex-

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pensive: the retail price for a single Meyer Sound Labs UltraMonitor™ is \$1800. A companion electronic processor contains frequency response alignment circuitry, SpeakerSense™ driver protection, proprietary time and phase compensation networks, and is an additional \$1030. Only one processor is needed for any number of monitors however, as long as they are all on the same channel. Although UltraMonitors™ are basically used by large well known bands like the Doobies, Styx, the Starship, and the Grateful Dead, they can still be cost effective for those on a tighter budget, says the speaker's designer John Meyer. "If they are used intelligently you can use fewer speakers than you normally would and they then become very cost effective and the best value for the money. The problem comes when someone thinks he needs twelve of them and then it gets expensive in a hurry!"

John explained that the UltraMonitor™ was designed to be used in a one-on-one situation, i.e. one speaker for one performer. The monitor has a 60 degree conical horn that defines a fairly tight yet comfortable environment in which the singer can perform. But what if a performer moves around so much that the coverage from a single speaker isn't wide enough? Meyer's suggestion is to place two speakers in front of the performer so that the inside rear corners touch and they face away from each other by about 30 to 40 degrees. "This setup avoids coverage overlap as much as possible and decreases the feedback potential that results from combined frequency combing." John explained. "If two or more speakers (ANY speakers!) carrying the same signal are *separated* and aimed into the same area you will get combing of their combined frequencies and lose headroom due to the peaks created. It's these peaks that you're trying to take out with a one third octave equalizer, but if you get a lot of them out in the basic speaker design and setup you won't have to deal with them on the stage." Meyer states that the UltraMonitor's™ companion electronic processor was designed to take care of many of these problems at the source and therefore reduces the amount of work you have to do on the job. He's also found that using only one monitor often eliminates the need for the one third octave equalizer entirely, and further reduces the cost of the complete monitor system. And as every sound tech knows, fewer pieces of equipment generally make for a quicker setup and strike and less complicated operation overall.

• • •  
Next month we will continue this survey with some more of the latest developments in stage monitors. ■

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# PREVIEW



## HARRISON SERIES 4 CONSOLES

Harrison Systems, Inc. of Nashville have introduced their Series 4, a totally new console line. "Our MR-4 24 Track Music Recording Console and TV-4 Stereo Teleproduction Console have been designed to be the most cost effective products ever offered by Harrison," said Claude Hill, vice-president of Marketing. The Series 4 marks Harrison's first generation of an all new console series, from the basic component and circuits level up, in seven years.

The new Harrison Series 4, as well as Harrison's full line of music recording, teleproduction, and film-sound consoles are represented in the USA by a select group of manufacturers representatives and factory sales personnel.

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## NAKAMICHI DRAGON CASSETTE DECK

Nakamichi U.S.A. Corporation announces The Nakamichi Dragon, an entirely new auto-reverse cassette deck featuring Nakamichi Auto Azimuth Correction. Unlike manual and automatic azimuth-correction systems that require special signals to operate, NAAC determines optimum azimuth

from the program material itself. Thus, it functions on every cassette, whether commercially recorded or home recorded.

The NAAC system employs a specially created playback head that derives two signals from the same track. A precision phase comparator determines azimuth misalignment by inspecting these signals in a specific band of frequencies and adjusts the playback head accordingly. Other features include: Discrete Three-Head Technology, individual left- and right-channel calibration of bias and sensitivity, microprocessor transport control, Dolby B- and C-type NR, 2-speed Easy Cue, 2-speed Auto Fade, punch-in recording, and remote-control capability.

Suggested retail price for the Nakamichi Dragon is \$1,850.

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## DYNAMIC NOISE REDUCTION SYSTEM

Advanced Audio Systems, Intl. of San Jose, CA, have introduced the DNR 911 dynamic noise reduction system. The DNR 911 is a universal NR system compatible with all audio sources—tape, disk, broadcast TV or radio, VTR's and video disk players. The unit, which does not require the encoding or decoding of the program material, provides selectable H.F. attenuation slopes, and a variable low-pass filter, with an LED display of bandwidth. Suggested retail price of the DNR-911 is \$249.95, and a rack mount version is also available.

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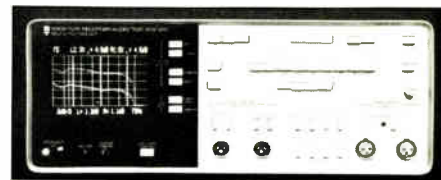
## DUAL COMPRESSOR/EXPANDER FROM VALLEY PEOPLE

The Model 610 Dual Compressor/Expander available from Valley People, Nashville, TN, consists of 2 channels, each having a compressor and expander section controlling a single VCA. A separate release coupling circuit allows interactive processing via symmetrical release characteristics.

The compressor control sec-

tion threshold is continuously adjustable from -40 dBv to +20 dBv. The expander control section features continuously adjustable threshold and range controls and allows selection of two commonly used slopes; 1:2 for expansion and 1:20 for gating. An LED Bar-Graph display monitors gain reduction, and separate LED's indicate expansion, compression and the presence of clipping.

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## 1510A TAPE RECORDER/AUDIO TEST SYSTEM

The Sound Technology (Campbell, CA) 1510A Tape Recorder/Audio Test instrument gives the audio engineer the capability of performing all necessary tests for maintenance, troubleshooting and general check-out of any professional audio device.

The unit will measure and display: AC Volts, Azimuth/Phase Error, 2nd or 3rd Harmonic Distortion, Frequency Response, Channel Separation, Noise, Wow & Flutter, Speed, Drift, Maximum Operating Level and Drop-outs.

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## STUDER UNVEILS CASSETTE DECK

The new Studer A710 microprocessor controlled cassette deck features balanced and floating professional line level inputs and outputs for interfacing with recording studio and broadcast production systems. All transport and electronic switching functions are controlled by the microprocessor. The A710's unique pivoting headblock assembly assures absolute azimuth stability. Other important A710 features include 3-head design, Dolby™ B and C noise reduction, programmable start/stop in record or play, headphone volume control, accurate 4-segment LED counter, peak reading bar graph meters, modular electronics, automatic start-of-oxide cueing, and cassette coding sensors. The Studer A710 has a suggested retail list price of \$2200.00.

