

November 1989

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3rd Annual Salary Survey

Daryl Dragon on Home Studios

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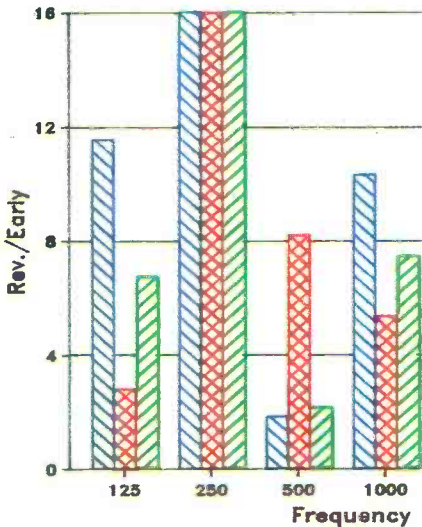
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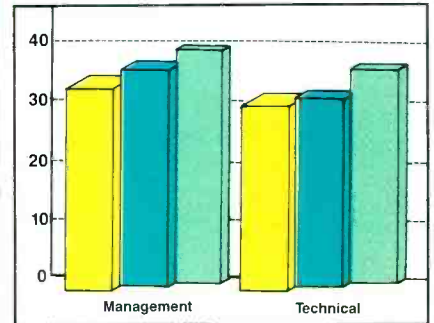


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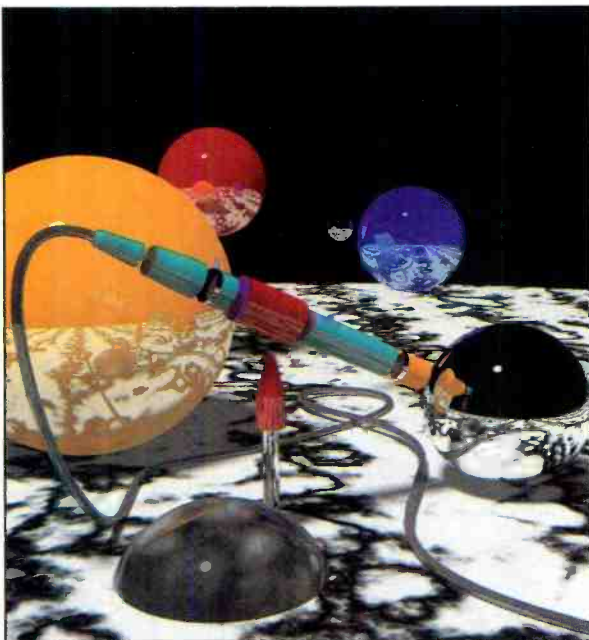
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◀ On the Cover


Created by Bruce Lindbloom and Mike Newman at Crosfield Design Systems R&D lab. The image was created on a computer using three-dimensional solids modeling, texture mapping and ray-tracing algorithms. A Crosfield Dicomed Captivator film recorder was used to output the image onto 4x5 Ektachrome film at 4000-line resolution. Photo courtesy the Bruel & Kjaer Pro Audio Group.

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Pay to play

When is sampling a production tool and when is it stealing?

Are you stealing if you sample a drum track off an old George Clinton album? What if you sample a musician playing live in the studio? Does that musician deserve a royalty on top of the regular session payment? What if you, as an engineer/producer, hit a snare drum while someone else samples it? Presumably, because you're the musician, you've solved the problem of additional compensation. But could the manufacturer of the snare demand something from you, because you appropriated the snare's "signature sound"?

As Rosanne Soifer's lead story in this month's News section details, the questions over sampling are far from being resolved. It's clear that technology has far surpassed the law.

The subject is extremely complex, because in addition to technical questions, there are questions of ownership. In the two suits brought against the Beastie Boys, by Gerry Thomas (now settled) and Jimmy Castor (still ongoing), the issue of who owns the recordings is unclear. The latest case, in which Flo & Eddie are suing De La Soul and Tommy Boy Records, the duo owns the Turtles song in question. But any precedent could be limited, because the suit is in *state* court, not federal court; the recording in question is too old to be covered by federal copyright law.

In addition to the sampling questions, the Thomas suit is notable because engineer Steve Ett was named as a co-defendant, along with the producer, artist and record label. For the first time, questions of accountability extended from record and production company offices to the control room, where creative decisions are made on the spur of the moment, in the heat of the session, and have been long forgotten when depositions are taken years later.

These suits strike at the heart of what we do every day in the studio, whether we

sample or not. In the Thomas and Castor cases, their lawyers argue that the issue is not who owns the recording, but of who owns the *sound*.

In essence, they are saying that Thomas and Castor created a unique sound that goes beyond the ownership of a recording. They own this sound, even if they do not own the rights to the recording.

If you follow this line of reasoning, it's easy to see that a precedent in the Castor case could have far-reaching implications. It's not out of the question to say that a musician playing on conventional recording date could later claim ownership to his personal sound. Could an instrument manufacturer such as Steinway claim that the sound of its pianos is unique and must be compensated whenever it is recorded, even if it's not sampled?

It's clear that technology has far surpassed the law.

This issue is the latest in a series of controversies, such as DAT and outdoor noise levels in the concert sound industry, in which the industry has abdicated responsibility. Instead of policing ourselves, we are allowing people who have no technical (or creative) backgrounds, and no idea of how audio is produced, such as lawyers, judges, politicians, congressional aides and bureaucrats, to decide on the most important issues we are facing.

The bulk of the listening public thinks that records are made when a group of musicians get in a big room, play the songs together and complete an album in about the time it takes to listen to the finished product. Given that sensibility, newer techniques, such as sequencing and sampling, are going to be even more difficult to comprehend. As an industry, why do we put ourselves in these positions when self-policing can solve the problem?

We have a long way to go, because opinions within the industry are diverse. When I went to the New Music Seminar in July, sampling came up in several seminars, and I was struck on how widely opinions differed. Some felt that any sampling was wrong. Others felt that it was OK in any circumstance. Two bars was the limit for some, four for others, and one person thought 12 bars was fine.

How do you reconcile such differences of opinion? By treating sampling as a business issue, in addition to a creative one. There are valid reasons to sample, even to sample copyrighted material. That's a creative decision, and if it works, do it.

Then, be business-smart. First, don't use the doctrine of Fair Use as a shield or an excuse. There is no hard-and-fast rule of when fair use crosses over into copyright infringement, even in something as technically straightforward as a songwriting plagiarism suit. Throw in sampling, and guidelines go out the window.

You gotta pay to play. *Every* sample of copyrighted material that appears in commercially released product should be approved by the copyright holders. If necessary, they should be paid a royalty for the use. Not only is it good business, it's good ethics.

That means someone has to keep track of what is sampled, and if it is used or discarded. Then, the copyright owners have to be tracked down. In the case of vintage recordings, that could be problematic, as ownership could have changed hands several times. Should the owner of the song also be contacted? And, does clearance extend to the performer, in the case of Gerry Thomas or Jimmy Castor?

Clearances don't even have to be obtained until it's apparent that the material is going to be released. The copyright owners of the "Mr. Ed" theme, which the Beastie Boys sampled on "Licensed to Ill," would have been willing to work something out, had someone contacted them before the record was released. That matter was settled during the deposition process, and that's cheaper than settling during trial. But it would have been a lot cheaper if clearance had been obtained first.

Yes, it will be a pain in the butt. But that's the only choice we have. Otherwise, lawsuits are going to continue, and we're going to get stuck with a decision that no one will like and everyone will have to live with.

Dan Torchia
Staff Editor

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GUEST EDITORIAL

By Daryl Dragon

Home Studios: the Root of the Problem

Home studios vs. commercial studios...the source of the problem may lie deeper than you think.

My feelings regarding the controversy between home studios and commercially operated studios haven't changed much since 1979 when my lawyer told me, "Daryl, you better phase out your home studio because the city is going to cite you for running a business out of your home."

Our group, the Captain and Tennille, consists of my wife, Toni Tennille (a fabulous singer/songwriter) and myself (a pre-MIDI keyboardist). We were quite successful in the mid-1970s with a string of hit records. We also had a weekly TV series that lasted one season, which required some specialized musical material that had to be done *quickly*.

I found that because of the way I worked back then (playing almost all the instruments, recording them directly into a tape recorder and my wife singing virtually all the lead and background vocals) that we could save a lot of money in recording costs by recording at home.

It was also more efficient, for the following reasons.

- We had all the musical instruments permanently set up and running in a room dedicated for recording in our home (rather than carting them to a studio, setting up, recording and then tearing down).

- We rented a 24-track recorder *only* as needed.

- We never had to worry about booking and reserving time in a (usually busy) commercial recording facility.

- We worked in a more relaxed, "homey" environment, with no pressure to clear out for someone else's recording session at 6 p.m., etc.

To this day, when I use my home facility (which is mainly to work out arrangements with sequencers and keyboards), my main concern is and always has been: Will I disturb my neighbors in any way? This includes:

- In-house noise from loud acoustical

musical instruments and/or monitor speakers.

- Traffic congestion and noise from parking, deliveries, neighbors' driveway blockage, late-night traffic nuisances, etc.

On the other hand, my commercial facility, Rumbo Recorders, has it over a home studio setup for a number of reasons.

- I am able to monitor first-hand how recording techniques are evolving by the minute, such as what equipment *many* successful, name producers, engineers and musicians are using, and what new computers, and rack-mounted and outboard gear are the hottest.

- Rumbo has had no complaints regarding parking, traffic congestion, excess noise, late-night commotion, etc., since it opened in 1979.