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## PROGRAMMABLE EQUALIZER FROM AUDITRONICS

Auditronics, Inc. of Memphis, TN, has unveiled a programmable equalizer. Up to 4 mono or stereo units may be included in a totally self-contained 19" rack mounting package only 8.75" in height. Each equalizer has 3 bands with variable Q in 10 programmable steps, 12 programmable frequency steps in 1/3 octave increments with bands overlapping by more than an octave, and 17 programmable boost/cut step for a maximum of  $\pm 15$ dB, on each band. High and Low bands also include Peak/Shelf capability. 16 Memories are provided with on-board storage and a battery is built-in for storage even with power off.

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## FOSTEX GATED COMPRESSOR/LIMITER

Fostex Corporation of America has announced the availability of a new 2-Channel Gated Compressor/Limiter, Model 3070. Compression ratios are continuously variable from 1:1 through infinity:1. Attack times are continuously variable from 0.2 msec. through 20 msec., and release times are continuously variable from 50 msec. through 2 msec.

Other features include a noise gate function with independent threshold setting, LED displays indicating gain reduction in calibrated decibel readings, and dual mono or "linked" stereo modes. Maximum gain reduction is 32 dB. Suggested list price of the Fostex Model 3070 is \$400.

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## DELTALAB ADM-64

DeltaLab has expanded its EFFECTOR™ line by introducing the ADM-64, a unit which provides a full three octaves of flanging (8 to 1 flange ratio). The ADM-64 also includes an internal envelope follower control voltage for additional flanging effects.

Doubling and short echoes are other features of the ADM-64, with a range from 16ms to 64ms of high performance digital delay. The EFFECTOR™ series maintains full audio bandwidth (16K) and full dynamic range (90db) at all delay settings.

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## PAS COAXIAL LOUDSPEAKERS

Professional Audio Systems has recently introduced a complete line of coaxial loudspeakers for musicians who require accurate reproduction of complex transient sounds. All loudspeakers may be ordered with a Time Offset Correction network that eliminates phase wash/time smear.

Loudspeakers are available in cabinet form and as raw frame components. The 12" (shown) and 15" coaxial components will accept most 1" compression drivers. Also available is a Passive Crossover Network with built-in Time Offset Correction and can be used with various 1" compression drivers. "Monster Monitor" stage monitor (shown) will also eliminate phase wash when used with the Time Offset Correction network.

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ty wood rack pivoted on a wheeled pedestal. The unit will house any variety of standard rackmount gear up to 12 inches deep, and its special 360° tilt adjustment allows the rack to be fixed at any angle. Its large swivel casters allow complete mobility and flexibility.

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## ISO-BOX FROM HARBINGER

The Harbinger Audio Iso-Box is an isolation chamber for an instrument speaker that provides a high degree of SPL attenuation from its interior to the external environment.

An internal microphone picks up the output of a speaker housed in an isolated subchamber. The user chooses a speaker and external amplifier source to drive it that will give the desired tonal characteristics. The extensive sound absorptive materials allow the speaker to operate at any level without interfering acoustically with other instruments.

The unit is compact (less than 3 ft. tall) and occupies only 2.5 sq. ft. of floor space. Banana jack input and 3 pin mic output are provided on a pre-wired recessed jackplate. Microphone mounting hardware is provided. Large recessed handles and rubber feet are standard and the cabinet is available in three finishes: Utility Black, Natural Birch, or Road Case.

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## AKG BX-25E REVERB/DELAY

Replacing the BX-20E, the BX-25E is based on the patented Torsional Transmission Line principle used in all AKG reverb units.

The TTL-SYSTEM has been improved by extending the overall length of the spring by about 25% over the BX-20E yet at the same time reducing the overall size of the BX-25E by about one-third.

Independent decay-time adjustment (via remote control), high- and

low-frequency equalization external input/output level adjustments and dry reverb signal mixing are provided for each of the two electronically and acoustically separate channels. Decay time is adjusted silently through the use of motional feedback.

The new M-250 Digital Delay module may be added to a BX-25E at any later time or ordered within the BX-25E. As a complete unit (reverb and delay), the BX-25E incorporates all the reverb features mentioned above plus digital delay.

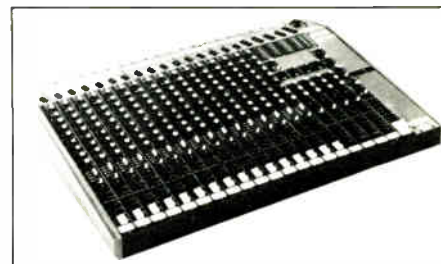
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## ASHLY SC-33 NOISE GATES

Ashly Audio of Rochester, New York has introduced the model SC-33 Noise Gate, a versatile two channel noise reduction system requiring only 1¼-inch of rack space. Designed to control leakage and background noise in recording and in sound reinforcement applications, the SC-33 acts much like a level-sensitive "switch," automatically muting or attenuating audio signals which fall below a user selected threshold, while passing audio that reaches or exceeds the threshold.

Front panel controls include a Threshold control which is continuously variable over a 60 dB range, an Attack Time control variable from 10 microseconds to 150 milliseconds, a "Floor" control which determines how much the noise is attenuated when the gate is off (up to 75 dB attenuation), a key switch which allows the noise gate detector to respond to a control signal other than the audio program, and a bypass switch. Suggested list price is \$394.

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## TRIDENT (USA) DEBUTS NEW MIXING CONSOLES

The VFM line marks the entry of Trident Consumer Products Division into the budget-priced professional musician, touring, and recording markets.

Configurations in the VFM line of fully modular mixing consoles range from 20 x 8 x 16, to 16 x 4, available in both recording and PA versions. Features on all models include full throw faders, separate mike and line inputs, multi-track output monitoring by 12 segment LED column meters, and pre-

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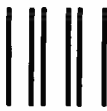
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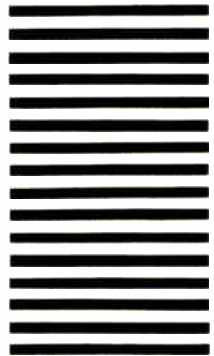
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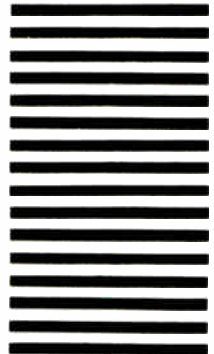
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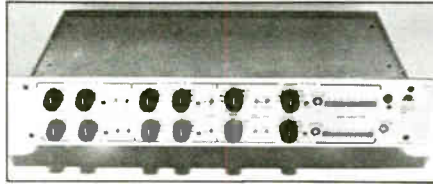


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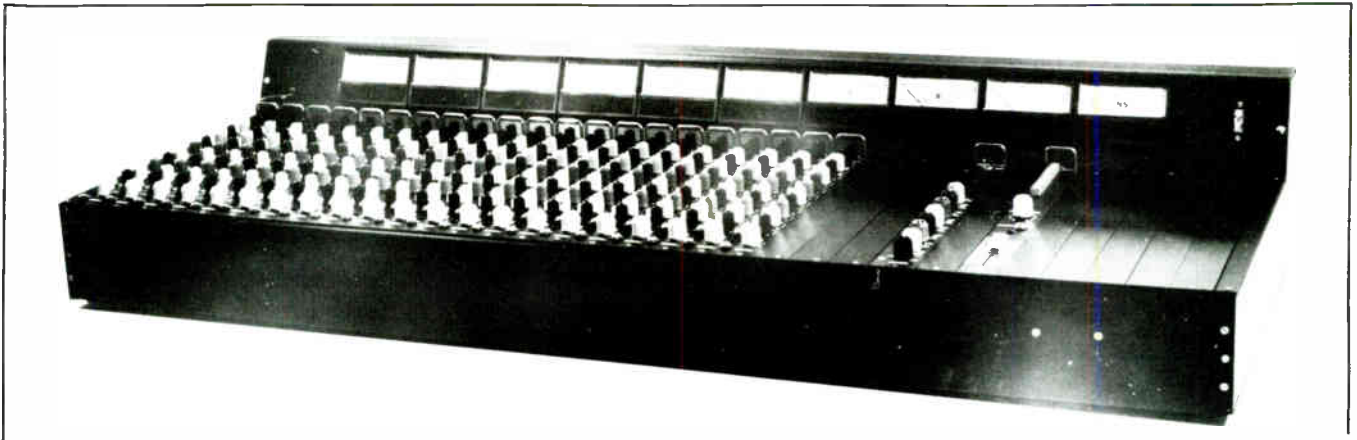
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In our December issue the price for the Loftech TS-1 was incorrectly listed as \$249. It should have been \$299.



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## Engineering Careers Part 3

by Chris Haseleu

In the first column on careers in studio engineering, I discussed the job market, job benefits, and working

conditions. In the second column, Tom Lubin covered the responsibilities of the second engineer. In this last piece, I want to deal with several subjects, including what employers want, how to prepare to fill these needs, how to find and land the job.

What is it that every studio/manager/chief engineer wants in a new employee? At the top of just about everyone's list is experience. There are three other qualifications that seem to share an equal standing. These are personality, musical ability, and an understanding of electronics. After these four, the list breaks down into very specific needs, like how much or how little you will work for, when you can start, how long you will stay, can you tie your own shoes, etc.

Now that you know what they want, what is the best way to prepare yourself? We'll take each of the four areas separately, starting with electronics.

The need for an electronics background will vary with the type of operation. At a minimum, there is a need to understand enough to troubleshoot a session and keep it going until the maintenance engineer can be called. In many smaller operations, the maintenance and mixing engineer are one and the same, necessitating a real need for an in-depth understanding of electronics and maintenance operations.

The current technology has made maintenance both easier and harder. The equipment is made of modules which are full of boards covered with chips. It's easy to swap chips, boards and/or modules. But the circuits now are much more complex.

Logic and digital systems are found everywhere. These require more than a course in AC and DC circuits to comprehend, much less fix.

Fortunately, there are ways of learning this information for just about everyone. Most high schools, junior colleges, and universities have physics and/or electronics courses. There are many trade schools offering training. The military will be glad to train you in exchange for a few years. The libraries are full of books and magazines that can help the self-motivated. There are correspondence courses available from a variety of sources. The idea is to get as much information and training as you can.

Before leaving this subject, a word or two about the position of maintenance engineer. It is a common complaint of studio managers that they can't find enough good maintenance engineers. Many managers will advise the would-be mixer to get into maintenance in order to get his or her foot in the door. That's good advice, but chances are, if you are a good maintenance engineer, you'll never be allowed to mix. That's why there is a shortage of maintenance engineers.

The next area of interest is musical ability. An engineer will be asked to make musical judgments all the time. He/she must be able to communicate with musicians, arrangers and producers in their own vocabulary. Recording, mixing, and intercutting all require an understanding and appreciation of the musical art.

Fortunately, musical ability does not mean musical talent. What is required here is the development of

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the vocabulary and an ear for music. Private musical lessons are available everywhere. There are numerous home study courses available. Practice on an instrument should be supplemented with some music theory. A competent teacher is a great help here. Music theory classes are available at most colleges and universities. Your musical ability will also be greatly enhanced by listening to many musical styles. Expand your appreciation of music. Try some styles outside your normal interest. Go to concerts and shows whenever you can. Listen critically to all forms of music. Develop the ability to dissect and analyze a musical composition.

The next area may be the most important and yet the most ambiguous. A well known studio owner once told me, "The most important thing is personality. I can teach a mixer all he needs to know but I can't teach him to have the right personality."

A lot of things go into a "right personality." There must be desire and ambition, but it should be tempered with humility and dedication. Humor is a necessity. Tact and diplomacy in dealing with people are important. The ability to work and deal with stress is required. Self esteem and self discipline are also important. A strong sense of timing and the ability to manipulate without being manipulative would be helpful.

How do you prepare yourself to have the "right personality"? It's not as easy as learning music or electronics. But it's not a "you have it or you don't" situation either. The sciences of psychiatry, psychology, and sociology all have something to say about personality and group dynamics. Using the techniques developed by these sciences, it is possible to evaluate and adapt one's personality. Even going to a professional analyst or counselor is preparation for a commitment that may cover most of your adult life.

The last area of preparation is to get that experience. The key is to remember that the demand for experience does not necessarily mean 24 track master sessions. Experience may simply be a demonstration of commitment, reliability, and understanding. There are many ways of demonstrating these qualities. Schools may offer internships or co-op programs. Summer or part time work doing live sound is often available. Work in electronics stores or repair stations will help. Audio work in stereo shops, theatres, film theaters, radio stations or television is excellent experience. The trick is to get it when you can and make the most of what you get.

Now that you're prepared, how do you find and get a studio job? Start by compiling a list of all the studios in the area. Use *Mix*, *Billboard's* Studio Directory, and the Yellow Pages. Note the manager and chief engineer's name. Also note any equipment they have with which you are familiar. Prepare a simple resume. Make sure it addresses the areas noted above. Start visiting the studios. Call ahead and make appointments with the managers and chief engineers. On your visit, give them the resume. Explain your experience and desires. Ask if you can sit in on a session or two. Make sure you note the name of everyone you meet. Follow up your visit with a letter and/or phone call. After a few weeks,

make a return visit. Do this for all the studios in your area.