- We found that Rumbo, being a 2-room facility, definitely required a maintenance shop and a full-time technician. This is a plus, because it assures any client that if something does break down, it will be fixed or replaced instantly.

- If a home studio gets too fancy, "over-improvement" could easily be a criticism or an excuse by your real estate broker when you attempt (and fail) to sell your home. Putting a half-million dollars into sound insulation, double-glass windows, 4-ply (sound-proofed) doors, floating floors, electrical wiring and air conditioning can surely become a losing proposition.

Ask the record companies

It seems that no one has really focused on the reason that people are using their homes to record in: today's record company recording budget policies.

Back when Toni and I were recording as Captain and Tennille, record companies gave hefty budgets even to unknown acts that they believed in. Today, those budgets are down considerably. The reason: Record companies know that they can be delivered master quality recordings by the myriads of desperate groups that are now recording their product in home studios.

Undoubtedly, this practice will continue to lower future recording budgets, and it will make it that much harder for exceptionally talented musicians/groups/writers, who may have trouble recording acceptable product, to succeed.

The alternative

Satellite radio and mail-order record product is one alternative to this dilemma. The magazine you are now reading is

called Recording Engineer/Producer. You may have a legitimate reason to ask, "What does radio have to do with RE/P?" Well, the salaries that recording engineers and producers earn (which are paid for by major record companies) are ultimately dependent upon if the product they deliver gets radio airplay. Therefore, there is a basic connection between engineers, producers, record companies and eventually, radio.

I believe that this may be the time for a radio airplay alternative. It may be time for engineers, producers and artists to unite (still utilizing their home/commercial studios) and start a nationally broadcast radio station (via satellite) that can literally reach the whole of the Western Hemisphere. This station would air new product that would not have to depend on whether "The Record Label" or MTV like it.

If you are old enough to remember when records used to earn their way on their own, without the need for outrageous budgets allocated to airplay "promotion," you may be the very one who could initiate the playing of new, imaginative music to our now-stagnate airwaves.

Simply follow these steps for success:

- Check on the unbelievably cheap cost of broadcast time on a typical satellite feed.

- Start up a radio station with a hip music format that includes a music director with an ear for music.

- Broadcast your newly formed radio station via your reserved satellite feed to independent, local cable companies and various college FM stations.

- Make sure you have enough new music to start your own "Top 40" playlist.

- Set up a deal with a cassette, CD and/or LP manufacturing plant to supply enough product for potential mail-order customers.

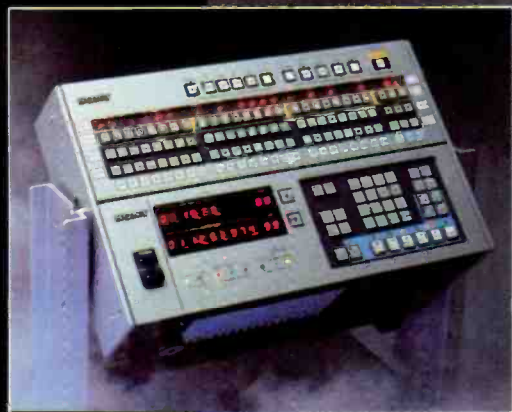
- Set up a toll-free 800 number where the listener can order any product heard on your satellite station. (The number can also serve as an audience monitor as to which tunes on your playlist are receiving positive feedback.)

That's it. Continue to record in your home, commercial studio, motor home, bus, boat, I don't care. The main concern is: Let's get the talented artists back in the mainstream and let's make good music available to all the people once again.

Daryl Dragon is the owner of Rumbo Recorders in Canoga Park, CA.

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PROFESSIONAL AUDIO

LETTERS

Sound reinforcement seminars

From W.J. Kessler, P.E., Kessler and Gehman Associates, Gainesville, FL.

The June issue of *RE/P* makes reference to an inquiry directed to consulting editor, David Scheirman, from Jennifer Miles, who is interested in a school where live sound engineering or sound reinforcement is taught. I can think of no better course or seminar than the one conducted by Don and Carolyn Davis in San Juan Capistrano, CA. These seminars are relatively short (less than one week), but are very pleasant, informative and useful. These seminars are known as the SYN-AUD-CON seminars. SYN-AUD-CON also publishes a periodic newsletter which is one of the best I have ever read. Don Davis has an unbelievably broad background, knowledge and experience in sound reinforcement principles, and is a captivating speaker who always gets his message across to his audience.

I have attended two of these seminars in past years and they seem to get better each year. For information on seminar scheduling, Jennifer should contact Don Davis at the following address and/or telephone number: Synergetic Audio Concepts, Box 669, San Jan Capistrano, CA 92693; 714-728-0245.

VITC and MIDI

From Spence Burton, technical manager, Alpha Recording Corporation, Richmond, VA.

I read Paul Lehrman's August MIDI column with great interest. When I started with Alpha Audio two years ago, I knew nothing about VITC. Like Paul, I learned on the run. I agree that VITC-MIDI connection presents exciting opportunities for audio and video production.

I got a little bit frustrated, though, when I read the following in the August column: *Here's a scenario: You need to line up a sound effect, say a window breaking, with a visual event. You rock the video until you're on the exact frame of the crash.*

Now, instead of looking at the SMPTE numbers on the window burn and typing them into your effects-list editor, you simply hit a button labeled "Capture"...

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Paul Lehrman replies:

Mr. Burton is quite right when he describes The Boss' capabilities. I have followed the evolution of the system over the past several years, and, in fact, have been inspired on more than one occasion by its user interface when thinking about how I would design the ideal video-to-MIDI interface. But he misses the point of the column, which is that a simple change in attitude on the part of VITC hardware manufacturers could bring this capability inexpensively into already-existing, computer-based MIDI and hard-disk audio editing systems. The computing power built into an IBM PC/AT or Macintosh II is already sufficient to do the job—what is needed is a new way to get time code data into the computer, so it can do its thing without the necessity of adding expensive dedicated hardware.

Shakedown in Utopia

From Eric Wenocur, KLM Video, Bethesda, MD.

Thanks for having the guts to publicly recognize the most serious problem in the recording equipment industry today. The problem of overzealous manufacturers turning out products that are unfinished, needlessly changed or just plain redundant is rampant in the professional video and electronic musical instrument markets, as well. (Let's not even think about the consumer market.) I cringe when I see yet *another* piece of copycat gear (or worse, a whole new *format*) arrive in a market that is already so ridiculously glutted that it's not possible to keep track of what's available—let alone what is worth the money!

The pro audio dealers I frequent have racks full of obsolete gear that was "state-of-the-art" a year ago. Is it really necessary to release a new product *every time* a technological change occurs, regardless of whether the product will truly be bet-

ter than the last one? Can't we get plenty of useful work out of the devices we bought this week before having to get next week's new box (whose only real change is the addition of a MIDI Thru jack)?

I join *RE/P* in asking manufacturers for a clean-up period to finalize products already in production, and allow the end-users to catch up with the real advances that have occurred. Likewise, end-users must evaluate their equipment and reflect on whether that new device will actually improve their final product or profit. (Let's be honest, are we being pushed around by our client's demands for the newest gadget? They'll only pay for it later in higher studio costs!) Really, I like getting new equipment as much as anyone, but we must consider the ultimate financial fate our industry will suffer from irresponsible product development.

MIDI multi-tasking

From: Frank Cunningham, Waltham, MA.

In his "Managing MIDI" column for April, Paul Lehrman supports the arrival of multi-tasking, add-on MIDI operating systems for various popular personal computers, and hopes that their software developers will support this progress toward making these computers capable of simultaneously walking and chewing gum, or in musical terms, playing MIDI and scrolling a screen score.

Unfortunately, he neglected to mention that the Amiga computer's operating system has had this ability since its introduction. Music people should consider further that the Amiga's basic hardware is more powerful and cost-effective than any of its competitors. Music software is already available from Dr. T's and Electronic Arts. Other software developers should be aware that the Amiga's faltering introduction is over, that more than a million Amigas are out there and that a stable multi-tasking operating system environment already exists for program development, without needing another layer patched on.