You can expand your search by checking with the local equipment or tape suppliers. They may know of studios not on your list, and are often the first to hear of openings. Visiting the trade associations may also be helpful. They often have open meetings where you can meet engineers, producers, and managers. These include the Audio Engineering Society, the Recording Academy (NARAS), the Society of Motion Picture and Television Engineers, and others.

This search may be the toughest part of the job. But perseverance pays off. Keep at it and good luck! ■

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*(continued from page 15)*

Eventide H949 Harmonizer, Marshall Time Modulator, MXR equalizers, dbx compressors, et al. This self-styled instrument allows her voice to be used for everything from making talking drums to shaping the complex variety of sounds in crashing ocean waves.

And sometimes improvisation is the only way to go. Although she has been using synthesizers on film soundtracks for nearly 10 years, it has been at times in spite of technology. It is only within the last year or so that Sequential Circuits designed their sequencers so that they could be triggered by a click; New England Digital's program for the Synclavier II is even more recent than that. At that, the various systems lack the standardization necessary to trigger each other. As a result, Ciani has had to scour the world of technology in search of solutions. From Germany, she has acquired a click multiplier, which yields a variety of clicks, and she has designed a "pulse conditioner" for a similar purpose, as well as a "pulse stretcher." Complains Ciani, "I once read an article where someone was talking about this problem, and it makes me feel so good when people share that kind of information because the manufacturers make you think you're the only one."

**S**ynching synthesizers to video, however, is completely uncharted territory. Without frames to work with, existing methods are useless. Ciani is working on it, but financing it is a different matter. "I developed a design for converting everything into the appropriate measures," she says. "My technician was willing to do it a year ago. But it would have cost \$50,000. So sometimes these things are premature."

In terms of the instruments themselves, she still prefers the older synthesizers. "Obviously, the biggest thing to happen lately is digital. And the nice thing about that is the flexibility you have for getting in there and designing the instrument yourself. But I find them all to be a little bit 'once removed' right now. A lot of them aren't in real time. You can control them if you're playing a keyboard, but if you're trying to manipulate a sequence, you've got to type in a command, as opposed to the old analog stuff which was always hands-on: if you moved a knob, something changed."

As synthesis has evolved from its academic beginnings to being part of the public consciousness, so has Ciani's own music. Once content to compose in obscurity and perform her music in museums, she recently had her first album, *The Seven Waves*, released in Japan and she has high hopes for it. She describes the music as a "sound painting," listing primarily classical influences, and stresses that the purposes behind the music are very different from what they might have been when she was still starting out.

"Back then, I see my work as being very self-centered. Very magical, incredible, astounding—but really on that level of 'watch what I can do and isn't it amazing?' I'm still very much into technical virtuosity, and I can't be satisfied without that. But one of the things I'm learning, and working on, is dealing with people. Basically, there is nothing else in this world, you know? The music. And you can get into your music. But it really isn't enough to have your one-on-one communication without your instrument. So I'd really like the music to get out there."

Partly because of Ciani, the public's ears are now ready to listen. ■



**ABC**  
**The Lexicon of Love**  
**Mercury SRM-1-4059**

*Produced by Trevor Horn; engineered by Gary Langan; mixed at Sarm Studios, London; mastered at Sterling Sound.*

From the opening bars ABC makes a statement that says it will stand apart from the norm. Side one opens with a 40 piece orchestra that sweeps into a powerful number setting the mood for the album. This is definitely dance oriented music with a tight midgy kick mixed out front. Yet it is a fully orchestrated sound, mixing traditional instruments with electronics, fully layered with beautiful production. The recording is clean and the sounds are tight and crystal clear. The album was recorded in several different studios but mixed at Sarm using a Solid State Logic Board.

The layering and interweaving of sounds and instruments draws one into the record, becoming a thick carpet supporting the vocal. This musical carpet flows from very busy to sparse and back, all the while being supportive. It is attractive because the vocal carries the melody lines with the instruments creating the mood. Not much vocal harmony, stacking or doubling was used allowing the lead vocal to stand out. Although processed here and there, mostly only Lexicon 224 reverb is used throughout on vocals.

All the songs are well done, played with a high degree of musicianship. Any tune on the album demonstrates this as well as quite a creative use of instruments. A variety of keyboards were used with layering being the key. For example, in *Show Me*, string sounds are a combination of Prophet 10, CBX-A and ARP Solina. Extensive use was made of the Fairlight Computer creating orchestra bells, cash registers and other heavenly sounds. Even drums and vocals were recorded into the Fairlight and played back for special effects (listen to vocal in *4ever 2gether*). The complex interweaving of sound is not restricted to keyboards though, as evidenced in *Poison Arrow*. Lots of plucked guitars were stacked, then filtered for harmonics and laid on top of the piano to create a whole new sound.

Drums got their fair share of attention here, too. Lots of reverb is apparent in many tunes taking advantage of ambient mic placement, Lexicon reverb and close mike gating. In some cases drums were sent to speakers in other rooms and recorded. Yes, some fills are synthesized (Simmons Drums), and a Linn Drum is used for claps and percussion. Always



**GREG COPELAND**  
**Revenge Will Come**  
**(Geffen GHS 2010)**

*Produced by Jackson Browne; engineered by Greg Ladanyi and Dennis Kirk; recorded at Wilder Brothers Studio, Los Angeles; assisted by Ray Blair; mixed at The Complex, Los Angeles; assisted by Barbara Rooney; mastered by Doug Sax and Mike Reese at the Mastering Lab, Los Angeles*

Newcomer and Jackson Browne protegee Copeland has already taken some heat for the rockiest and most perversely humorous cut on this excellent debut LP, a ditty titled "Full Cleveland," that, like most of the other nine songs on the set, makes a very strong political statement. Reportedly several Cleveland stations, WMMS-FM among them, have refused to play the album, having taken chauvinistic umbrage at the alleged slight.

Indeed, the poetic passionateness and Old Testament righteousness of Copeland's material make this album—given the bland tenor of most of the chart toppers these days—stand out like an obelisk on a street full of row houses.

However, let us note right away that the politics of "Full Cleveland" have nothing specifically to do with the fair city by the Cuyahoga. Copeland has only appropriated for his own use a satiric term from the East Coast argot, one meant to sum up the mind-set that seems to go with the white belt/white shoes/leisure suit look. Those done up in the entire outfit are wearing "the full Cleveland." Herb Caen, who regularly rails against outlanders and tourists in his widely read San Francisco *Chronicle* column, has found

the term particularly appealing.

As one might expect from a protegee of Browne, Copeland's strength is in his words. The album is, in fact, a veritable feast of words and images that combine Browne's Paradise Lost plaintiveness with Warren Zevon's gunslinger/gonzo angst, with a few Bernie Taupin American Westernisms and a lot of Bob Dylan bluntness thrown in. Copeland chooses subjects—life in a Texas border town, the revolution in El Salvador, Dylan introducing his Christian songs at the Warfield, a son out to kill the man who shot down his father—which fairly crackle with literary and mythological possibilities. A start on more than a few movie scripts might well lie here.

Copeland's constant use of religious metaphor and his evocation of both the zeal of the spirit and the compulsion of retribution form the backbone of the album, and his vocal delivery, while certainly not polished, is quite moving and affecting. This is balanced well by Browne's production, which does not bow to the weighty sentiments of the songs, but complements it with zip, punchiness and grace, with the fat and chunky guitar of Danny Kortchmar the strongest element in the mix.

Browne himself stays to the shadows, which makes his sudden emergence to add a heavenly harmony on the line that climaxes Richard Hill ("God has come/To banish Satan/No child is homeless now") all the more telling. Equally representative of Copeland's power is the penultimate verse from "El Salvador": "Think of the midnight silver and black/Think if the sun can be fooled/Think of the four sisters shot in the back/For holding a land-reform school."

As remarkable as the power of the tales is the fact that Copeland is not—or is just now learning to be—a musician. Most of the songs were originally written as poetry conjured up while Copeland was doing some world traveling, and when he did the demo tape for Browne that led to this album, he just sang without accompaniment to a melody he thought was right. There is indeed hope for all of us.

Despite the richness and a power of the sentiments and musical arrangements on *Revenge Will Come*, its uncompromising nature has kept it off the radio, and, to this point, off the charts. That, however, has nothing to do with its artistry, and for my money this is easily the debut of the year.

—Jack McDonough

driving the beat is that tight kick drum laying a rock solid foundation with the bass for these songs.

The horns, mostly sitting in a nice reverberant space, act as a bridge in many cases linking parts together and adding textures. A prime example is heard between verses in **4ever 2gether**, pulling together the flowing poetic lyrics that endure throughout the record.

A quick look at three of the tunes, will demonstrate the mood versatility of ABC. **Show Me** is a mixture of classical and new wave with an accent on textures. **Tears Are Not Enough** shows that these boys can funk on down with some serious guitar rhythm and horn lines. **All of My Heart** is a spacious ballad, a beautiful melody with lush strings and conviction. This album is an outstanding musical and production achievement and should be inspiring to those wondering where the new music is headed.

by Bob Hodos



**CHOOGLIN'**  
Creedence Clearwater Revival  
Fantasy F-9621

Produced by John Fogerty; mastered by George Horn at Fantasy Studios, Berkeley, California

I know you're probably saying to yourself, "So who needs yet another Creedence

repackaging"? Well, if you're a Creedence fan—or even a former Creedence fan—with a picky ear and a good stereo, this is the one repackaging you've been waiting for. Apparently the folks at Fantasy—spurred perhaps by Mobile Fidelity's re-release of *Cosmo's Factory*—have finally come to realize that there are thousands of Creedence lovers out there who have abandoned the \$149 compact stereos and the Garrard changers (often with a nickel astride the tonearm) in favor of more sophisticated systems—and they still want to hear Creedence! Consequently, Fantasy has finally given us—essentially—a "quasi-audiophile" repackaging.

First, *Chooqlin'* master tape was compiled on a digital recorder, thus bypassing the generation loss usually encountered when making an album of this type. (Original master tapes are rarely—if ever—physically spliced together to create a "greatest hits" LP.) Disk mastering was done with extreme care on the latest computerized equipment, and the records are manufactured to premium quality standards using virgin vinyl for the pressings.

The result, for you die-hard Creedence buffs, is a wondrous revelation of subtle details you may not have noticed before. Progressing through the live cuts—"Suzie Q," "Born on the Bayou," "Pagan Baby," "I Heard It Through the Grapevine," and "Keep On Chooqlin'"—becomes a sentimental journey through beloved bayou country, only this time with your windshield wiped sparkling clean. Everything is right *there*. Percussion instruments—shakers, congas and cowbells—emerge from the fog. The kick drum has more slap, the air opens around the cymbals, the bass has more definition, and the Fogerty guitars attack with a new edge. The underpinnings of Creedence's driving sound have stepped out to assume their own separate identity.

Of course, when you stop to think about it, there's a sobering side to this revelation. That's because *Chooqlin'*'s advanced re-mastering technology also reveals just how good—in their way—the original recordings really are. Tape hiss aside (some of which is certainly due to age and

wear), these recordings boast a liveness, an openness, and an immediacy lacking on most of today's new releases. (And "Suzie Q," as I recall, was recorded 3-track!) I get the feeling that if Creedence had emerged in 1982 instead of 1967—and had fallen into the grip of a sophisticated L.A. producer—they probably would have been 46-tracked, over-lubbed, and signal-processed into the same pasteurized techno-pop that burdens so much of today's so-called rock and roll.

But thankfully *Chooqlin'* is here to remind us of rock's real roots, presenting some of Fogerty's finest moments as he works himself into a frenzy of emotional exorcism. Measuring sheer intensity, only Springsteen compares favorably—but still comes in second. If you listen to this album and then follow it with Kenny Loggins or Michael McDonald, you'll see what I mean. Be prepared for the musical equivalent of sudden detumescence.

—Sam Borgerson

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# VIDEO NEWS

by Mia Amato

## *Calling The Shots: Jay Dubin*

Jay Dubin directs film like tape and tape like film, and has in the process amassed a considerable reputation for full length concert videos. **Graham Parker, Devo, Hall & Oates, Kid Creole** and the **Shirts** are but a few acts Dubin has worked with, in tiny clubs like CBGB's to Shea Stadium.

"In today's market the only cost effective music video is the live concert," says Dubin, who's directed satellite feeds for MTV, ON-TV, and **Campus Entertainment Network**. "But unless it's going out live, I prefer to do multiple video cameras all iso. It gives you so much more time to concentrate on getting good looking shots.