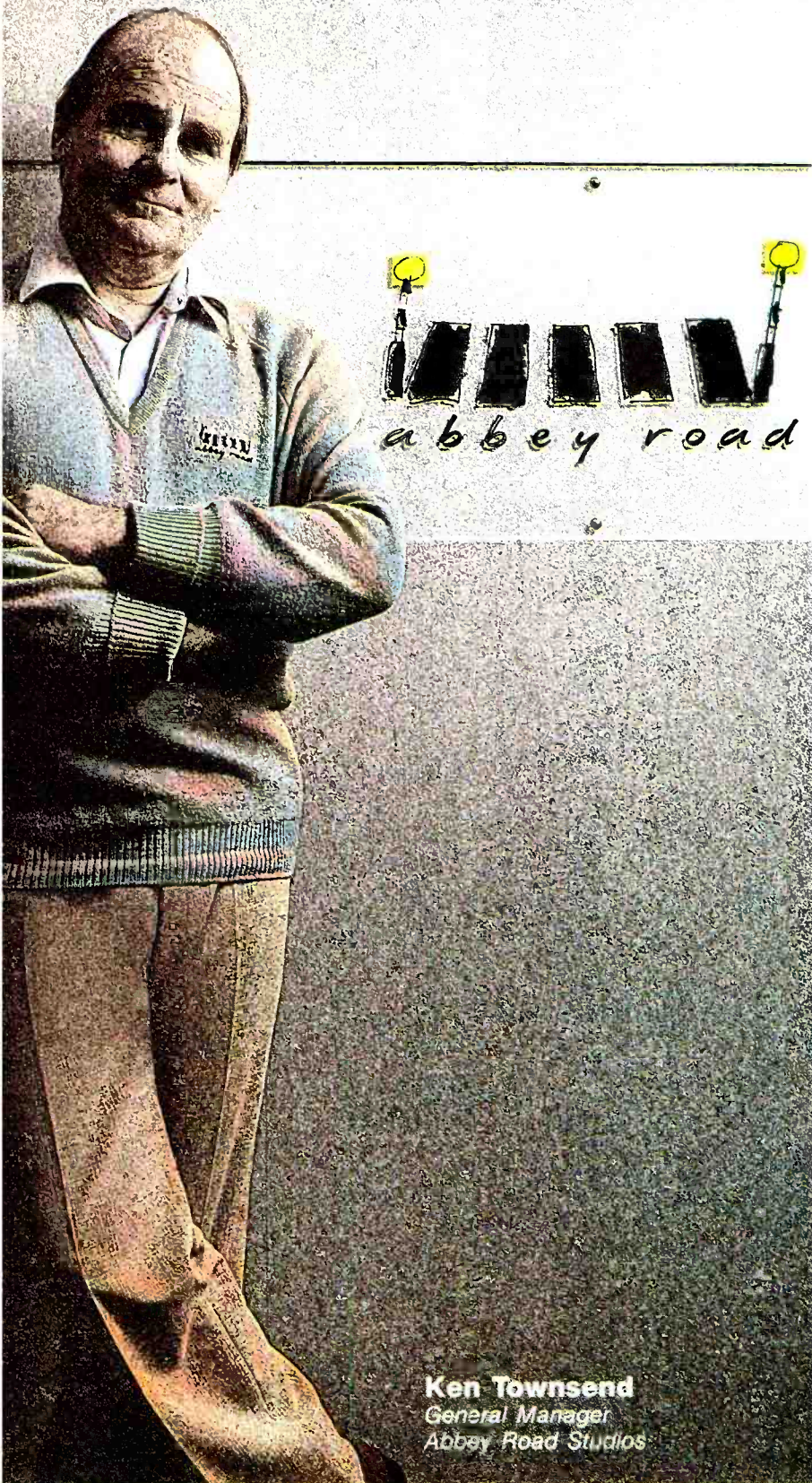
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W E C A R E

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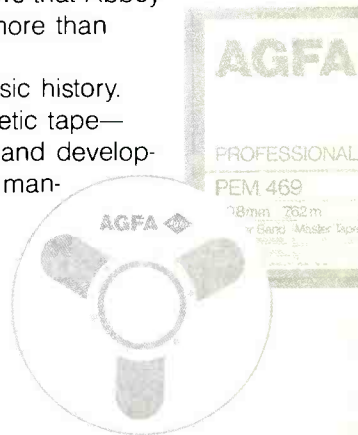
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Sampling questions remain

By Rosanne Soifer

The debate over sampling may have died down somewhat, but it's far from a dead issue. Although one prominent case has been settled, another is approaching trial and a third was filed this past summer.

The most recent case involves Flo & Eddie (Howard Kaylan and Mark Volman of the Turtles) filing suit against Tommy Boy Records and its act De La Soul and producer Paul Houston. The suit alleges that four bars of "You Showed Me" were sampled into "Transmitting Live From Mars" on the album "3 Feet High And Rising."

It's a complex issue, made more complicated by the fact that the current copyright law has no provisions for a technology such as sampling, and that there is disagreement within the recording community on what is acceptable.

Watching TV

"A strange combination of curiosity and shock."

That's how musician/producer Gerry Thomas described his reaction back in May 1987, when he tuned in "Soul Train" and heard a recognizable part of his tune "Bring It Here" performed by the Beastie Boys as part of their tune "Brass Monkey"

from their multi-million-selling "Licensed to Ill" album.

Thus began what could have been the precedent-setting case regarding the issue of sampling. The case, filed in October 1987, was settled this past spring with a non-disclosure agreement, which keeps the settlement terms confidential.

However, a similar case against the Beasties, filed in August 1987 by Jimmy Castor, is still alive and well in federal court. The case involves the allegedly unauthorized use of Castor's "The Return of Leroy (Part 1)" on the Beastie's "Hold It Now, Hit It," also from "Licensed to Ill."

Even if the Castor case sets a sampling precedent, the Thomas case is notable in that the suit named the recording engineer, Steve Ett, as a co-defendant, in addition to the artist and record company. According to Robert Osterberg, attorney for Gerry Thomas, an engineer had been sued at least once before regarding a compilation album (Leo Feist v. Apollo Records, 1963). But in Thomas v. Diamond, a new question arose: Can an engineer be held liable for a potentially illegal sample that a client asks him or her to record or perform?

Sampling opens up a host of legal and ethical issues that have to be decided by the courts. It touches, as in the instance of naming the album's engineer as a defen-

dant, on the question of responsibility.

But the main issue seems to be copyright. Sampling stretches current copyright law to its limit, perhaps beyond. And for the musicians and artists who get sampled, this represents a new category of re-use, not covered by current union agreements.

Looking at the liner notes and disc labels of "Licensed to Ill," it seems that neither the group or the record label, Def Jam, intended to give credit (let alone cash) to anyone involved in the album's production except the principals. In addition to the Thomas and Castor samples, strains of Led Zeppelin, Creedence Clearwater Revival and the "Mr. Ed" and "Green Acres" themes can be heard.

Larry Shayne Enterprises, a West Coast publishing company that now owns 50% of the "Mr. Ed" theme, had its claim settled at a deposition in Fall 1988. Said the company's Dennis Poore, "We were shocked that apparently no one at CBS [which distributed the Def Jam album] even bothered to ask whether the necessary paperwork securing the rights to 'Mr. Ed' had been taken care of. Because very little of the theme was used—only a few seconds worth—it would have cost relatively little compared to what CBS is accustomed to spending."

A spokesman at CBS declined to com-

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RECORDING ENGINEER/PRODUCER is edited to relate recording science to recording art to recording equipment, as these subjects, and their relationship to one another, may be of value and interest to those working in the field of commercially marketable recordings and live audio presentation. The editorial content includes: descriptions of sound recording techniques, uses of sound recording equipment, audio environment design, audio equipment maintenance, new products.

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ment on the case. The Beastie Boys are now on Capitol, and their second album, "Paul's Boutique," was released this past summer. A Capitol spokesman said that all samples on "Paul's Boutique" were cleared with copyright holders because of the lawsuits concerning "Licensed to Ill."

The effect of the Flo & Eddie case is uncertain, because it was filed in California state court, not federal court. The recording was made in 1969, and U.S. copyright law does not protect sound recordings made before 1972. The suit states the recording is protected by the California Civil Code. In previous press statements, lawyers for Tommy Boy said that because the California statute is not as detailed as federal copyright law, the claim of ownership violation is not valid.

What is fair use?

Poore's characterization of sampling—"only a few second's worth"—brings up what could be charitably described as a debatable headache: the doctrine of Fair Use. This is defined as an insubstantial, permitted use by copying and acknowledgement. Whether a particular use is considered insubstantial, and hence a fair use, depends on the *reasonableness of the copying under the circumstances*.

Important factors include whether the copied material was creative or research-oriented; the status of the user (reviewer, scholar, compiler, parodist); extent of use (both qualitatively and quantitatively); whether the use will diminish the value of the copyright; the absence of an intent to plagiarize as evidenced by proper acknowledgement; and the original contribution of the user.

It's obvious that the factors evolved with no thought to a technology like sampling. As Gerry Thomas said, "How long is fair use? When does the recognition factor enter into it? Straight plagiarism is actually easier to prove."

As to the future, the Castor case is still pending and is ready to be scheduled for trial, although Bruce Gold, Castor's attorney, said that there have been some attempts at a settlement.

"There is no less sampling going on, but artists and record companies are beginning to think in terms of licensing before a record is released," he said. "However, it seems the labels are now putting pressure on the artists and producers to take responsibility to licensing everything properly.

"In the future, I see a lot of companies

drawing up hold-harmless agreements [which would relieve companies from any liability due to unauthorized sampling]."

Ron Bienstock, Steve Ett's personal attorney, also sees indemnification agreements becoming necessary for engineers and recording studios. And Charles Sanders, an attorney for the Harry Fox Agency, said that the company had been receiving an increased amount of phone calls from people who want to sample and need information on how to proceed.

Nevertheless, there are many questions that need to be answered. Without a precedent-setting case, conflicting answers will continue to occur. Hold-harmless agreements provide a stopgap measure. But they also simply pass the buck around, especially if all parties involved in a project refuse to work without one signed by everyone else.

Rosanne Soifer is a New York-based musician and freelance writer.

Studer acquires IMS

Studer International has acquired Integrated Media Systems, Menlo Park, CA, a manufacturer of the Dyaxis hard disk workstation. Dyaxis is now available through Studer's worldwide sales network; future product development at the California facilities will be carried out in cooperation with Studer in Switzerland.

IMS, now the Studer Editech Corporation (SEC), operates as a wholly-owned subsidiary under Studer International. SEC is headed by president and CEO Lee Cochran, who, as president of IMS, encouraged the merger between the two companies.

Klark-Teknik and Edge enter agreement

Klark-Teknik U.S. has signed an agreement with Edge Technology that makes Klark-Teknik the U.S. distributor of the Turbosound and BSS product lines. The Turbosound and BSS products will be headquartered at Klark-Teknik's base of operations in Long Island, NY.