"We did Hall & Oates that way, in a 20,000 seat arena, which was nice, I could bring in a lot of big equipment. I like big equipment!" he laughs. "In the middle of the audience we had a huge Titan crane for wonderful crane shots through the audience. On the left we had another crane, to swing above the aisles. We were able to lay an L-shaped dolly track around the back of the stage, too. We were aiming for a big, grandiose look. Of course, it meant thousands of dollars extra, shipping the crane," he adds. "It takes three people to operate a Titan crane. On the other hand, Graham Parker was done inexpensively, the gross was probably \$55,000 to do that live concert for MTV."

For the Canadian band **Triumph**, which "unequivocally insisted you shooting on film" Dubin used eight Arriflex 16SR cameras equipped with video assist.

"I directed the show from the press booth on top of the arena, watching seven monitors and in PL communication with the cameramen, setting up shots. Before they had video

tapes on film cameras, all you could do was give your cameramen a pep talk before they went out, and two weeks later you'd get your surprises in the editing room."

Another advantage is the ability to see when a camera has run out of film, requiring a switch to another to cover the action. "You can only get about ten minutes per film load, as opposed to video, which will tape up to sixty minutes," Dubin explains. "You have to have four or five magazines per camera, plus an assistant, plus runners to bring the magazines back and forth.

"The film was transferred to video from the negative using a Rank Cintel, for each camera a roll of video tape. For this particular project we edited at E. J. Stewart, with **Greg Dougherty**, doing A-B-C-D-E rolls," he went on. "Greg later moved to Unitel, where we've since done hundreds and hundreds of hours of multimachine edits on one-inch.

"I don't believe in off-line editing. It takes too long. If I have five camera reels, how much time is it going to take me, on a two-machine off-line system, to take out one cassette, put in another and then synch it up? Greg and I can sit down with five iso reels, on one-inch, and knock off a tightly edited sixty minute show in less than 35 hours. We edit the picture to a scratch track, then usually send the job over to Bob Lifton at Regent to finish the sound."

"Music is boring to watch for an hour, and it takes more than just music to produce an interesting television show," Dubin asserts. "I've had managers tell me to stay on the wide shots 'so we can see the whole band.' People are afraid to use closeups, and afraid of dissolves—you rarely see dissolves. One of my biggest complaints about the **Rolling Stones** live was that in the entire ninety minutes, there wasn't a good closeup of anyone in the band. Everything was safe medium shots.

"I like to do lots of layered effects. Not superimpositions, but dissolves. A camera pushes into a closeup on a face as the music pushes to a crescendo... dissolve across to another camera pushing in on a closeup of someone else. Then dissolve to an extreme tight shot of the drums, pulling out from that and then boom! On the final beat, cut to a frontal shot of the stage. I cut the picture to build with the music."

Dubin thinks directors can and should take liberties to make musical projects more than just documentation of an event.

"There's a scene at the end of the **Triumph** film where pyrotechnics go off. In the actual concert, four flares go off and there's a very long guitar solo in total darkness," he explains. "Fifteen seconds of black is totally unacceptable for television. What we did was have seven camera angles of each bomb going off. In editing, we kept repeating these 28 different shots, bombs going off, backlit silhouettes of the crowd, to cover up the black. We put in extra cheers and yells. Enhance the event? It looks like the end of the world."

## *Facilities: Showtime Eyes Texas*

A drama series wrapped round a country music theme bows next month on the pay service **Showtime**. **The Lone Star Bar & Grill**, shot on film in Houston, is six 90-minute programs concerning the owner of a Texas dayclub (a nightclub for people who work at night), his wife and best friend—all of whom happen to be country singers—plus their colorful clientele.

The series is being coproduced with MFC—**The Texas Outfit**, a Houston film company best known for its commercials and documentaries. **David Ford** and **Frank Dobbs** are

producers; **Larry Dobkin** is director. Executive producer is **Thomas Morre** of **Tomorrow Entertainment**.

**Innery Studios** handled sixteen and twenty-four track mixing for the show, which may be simulcast in stereo. Club interiors were done on MFC's own soundstage in stereo and the majority of the musical numbers were lip-synched.

In San Francisco, **One Pass Video** has completed post work on a **Journey** concert at the Oakland Coliseum. The grueling eight-camera shoot was live-switched and "nightmarish" according to OPV staff; high decibel count made it impossible for camera operators to hear directions over their headsets. One Pass is also putting finishing touches on their taping of the **San Francisco Blues Festival** and some promos for **Marshall Crenshaw**.

Facility manager **Scott Ross** reports the firm will add a new 40-ft. mobile unit. It's being built by **Centro** (San Diego) and will be on line in June.

### Video 'Singles' At Last

"Video 45's—music programs running fifteen minutes or less on Betamax cassettes—hit the stores next month, courtesy of **Sony Corporation**. The videocassettes, mostly promos and conceptual pieces by rock groups, feature stereo sound in playback on Sony's new consumer VCRs. A software division, headed by **John O'Donnell**, is shaping deals with record companies following a successful introduction of short-form cassettes in Japan.

"We're paying enough up front to cover the legal fees and mastering costs," explains O'Donnell. "We do all the distribution, marketing, advertising and promotion. We're not coming out with a 'Sony label' though; we'll put companies into the market with their own label identity. This is a no-risk way for record companies to test the waters."

Those waters are murky indeed, as Sony in its enthusiasm is committed to customizing each deal, even down to the cassette box design. Lack of a standardized contract has led to lengthy legal limbos for the first few titles.

So, while many have called, few have chosen to be on the 'video single' bandwagon, even though the concept is a good one. One problem with existing music video product in the half-hour or hour length is unevenness. A few good 'cuts' punctuating largely pedestrian footage. (Cases in point: **Elton John's The Fox** and the uneventful **America** laserdisc).

"An hour is too long for video music productions," says O'Donnell. As

he also points out, the target price of \$15.95 for the shorter tapes may encourage sales over rentals. This is not merely a short-term project to boost sales of Betamax, the Avis of half-inch formats. It's an innovation in product genre and we'll be watching it closely.