News notes

27th Dimension has relocated its corporate offices to 2312 S.E. 29th St., Okeechobee, FL 34974; 813-763-4107; 800-634-0091; fax 813-763-0410. Mail should be directed to Box 1149, Okeechobee, FL 34973-1149. The 27th Dimension studio is now located at 133 Grove St., Orlando, FL 32811; 407-578-1211; fax 407-578-1298.

Electro-Voice has named Jones Audio Sales, Plano, TX, its "1989 Rep Firm of the Year." Jones Audio Sales covers Texas (excluding El Paso), Louisiana, Arkansas, Mississippi and Oklahoma.

The Society of Professional Audio Recording Services (SPARS) recently hosted a meeting at Paisley Park Studios, Chanhassen, MN, in its ongoing effort to unite audio professionals in all markets. More than 60 guests from North Dakota, Minnesota, Wisconsin and Iowa were present. Dick Trump, SPARS regional vice president/treasurer and president of Triad Productions, Des Moines, was the keynote speaker.

Brandyweine Electronics, Newport, DE, recently provided sound for a Delaware Symphony concert that featured the "1812 Overture" with 20 live cannons. Brandyweine mixed the concert with its UNIBEL system, which includes 3-way enclosures with Community M-4, TAD 15-inch and 2-inch drivers; and four SDL-5 ServoDrive subwoofers, powered by Crest 8001 amps.

Aphex Systems has moved to a facility more than twice the size of its previous headquarters. The company is now located at 11068 Randall St., Sun Valley, CA 91352; 818-767-2929; fax 818-767-2641.

Stewart Electronics has appointed Pearson & Pearson, Denver, and North Shore Marketing, Seattle, factory representatives to handle its line of direct boxes, mixers and amplifiers.

Guy Costa, chairman of the board of SPARS and formerly of Motown Records and Gordy Company, has announced the opening of **Quadim Corporation**, a real-time cassette duplication facility. For more information, contact Guy Costa at 31542 Rustic Oak Drive, Westlake Village, CA 91361; 818-706-8843; fax 818-706-8426.

Biamp Systems has been sold by International Music; Rauland-Borg has acquired a financial interest in Biamp Systems Ltd. Partnership, which was formed to continue operations of BIAMP.

UltraAnalog now offers the original dbx high-resolution A/D Converter IC Set in North America and Europe. Carillon Technology, the former parent company of dbx, continues to offer the products to customers in the Far East.

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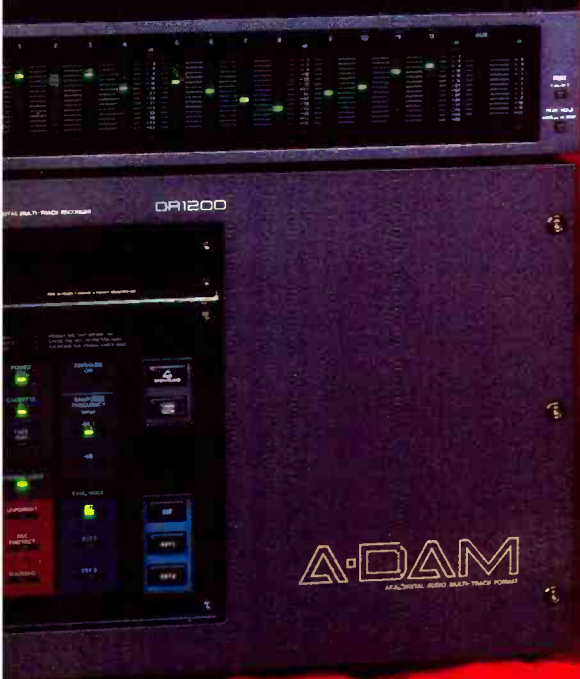
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MANAGING MIDI

By Paul D. Lehrman

SCMS for DAT: Friend or Fraud?

This month's column is not specifically about MIDI. Instead, it deals with an issue that is close to the heart of anyone who works in a MIDI studio.

It's about DAT, which is, of course, of interest to all of us in the recording industry. But it's of particular concern to those of us who have been looking forward to using it as an economical means of high-quality mastering, just as MIDI has proved to be an economical way to do music and sound production. The Recording Industry Association of America (RIAA) has for years been trying to slow or derail the development of technologies that it feels have the potential to harm its member record companies.

Since the advent of the analog cassette, the RIAA has been screaming bloody murder about home taping, claiming that it reduces record sales and cuts into company profits and artists' royalties. The association has been lobbying for royalties on blank tape and tape recorders, to be distributed among its members according to some vague and arcane plan.

Most recently, the organization has been focusing on DAT recorders, claiming that DAT's ability to make unlimited numbers of perfect copies of copyrighted material represents a clear and present danger to the recording industry as we know it. To this end, the RIAA has succeeded in blocking the introduction of DAT to American markets, both professional and domestic, which means that production of the units is limited and prices have remained high.

This has been achieved not by legislative action (although the RIAA tried that route, with the spectacularly unsuccessful Copycode idea), but by the threat of lawsuits—that any company bringing consumer DATs into this country would have to face a battery of lawyers eager to sue for “potential” copyright infringement. The only winners in such a case would be the lawyers' kids, whose college tuition would no doubt be well taken care of.

Paul Lehrman is *RE/P*'s electronic music consulting editor and is a Boston-based producer, electronic musician and free-lance writer.

Now the war seems to be over, and it appears that the RIAA, for the first time since the advent of the LP, will actually have a say in the technological development of a consumer medium. The organization has reached an agreement—a “Memorandum of Understanding”—with a group of Japanese and European DAT manufacturers to incorporate a circuit called the “Serial Copy Management System” (SCMS), once known as “Solocopy,” in every DAT deck. SCMS (“skims?” “skams?” “skums?”) will put a signal into the tape's digital subcode that will let the DAT owner make one digital copy of any copyrighted digital source, but then not allow that copy to be copied—although the *original* can be copied as many times as you want. The system seems to accomplish the goal that the RIAA holds to be primary: not allowing friends to copy tapes, and then having the friends' friends copy the copy, etc.

Just like all the other anti-copying schemes proposed by the RIAA in the last decade, SCMS is a fraud.

Unfortunately, in my humble opinion, just like all the other anti-copying schemes proposed by the RIAA in the last decade, SCMS is a fraud. It will have the greatest effect on the wrong people—small studios—while it will have no effect at all on wholesale, for-profit piracy. Leaving aside for a moment the issue of whether copying by the consumer actually does cut into record sales (the RIAA's own studies support that claim, while studies commissioned by the equipment manufacturers refute it), let's look at what SCMS will accomplish.

It's true that “chain” copying will probably be reduced. But there is nothing in the system to limit copies made through a DAT's *analog* inputs. Granted, the signal degradation generated by multiple passes through D/A converters will eventually limit the number of copies that can be made from a single original. But that number will still be much higher than what is possible currently with analog tape copying. For the vast majority of the boom-box-toting, tape-buying public, the

slight loss of fidelity will go completely unnoticed.

However, if record sales do have a true enemy in tape copying, it has never been consumers doing it, it has been large-scale commercial counterfeiting. SCMS will do nothing to stop counterfeiting, because pirates in business for money will produce tapes by copying an original from one DAT deck directly onto a large number of decks simultaneously. There will be no serial copying, so SCMS will not affect the process. Of course, the copies themselves will not be copyable, but the only person who will realize this will be the hapless buyer of the counterfeit tapes, and who's he gonna call?

As annoying as SCMS may be for the consumer, it is a disaster for the studio owner who wants to use DAT as a mastering medium. SCMS assumes that *any* input to a DAT deck's *analog* inputs is copyrighted material. (Apparently the RIAA figures that the primary reason for anyone to buy a DAT deck is to copy LPs, radio broadcasts and CDs from players that don't have digital outputs.) Therefore, a DAT recording made from an analog source will have the same encoded restrictions as a commercially released DAT tape: It can be copied once and only once.

Because DAT cassettes cannot be spliced, editing a DAT master has to be done using an assembly process: Record the individual songs on one or more DAT tapes, and then dub them, in the order you want them to appear, to a master tape on another deck. If the original source of the music is an analog mixer (which, despite advances in digital mixers, will likely still be the norm for the next several years), the individual song tapes will be encoded by SCMS as “one copy only.” The master created from those tapes, therefore, *cannot be copied!*

No safeties, no archives, no artist's dubs, nothing. You get one shot. If you send the master off to be made into a CD or commercial DAT and it gets damaged or lost, you have to assemble it all over again.

One very rapid response to this will be the establishment of a market for devices designed to neutralize the effects of SCMS in studios. These devices will likely be made by a number of manufacturers, perhaps ranging from domestic basement companies to some of the large Japanese

firms that are not party to the RIAA's Memorandum of Understanding, like Fostex, Teac, Otari, and Nakamichi. (The RIAA hopes to have the agreement made into federal law, but somehow I don't see this happening.)

The first such product will likely be an inexpensive analog-to-digital "pre-converter" that will take the analog signal from a mixer, put it into digital form, and write a message into the DAT subcode that the SCMS will interpret as "No copyright here—make as many copies as you want." But soon folks would discover this device could be used for other purposes—for example, to "de-copyright" the signal coming from the analog outputs of any DAT deck, and thus allow the making of infinitely copyable digital copies from a protected original. (The one pass required through the D/A converters would have a minimal effect on the sound.)

And soon a similar cheap product would appear that puts the "No copyright" message into signals coming from a digital source. This would utterly defeat the en-

tire purpose of SCMS.

Well, perhaps I should stop complaining. After all, the logjam on DAT is finally broken. The RIAA is thrilled because it finally accomplished *something*. The DAT manufacturers are happy because they can get on with developing a technology that should have been finished five years ago. Studios will undergo a short period of inconvenience, and will then be rescued by ingenious independent developers. Piracy will go on.

Kids will listen to copies of their friends' tapes and not know or care whether the copies are digital or analog. And maybe in two or three years, recordable CDs will render the whole debate moot and make everyone involved in it look very silly indeed. But what's troubling is that the RIAA has managed to dictate the development of technology not through reasoned debate, or even through legislation, but through scare tactics.

The recording industry thrives or suffers not on whether people are making copies of records, but on whether the product the

industry produces is any good, and whether the market is there to buy it. To continually pick on the consumer electronics market as the source of its real or imagined woes is stupid and self-defeating. The industry is healthy today not only because of CDs, but also because of pre-recorded cassettes.

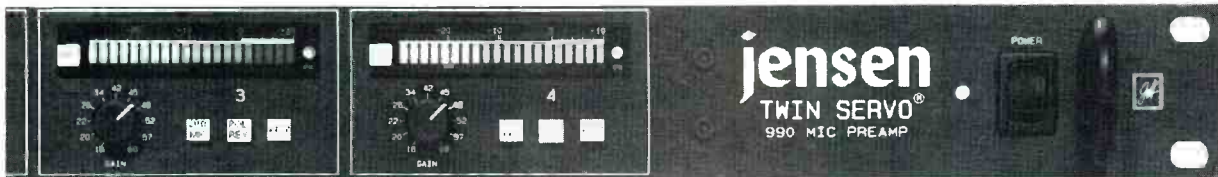
If cassette decks had a royalty attached to their price, which the RIAA has been calling for for years, there would certainly be fewer of them out there, and the whole industry—not just the Madonnas and Michael Jacksons who would collect the bulk of those royalties—would suffer.

Hollywood tried to stop VCRs, but VCRs ended up saving the movie industry. The RIAA should learn from this lesson. The record industry should embrace new technologies and look for ways in which they can help everyone, not try to shoot them down because of some imagined threat.

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SPARS ON-LINE

By David Porter

Don't Confuse Professionalism with Elitism

In August 1973, as I struggled to put up Sheetrock in the ceiling of my first garage studio, I was unaware of the course that I was setting for myself. While working on that project, one not intended for commercial use, I was also reading audio industry magazines from cover to cover.

I wanted to learn all that I could about audio, and I became addicted to the technology and culture of professional audio. In those trade magazines were articles by and about the people that have made this an industry, set the standards and given it the character it has today.

Now, I find myself president of the one organization that truly represents those people. I must admit that I am humbled to be in this position, and I am very mindful of where I came from.

Like many newcomers to the audio industry, I evolved from the semi-pro ranks, not unlike the bush leagues of baseball where you hone your skills while waiting for the break that will allow you to take your place in the big leagues. I am all the things that an elitist organization would scorn: a musician, composer and an audiophile who never apprenticed in a major facility. I didn't come from the establishment and I never worked at CBS. Just like many others building studios today, all I wanted was a little multitrack facility in my home for my own projects.

What happened was not planned for, and like most young people new to this industry, I had limited funds. The only way to continue with my work was to sell studio time to others so I could buy more technology. Suddenly, without really trying, I was in business. Sound familiar?

I became a student of the industry, following the progress of the leading studio owners. I was envious of the Mack Emmers and the Joe Tarsias. I would read about all the technical innovation they could afford and gaze despondently on my

David Porter is the 1989-90 president of SPARS and president of Music Annex, San Francisco.

own modest gear. I wondered how long it would take for me to break out and become a member of the powerful group they comprised. I watched very closely when in 1979, they created an official organization. They called it SPARS, and most newcomers like myself viewed it as a group that operated beyond our smaller circles. They were the big guys and we could only stand by and watch.

In 1981, I attended a SPARS seminar in New York City. I met other young studio owners from around the country and together we listened to the presentations by these various members of the "elite." We were surprised to find them open, friendly and even eager to share their experiences with the new kids on the block.

They were committed to making the recording business a better place than it was when they started out. They were willing to offer help to people like us who had more desire than money. We were impressed even more when we found out that most of the SPARS founders were really no different than us, and had started out in much the same fashion.

Pete Caldwell from Atlanta, now a SPARS vice president, referred to us as kindred spirits. We found that, independent of each other, we had built businesses that were very similar, operated them for years in our own little vacuums and then realized how much we had in common with studio owners throughout the country.

In addition to having similar facilities, and sharing the problems of growth in a highly competitive field, we found that we had something else in common: the desire to be both profitable and ethical.

There is no formal accreditation or licensing in the audio industry. We are left to police ourselves, so there is always the danger of abuse. We don't have a set of written guidelines established for us like there are for the AMA. We must set our own standards and make those standards known to all who practice our craft. SPARS does not issue standards as such, but as an organization it is firmly committed to innovation, education and communication. The dissemination of information regarding standards—whether business, ethical or technical—is central to our educational process.

Communication is the most sensitive of SPARS' activities. After all, we are in com-

petition with each other. We need to share information about equipment, credit risks, new technologies, changes in tax laws and the like, but we must also accomplish this in an environment that remains competitive. In many ways, we pass this information along like folklore, through experience and observation.

The need to communicate is not limited to facility operators. Communication with the manufacturers is crucial to the progress of our industry as well. The SPARS interface program with manufacturers is an ongoing effort to evaluate new technologies and foster a dialogue about the types of products that are developed. Our efforts are to explain what we need, not only technologically, but economically.

The manufacturers need to know about our client requirements, and what they are willing to pay for. There is no point in creating technology that is so expensive that none of our clients can utilize it. In addition, our experience as users can prove valuable to a group of design engineers who may have never mixed anything other than a Bloody Mary.

My mission as incoming president is to dispel the myth that SPARS is an elitist organization, and to encourage new members to join with us in the educational process. Our goal is to filter out those who are really "professional" from the "wannabees" and those who otherwise abuse the industry.

If this appears elitist, then it is a misconception. We encourage new membership so that SPARS may become even more effective and reflect the entire audio industry. To achieve professionalism, we must all play by the same rules.

Professionalism can be practiced by even the smallest of facilities; conversely, a major facility may operate with inferior technical practices and questionable business ethics. Membership in SPARS has nothing to do with size or income.

If I can do anything to further promote professionalism within our industry, then I will have accomplished my goal for the coming year.

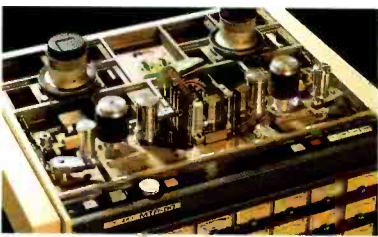
RE/P

SPARS stands for the Society for Professional Audio Recording Services. For information on membership or activities, contact SPARS at 4300 10th Ave. N., Lake Worth, FL 33461; 407-641-6648; fax 407-642-8263.

Because compromise is out of the question

Whoever said, "compromise is the oil that lubricates the business process" apparently wasn't in the studio business. To the contrary, in this unique world where art and business meet, and clients expect the best, compromise may be the fastest way *not* to stay in business.

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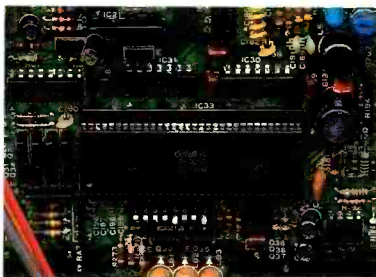
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For *whatever* you do in audio, both machines share constant tension transport technology for high performance, yet gentle tape handling. You'll also get digitally timed, gapless, seamless, punch-in, punch-out. On the "80," an autolocator with search zero and three cue memories comes built-in. And if you're a purist looking for the highest quality sound



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possible, you'll appreciate the transformerless balanced inputs and outputs.

The MX-80 and MTR-90 were designed from the beginning to lock to external controllers, and therefore provide exceptional performance under these conditions. Pictured is the MTR-90's advanced EC-901 chase synchronizer.



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UNDERSTANDING COMPUTERS

By Jeff Burger

Databases, Part 1

Let's take a break this month from the musical aspects of the computer and examine some of the business applications for the studio.

One of the most useful types of software for keeping your business organized is the database. A database stores a series of records containing similar types of information. In traditional terms, a Rolodex is a database. Each card is a record containing the same type of data as the others: name, address, phone number, etc...A mailing list is a database. Even a drawer full of invoices is a database. The advantage of electronic databases is in manipulating these types of information.

To duplicate a combined Rolodex/ mailing list in an electronic database, a template would be designed containing all the categories you would possibly want to associate with a client or classify him by. Each of these is called a field.

A simple client database template might contain the following fields: Record #, Company, Contact, Address, City, State, ZIP, Phone, Category and Notes. Each field is given a maximum character length and a data type such as alphanumeric, numeric, date, auto-entry, etc.

For example, the Address category would allow alphabetic and numeric characters, the ZIP and Phone categories would only accept numbers, and the Record number would be entered automatically by the computer. The Date category is another candidate for auto-entry.

Once these categories are defined and arranged comfortably on the screen, you can go to data entry mode and begin filling in records. Each time you enter a new record, a new record number will be created with the next sequential number. Most categories are self-explanatory. The most important thing to keep in mind is to use standard terms when filling in fields such as Category and Notes, for reasons that will become clear as we begin accessing information.