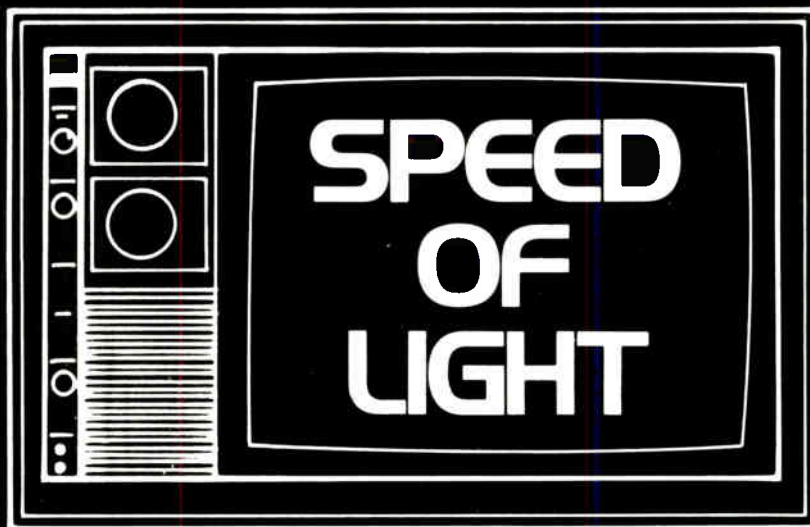
### Only A Game

Another consumer item to watch is the **Journey** video game, loosely based on the latest album, **Escape**. The game cartridge is marketed by **Data Age**, and has music—sort of—according to **Jay Dettling**, product development manager.

"The first part of the game uses

two melodies from the album," says Dettling. "It's like a little electronic piano sound. You can't get too elaborate, because music takes a hell of a lot of memory."

The object of the game is to get five running figures representing **Journey** band members to an 'escape ship.' Using a joystick, the player must evade other figures representing "shifty-eyed promoters," "groupies" and paraparazzi, which scroll down the screen. Dettling expects "well over a million" game cartridges to be sold at \$34.95 in the wake of **Journey's** fifty-city 1983 tour. Certainly the opportunities for cross-merchandising in record stores, now that many carry video games, will be interesting to watch. ■



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## INTERFACE

by Neal Weinstock

**A**ccording to a recent survey by National Public Radio, there will

cashing in on it.

In the major recording centers of Los Angeles and New York, much of this cashing in has taken the form of music recording for the cable

independent producers making ads or shows for syndication or the cable networks. In other words, this is a market that's walking in our doors, and that looks a whole lot like the

# Getting The Business

be about eight hundred more radio outlets in the next decade, due to piggybacking audio signals on cable TV. Stereo simulcasts are now very common. Warner Communications, MTV and other stereo services are being offered to cable TV. Locally produced pop music shows have become a staple on many a broadcast station, even in mono and with lousy audio quality. In short, the market is out there for quality audio in television. Smart recording studios are

networks' original programming. In the rest of the country, studios are lending their expertise to local pop music programs. But is all of this a large part of studio business? Not usually. Could it be larger?

It could be hugely larger.

**Sessions** pages of *Mix* (and of the unmentionable competition, consulted merely for the sake of total editorial completeness) show that very few audio studios are doing video- or film-sound; of those that are, 99% is for

record producers we're used to. These are indeed a growing force in TV, but their meaning to an audio studio is limited in a few ways.

**F**irst, video and film production can be much larger scale business than the albums you cut. Large-scale motion picture productions like to do all of their studio work in one place. The most well-capitalized audio studios

## A Few New Products of Interest

### Enerlite Marathon 10 Power Pack

Enerlite Products of Troy, MI is bringing out the Marathon 10, a rechargeable NiCad power pack that weighs 3.5 lbs. and can power a VCR for up to eight hours. Designed primarily for half-inch production, Enerlite claims sustained performance that equals or betters batteries costing \$500 or more. The unit is capable of delivering approximately 1,000 to 1,500 charge/discharge cycles for 4 to 8 hours. In contrast to competing lead-acid battery packs, which weigh in at 6 to 15 pounds, the Marathon 10 cannot be damaged by over or undercharging. (\$169.95)

### Standard TV Audio Tape

Standard Tape Lab, of Hayward, CA, has added audio alignment

tapes for the TV broadcaster to its line of test tapes. Formats meet NTSC standards and are available in 2 inch quad and 1 inch type C. Tapes have control track, visual identification, serialization and voice announced audio test tones. All are available only directly from the manufacturer, at 26120 Eden Landing Road, #5 Hayward, CA 94545.

### Shintron 260 Audio Follow Video Switcher

The new Shintron 260 is a passive routing switcher with 12 video inputs and one video out. There are left and right audio inputs for each video in, and a thirteenth stereo audio channel for override or emergency feed. A clear green switch indicates the selected channel. (\$420.00)

### Animation Video Anivid System

A video animation stand that duplicates most of the traditional functions of film animation brings animation possibilities to the small video studio. The Anivid System accepts any kind of artwork: cel, 3D, pencil tests, animatics, pixillation, time lapse, titling, document storage, and filmograph techniques. In addition to a standard film animation stand, the Anivid includes a microprocessor based VTR controller for programming by single frames into any unmodified VCR. The system's camera mount is made for industrial size cameras like JVC's KY-2000. For information contact Convergence Corporation, 1315B East St. Andrews Pl, Santa Ana, CA 92705. A full system costs about \$50,000.



in the most active movie-making markets have realized this and expanded to full video/audio/film studios. And in the process they've lost some of their original audio business—in every case. This includes audio post-production for those smaller scale video and film projects that were the studios' first involvement with video. When the small scale producers you may now be working with grow up, will they not also want to do everything in one house?

An effective way to enter audio-for-video (or film) is to arrange some sort of limited partnership with a small video-only facility. The type that your current clientele of small producers may be using for their video studio work may be perfect for a partnership that will allow you, the video studio, and the small producers to all grow together.

Such a partnership will begin to reach another class of client, too. This gets us to a second major way in which the small producers discussed above may be of limited significance. Where do small producers come from? Is there a difference between where the ones that grow come from and whence come the ones that stay small?

**T**he answer is very much a comparison of yin and yang. A major strength that audio studios can bring to the video business is their very outsideness—the experience you bring in from that other world of creating quality audio. The producers an audio studio already work with are likely to be coming from the same orbit. It cannot be said, ipso facto, that producers moving up vertically from within the TV world will be more successful than those coming horizontally from other production experience; but this certainly seems a likelihood. Even more importantly, the most creative combination of talents will often also combine those (*emic* and *etic*) experiences. In short, the audio studio is already coming from outside; try to work with somebody who's moving up on the inside track.

This means approaching broadcasters and cablecasters, along with established TV and film production houses if you happen to be in an area where any of this is happening. Certainly, there are broadcasters everywhere, cablecasters almost everywhere.