Jeff Burger is RE/P's computer consulting editor and is president of Creative Technologies in Los Angeles.

After a number of records have been entered, we can manipulate information in a variety of ways. For starters, the records could simply be printed. As things sit now, they would be printed in the order of entry. In effect, they are sorted by ascending record number. It is possible to sort on any another field, such as sorting the Client field alphabetically. This would yield a more useful printout.

Different layouts might prove handy as well. This way, the same data can be displayed for a number of uses. A report format would probably contain all fields. A mailing list format would only have the fields required for a mailing label and they would be, of course, organized appropriately. Another layout might give you a phone and address book.

The true power of the database comes clear when we apply search criteria on given fields. The simplest example is just looking up a client, say to get a phone number. For example, if you want to send out open-house invitations to kick off your new voice-over booth for broadcasters, simply search the Category field for "Broadcaster." Here the importance of using standardized terms comes clear. You could live with having to search for "Radio Station" and "TV Station," but you wouldn't want to have to also search for "Television" and any other variation on a theme somebody might have thrown in.

For this reason, it is often desirable to restrict a field such as Category to entries or codes conforming to a previously specified list.

Fields can often be searched on "whole word" or "includes" basis. The City field might be searched on a "whole word" basis for all entries in Chicago, while the Phone field could be searched for all entries including the 312 area code.

Search criteria can usually be extended to multiple categories. For instance, your mailing might go to all broadcasters (in the Category field) from Chicago (in the City field). This is an "and" search, i.e., the search is for clients who are broadcasters *and* are from Chicago. An "or" search might be helpful for something such as mailing to clients who are either broadcasters (in the Category field) *or* who you've made a reference to "voice-over" in the Notes field.

Let's say you want to send a personalized letter to each customer with the invitation. Undoubtedly, your mailbox has been accosted from time to time with form letters offering something akin to "personal attention to you, Mr. John J. Smith." This product of the electronic age is actually the marriage of a database similar to the one we've been talking about and a word processor. First, the database is created (or bought in electronic form in the case of most of those prize contests). Next a basic letter is drafted, except the field names are entered at strategically personalized positions.

At the top of the letter would be a header listing the field names from the database so that the word processor knows how to reference the appropriate fields. The process of uniting the letter with the database is often referred to as a mail merge, or print merge. Of course this process can be executed after you have restricted the search criteria in the database to suit your needs.

When designing a database, you should consider how large your database will grow to. If you have limited disk space, especially a floppy disk, consider that each character takes up a byte. Each field usually takes up the maximum number of spaces defined for it whether the contents actually fill the spaces or not. Multiply the total number of maximum characters in the record template with the number of records you envision having and you'll have a low estimate of required disk space.

So far, we've been discussing fairly simple applications of common databases. This basic form is often referred to as a flat database. Databases can certainly be put to greater task such as invoicing and managing inventory. This usually requires a more complex form of database known as the "relational" or "hierarchal" database.

Next month, we'll expand our discussion to databases that can improve the daily operation of your studio.

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Recording the Sound of a Concert Hall

By Jim Mastracco

Mic placement in the reverberant field can be as important as mic placement in the direct sound field.

The medium of recorded sound has made a transition from 78 to LP to cassette to CD, but experience still shows that microphone choice and placement is the single most critical element in the entire recording process.

Engineers and producers are often faced with the task of choosing and matching microphones to performance spaces which possess distinctive qualities of reverberation. Complicating the problem is the fact that musicians, either recorded as a group, such as an orchestra or string quartet, or alone as soloists, prefer to be in acoustically comfortable surroundings.

The reasons for preferring certain

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Photo 1. Interior of Union College Memorial Chapel during a choral rehearsal. (Photo by T.J. Cooley.)

acoustical settings are twofold. First, musicians love to perform for people. Independent of being compensated for their services, live performances render an excitement and spontaneity to music that usually cannot be created in a studio unless performance-like conditions exist. An example of this would be when particular artists are brought together for a special event (e.g., the Bernstein "West Side Story" sessions on Deutsch Gramma- phone). Secondly, musicians rely on the acoustics to aid in the execution of their professional skill. Stage design, hall shape, audience absorption of sound and the amount of reverberation all play a role in ensemble.

Acoustical studies made during the last four years have examined the effect of microphone choice and placement in the measurement of reverberation. The results of this work suggest that, in terms of recording, the choice and placement of microphones in the reverberant field is as critical as choice and placement near the performing ensemble on stage. How the reverberant field is documented may be the one factor that contributes most to the recorded sound.

By interpreting the results of these studies, both from the point of view of a recording engineer as well as a scientist, new suggestions may be made about producing *authentic*-sounding recordings in preferred acoustical environments.

Miking: schools of thought

There are three schools of thought about microphone choice and placement. The first teaches that microphones be placed in the same point in space as is physically allowable. Methods that apply this rule are designated as *coincident techniques* and usually utilize a pair of directional microphones separated by either a small distance or angle. These techniques produce a stereo image from coherent phase between sound waves and from differences in sound intensity.

The second school of thought champions the placement of microphones in a wide array across the front of an ensemble and throughout the stage area. These techniques, designated as *spaced array techniques*, generally utilize microphones that possess omnidirectional characteristics. Recordings produced in this manner derive imaging from random phase between sound waves and a point-to-point pickup via a multiple number of transducers, often only three across the front of the stage.

The third school suggests that some combination of coincident and wide-spaced methods be employed. Depending on the method chosen, representations of

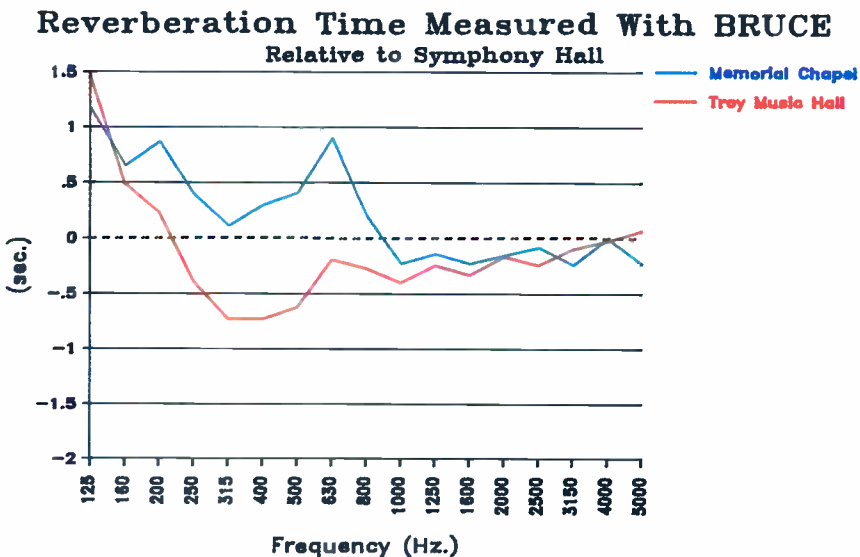
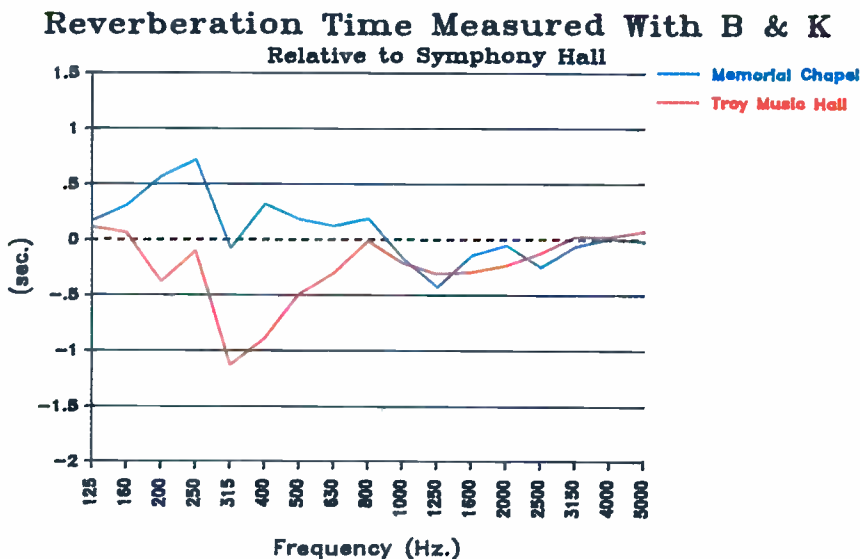


Figure 1. Differences in reverberation time between Memorial Chapel and Troy Music Hall, normalized to Symphony Hall.

the reverberant field are created and reproduced across a pair of loudspeakers.

Independent of their distinguishing features, all of these techniques involve the placement of microphones in the direct sound field. On the few occasions when microphones are placed in the reverberant field, omnidirectional microphones are usually chosen and used at very low gain. Little debate has been offered about other options that may be employed in the reverberant field since it is generally believed that this sound is diffuse and not dependent on the direction from which it impinges on the microphone.

However, it is the reverberant field that is the distinguishing feature of each hall's

acoustics. Consequently, the placement of microphones in the audience area is what acousticians are concerned with when studying the effect of a music hall's architecture on its acoustics.

Measuring reverberation

Experiments were conducted in three architecturally similar concert halls: Union College Memorial Chapel, Schenectady, NY; Troy Music Hall, Troy, NY; and Boston Symphony Hall. Photo 1, of the Union chapel, illustrates the traditional shoebox design shared by these three buildings.