In many conversations with broadcast and cable station program directors and engineers recently, at all those acronym shows like NAB, CTAM, NFLCP, AND SMPTE, and in

this writer's other travels around the country, **none**, out of this admittedly informal survey of perhaps a hundred, say that they are working with an outside audio studio. And **almost everybody** thought, upon reflection, that doing so would be extremely valuable.


Stereo TV is coming, component TV is here; they know quality audio is worth paying for, they know they want it. But they really don't know that you exist!

Sure, they know that records get made someplace. They may even know that you have something to do with making them. But TV people have given at least as little thought to our business as we have to theirs. Until now. In other words, the time is ripe.

**O**ne comes across multitudes of these broadcast types at technical seminars, where they're trying to pick up the ability to do for themselves what outside consultants or technicians might do better, cheaper, and faster. Approaching a human of the TV persuasion is no great problem, it just takes the ability to speak their

language. Know exactly **why** TV audio must be improved (e.g.: to be prepared for broadcast stereo, to utilize and promote current cable stereo, to re-seil programming for home video distribution, and so forth.) Know exactly **how** (e.g. time again: the ubiquitous TV audio buzz can be eliminated, but it involves properly aligning video gear as well as cleaning up audio.) To these ends a little bit of attendance at technical seminars from the other side of the coin can also be helpful. (One more e.g.: the interdisciplinary technical combination of SMPTE's conferences is great for this—see coverage in the next issue of their last. The next is February 4-5 in San Francisco, the next equipment exposition and major conference is in L.A., October 30—November 4, '83.)

Talking to other engineers from the video side can be helpful in many ways, but you will eventually want to be selling your services to program directors and producers. An engineer's introduction can be invaluable, but so can the guts to introduce yourself and lay out a detailed proposal cold. You know that what you've got is the thing they need, or you wouldn't have read this far.



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## Crescendo Audio Productions

by David Goggin



An easy flight from the mainland takes you to the second oldest city in the Western Hemisphere: San Juan, a city of one million with skyscrapers, casinos, and streets paved with bricks

been allotted for Double Talk, Inc., a Spanish/English dubbing facility to be completed in 1983. The cost so far: \$1.5 million; the cost when finished is projected at \$3 million.

Crescendo was researched and designed by New York engineer

Brooke Cadwallader, a classically trained musician who worked professionally in big bands before earning a master's degree in economics from the University of Arizona. He formed an international economic consulting firm which was very successful and now has returned to his first love: music and recording.



Crescendo was brainstormed as an audio facility which could serve many needs. Studio A control room has an automated MCI JH-528B console, MCI 24-track and 2-track recorders, Auto-lock for time code synchronization, Dolby noise reduction, Sony BVU-200 VTRs, and UREI 813 monitors. The rack has an Eventide H949 Harmonizer, UREI digital metro-



*(Standing left to right) Brooke Cadwallader, Chairman of the Board; Chips Davis, LEDE Designer; Jose Madera, Head—(Fomento) Economic Development Administration; (Sitting at console) Alan Manger, Vice President, Engineering.*

that were used as ballast in the ships of Columbus. Puerto Rico is Latin and American, a tropical combination of old and new. It's buoyant with lively rhythms—a pina colada with fresh juices and potent spirit.

Crescendo Audio Productions, a major recording complex, opened its doors in December of 1982. Built into an old movie house, Crescendo now has two complete studios, with the foundations and outer walls in place for a third. The key element of the project is diversity and the particulars of the third studio will be determined by the business in Studio A (a 24-track automated facility for record production and scoring) and Studio C (a film dubbing and mixing theater). Space has also



*Control Room "A"*

Alan Manger. As VP Engineering, he brings to the island 20 years experience as audio engineer and producer, as well as film editor and independent filmmaker. Following a Synergetic Audio Concepts seminar and a visit to Tres Virgos studio in Marin County, Manger chose Chips Davis to do the interior acoustic design of the studios.

Financing was provided by

nome, Kepex II, Gain Brain II, Ashly notch filter, dbx compressor/limiters, Dyna-Mite 410 2 limiter gate, and a Delta Labs DL-2 Acousticcomputer, among other processors. Above the studios on the second floor are Crown M-600 power amps with Delta Omega modules, three Echoplex chambers, and an AKG BX-10 reverb unit. Power can be routed from any amp to any studio, and the echo units can be

patched to any room. Studio A is flexible for both making records and is wired with video playback for scoring sessions.

The studio proper has dimensions of 50' x 40' x 20', with drum booth, mirrored room for recording strings, and two isolation areas—all with clear visibility of the engineer. They have over 50 microphones of various makes and models, including some vintage Neumanns and RCAs. Studio instruments include marimba, xylophone, Yamaha CS-80 and Oberheim synthesizers, and an impressive 105 year old Chickering and Sons 9' grand piano.

Studio C, the film mixing theater, is the first Chips Davis LEDE™ room designed for film work. There is an announce booth for dialogue replacement and radio production, and a projection booth which houses a 16/35mm Magna-Tech projector, four dual dubbers, and a four track pickup recorder. The system is capable of up to six times normal speed in forward and reverse. The monitors are UREI 811s and the console is a 24-channel Spectra-Sonics, which has foldable legs and portable power amps and out-board rack for 24-track location recording at such sites as Puerto Rico's 25 million dollar Center for the Arts. The studio also has a Nagra and complete sound kit for film, TV, and commercial location audio. Crescendo is capable of doing audio for just about any conceivable project.



Brooke Cadwallader chose Puerto Rico for various reasons: good weather year round, no competition on a world class studio level, and tax exempt status because of the studio's involvement in the island's music industry. Jose Madera, head administrator of the Economic Development Administration, performed the champagne christening of the studio and stated: "Our goal is to develop all the infrastructures for the music, film, and television industries, of which Crescendo will play a very important part." The opening was attended by numerous musicians, composers, and producers, including Jerry Masucci, the "King of Salsa" and president of Fania Records. He has already slated the studio for his projects, and judging from the turnout, there will be plenty of business from local and location film companies, as well as major advertising agencies.

Crescendo has put the right amounts of forethought and capital into a center which combines comfort and function, creating an environment conducive to truly modern recording. ■

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- 1981 April, Northeast Listings. Todd Rundgren's A/V Studio. Women in Audio. History of the Tape Recorder, Part 2.
- 1981 May, AES Spring Update. Mike Love's Studio. Envelope Controlled Filters. Women in Recording, Part 2.
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