These spaces have their origins in classic halls built at the turn of the century,

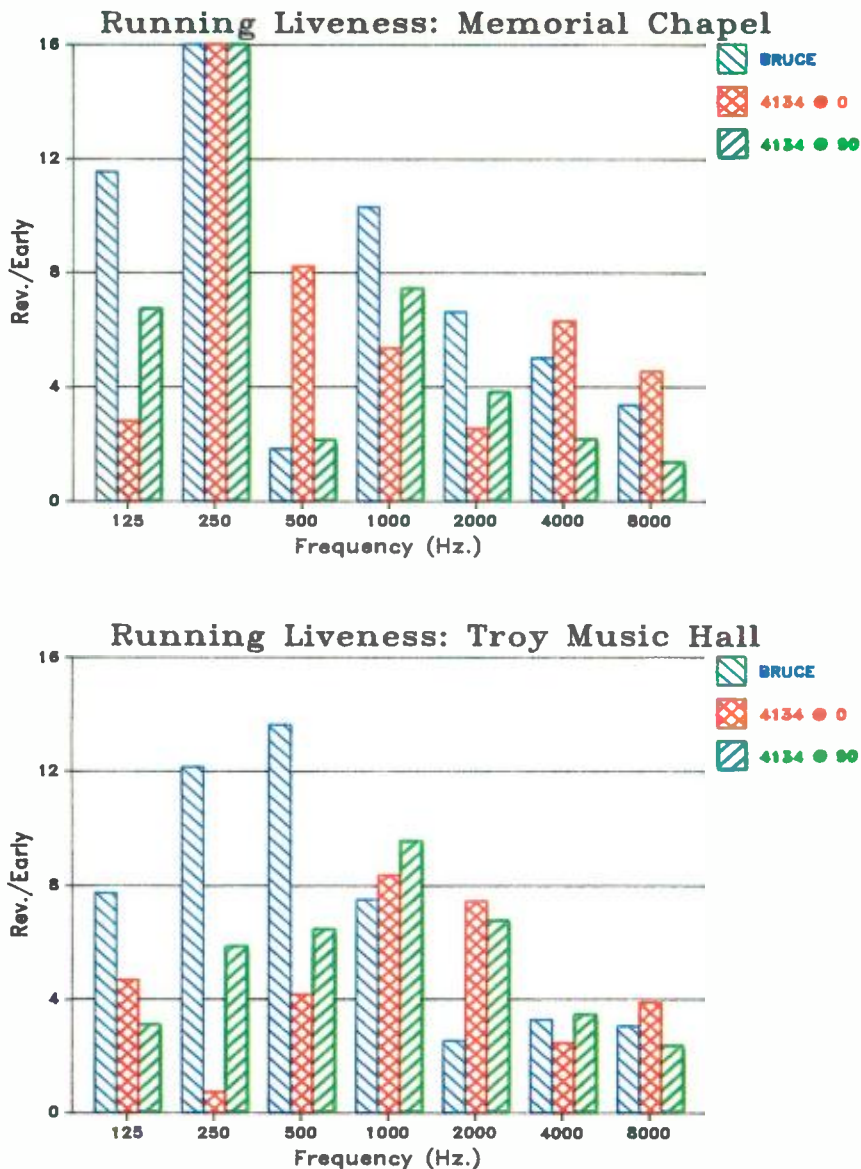


Figure 2. Ratio of reverberant-to-early sound for three microphone configurations.

among them the Gewandhaus in Leipzig, the Concertgebouw in Amsterdam, and the Musikvereinsaal in Vienna. All three test spaces are noted not only for their acoustics, but for their beneficial effect on musical ensemble. Their similar floor plans, architectural materials and architectural heritage provided the opportunity to recreate experimental conditions in each hall, thereby making the results comparable.

Microphones of various designs were placed in the audience area and well into the reverberant field. Among those used were a Neumann U-87 studio condenser, Neumann KM-83 and KM-84 studio condensers, a Crown PZM, Bruel & Kjaer measurement microphones, and an acoustic manikin of the author's own design.

The manikin, designated as BRUCE: Binaural Recorder for Understanding Concert Environments, contained a B&K 4134 pressure microphone in its ear.

Orchestral chords, produced from a BBC recording of the English Chamber Orchestra in an anechoic chamber, were introduced into each space via amplified cassette tape loop. As each of 25 pulses was amplified and played, the reverberation measured by each transducer was recorded.

From this data, several analyses were performed, including calculations of reverberation time as defined by Sabine, and calculations of Running Liveness. As prescribed by Schultz, one measures Running Liveness by electrically integrating, or "adding up," all sound during the first

50ms and the first 400ms from the instant the chord is energized into the hall. The ratio of these two voltages is then calculated.

Reverberation times measured with an acoustic manikin and a 4134 omnidirectional microphone oriented toward the side wall (90° with respect to the vertical) were calculated via a PC-assisted spectrum analyzer. Figure 2 plots the differences in reverberation time between Memorial Chapel and Troy Music Hall. The values were normalized to reverberation times obtained in Boston Symphony Hall, a concert hall that many consider to be the best in the United States.

The top illustration shows how the two halls compare when only the omni is used. The bottom plot illustrates the same comparison, but the manikin employing the omni is used as the recording device. Above 1,000Hz, the differences are minimal, but below this frequency band the differences are quite pronounced.

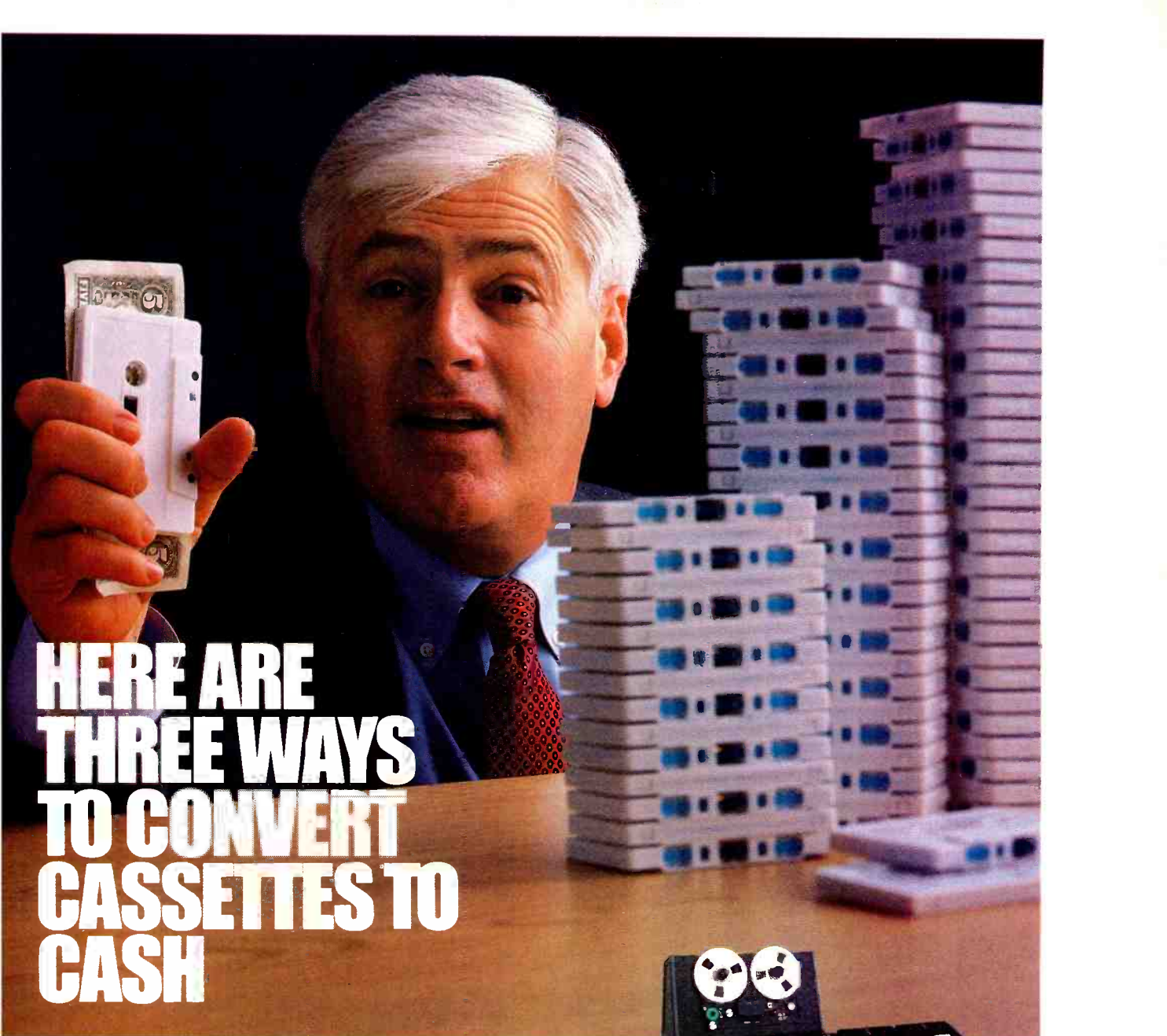
At frequencies below 1,000Hz, particularly those between 250Hz through 630Hz, the microphone oriented toward the wall suggests that Memorial Chapel has a greater reverberation time than Troy Music Hall. However, when the manikin is used to record the transient pulses, the differences between the two spaces relative to Symphony Hall is altered and the two smaller halls are shown to have reverberative properties that are much more distinctive.

At the 1/3-octave band centered at 125Hz, there is little difference between the two smaller halls. But depending on the choice of transducer, the difference relative to Symphony Hall rises to 1.5 seconds. It appears that at lower frequencies the presence of the manikin introduces an effect associated with the presence of an audience. Previous studies have shown that the spatial qualities of a concert hall are determined at lower frequency bands. The results of this investigation support this contention.

Depending on which configuration of the B&K microphone is employed, the differences in the results show these halls to have very different reverberant qualities at frequencies where subjective judgments of acoustics are generally made.

In Figure 3, the ratio of reverberant-to-early energy is plotted for three microphone configurations: a B&K omni oriented toward the ceiling (0°), the same microphone oriented toward the side wall, and the acoustic manikin employing the B&K omni. The length of each bar is directly proportional to the ratio of reverberant-to-early sound that each microphone measures.

Octave band comparisons for Memori-



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Hallradius: Memorial Chapel

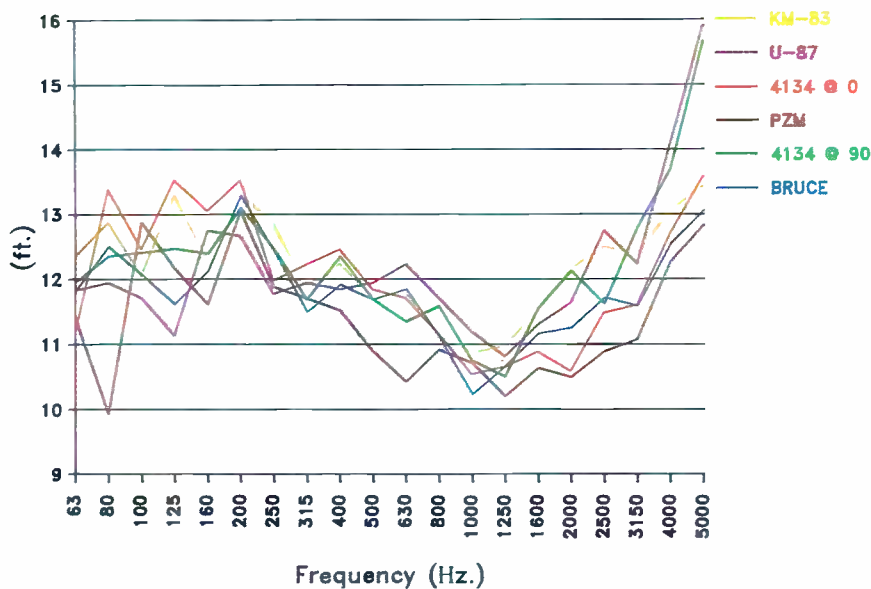


Figure 3. Hallradius of Memorial Chapel for six different microphones.

Running Liveness: Troy Music Hall

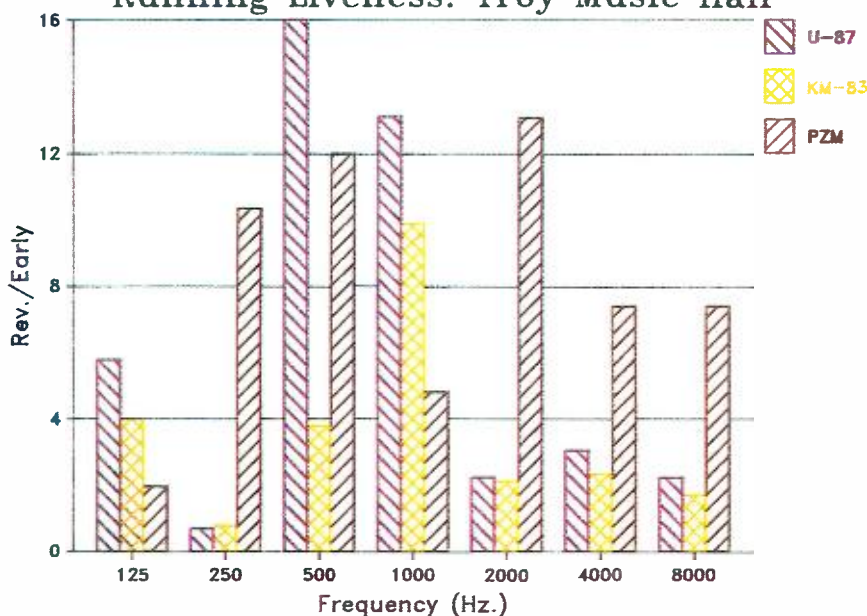


Figure 4. Ratio of reverberant-to-early sound in Troy Music Hall for three studio microphones.

al Chapel and Troy Music Hall suggest that these two spaces are acoustically different, depending on which microphone is used. At 500Hz in Memorial Chapel, the omni yields a ratio of 8:1, but the other two configurations of this microphone produce ratios of 2:1.

In Troy Music Hall, the omni yields a ratio of approximately 1:1, but the other two orientations of the omni produce ratios greater than 1. In effect, the results are

reversed from those obtained in Memorial Chapel. At 250Hz, the manikin yields the greatest ratio in Troy Music Hall, approximately 12:1; but in Memorial Chapel, all three microphones yield approximately the same value, slightly over 16:1. At the higher frequencies, Running Liveness is reduced, but in each octave band, no pattern is observed.

One of the more interesting results is illustrated in Figure 4. The Hallradius is de-

finied as the point in a music hall where direct and reverberant energy are considered to be in equal proportion. It is often used as a guide in microphone placement to keep the amount of reverberation on a recording uniform.

Even under the assumption of diffuse reverberant conditions, the results of reverberation time measurements for each microphone indicate that differences of up to three feet in Hallradius exist at the same frequency bands, and up to six feet at different frequency bands. Similar results were obtained in the other two halls.

The Random Energy Efficiency (REE) theory of microphone placement suggests that, despite differences in orientation, the reverberant field would be measured as symmetric and uniform. The results of these studies suggest that the Hallradius and the REE are not applicable in describing real situations. Consequently, the assumption that the reverberant sound field is diffuse is inappropriate.

Ramifications

Figure 5 shows a plot of Running Liveness for Troy Music Hall, obtained with three very different studio microphones. Each set of bars corresponds to the KM-83, U-87 and PZM respectively. The KM-83 is a pressure transducer, the U-87 is a pressure gradient transducer and the PZM is a boundary surface microphone.

In spite of the fact that each microphone was placed at the same position in the audience, a different measure of reverberant-to-early energy is obtained. Moreover, it is the cardioid that measures more reverberation at certain frequencies. The PZM, a microphone mounted on the floor, yields the greatest value of this ratio at the majority of frequencies.

This is consistent with the understanding that each microphone responds to a different physical variable and therefore cannot measure the same components of the reverberant soundfield. Microphones that utilize a pressure gradient element respond to a vector. Depending on the direction of orientation and their proximity to boundaries, these types render a different measure of overall reverberation.

Microphones that utilize pressure elements record the reverberation that one generally thinks of (reverb associated with the duration of the acoustic pressure) as scalar. The results suggest that both types of reverberation, pressure or scalar and pressure-gradient or vector, should be mixed in some proportion to create an accurate sound of a music hall.

Being there

A soundfield microphone, either created from two stereo microphones, or by the

implementation of a Calrec, is the only configuration capable of recording transient sound in three mutual directions, as well as the magnitude of the decaying sound pressure. As such, it is the only means to record all components of the reverberant field necessary to completely parameterize the acoustical properties of a hall.

For conventional 2-channel playback, one of the primary goals of an engineer is to record musical performances so that a listener will feel a sense of presence, a feeling of "being there." Although certain microphone techniques, such as M-S, Blumlien and xy cross-cardioids, can capture these qualities when used in the *right* hall, the results of these studies suggest that reverberation, as a measurable quantity and as recorded sound, exists both as a finite time and in terms of measured and perceived direction.

Consequently, the information recorded only by two channels is often not enough in many situations. This is not to suggest that misguided multiple miking is the answer, but as one example, a standard xy pair might be augmented a manikin seated in a chair well into the reverberant field in order to obtain some missing

acoustical information. As a second choice, a PZM might be chosen as the third microphone and placed on the floor in the audience area. Some recording methods currently in use attempt to attack this problem. Dual-MS, for example, places a complimentary cardioid/bidirectional pair in the reverberant field.

Summary

While most engineers concern themselves with orchestral balance and close-miking, the effect of the room is generally ignored and lumped into "reverberation," as if all reverberation were the same. The experiences of the author, both as a producer and as a scientist, suggest that reverberation is a complex property of a room and it is the *vector* reverberation that gives a music hall its signature. Microphones which are sensitive to direction are necessary for a recording if the acoustics of a hall are to be accurately rendered in a recording.

No matter how applicable acoustical studies are to advancement of the science of architectural acoustics, subjective factors will always constrain the application of research to practical situations. Human beings, even scientists, cannot be fully ob-

jective, and because taste is a key part of the process of making recordings, microphone choice and placement will still remain an art.

As an effort to apply more science to the art of recording, it is hoped that this article will be a catalyst for some new thinking about recording the natural acoustics of a hall. What complicates the problem of measuring reverberation for an acoustician generates wonderful opportunities for the recording engineer.

By experimenting with different microphones away from the direct soundfield, engineers can provide missing information concerning the correlation (or a lack of one) between what is heard with what acousticians measure. It is hoped that those who make recordings in acoustically interesting spaces will leave their sound processors and digital reverbs in the studio and produce more recordings without "artificial sweeteners added."

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Some Good News

By Dan Torchia

Salaries increased for the third straight year, according to RE/P's third annual Salary Survey. How does your salary compare?

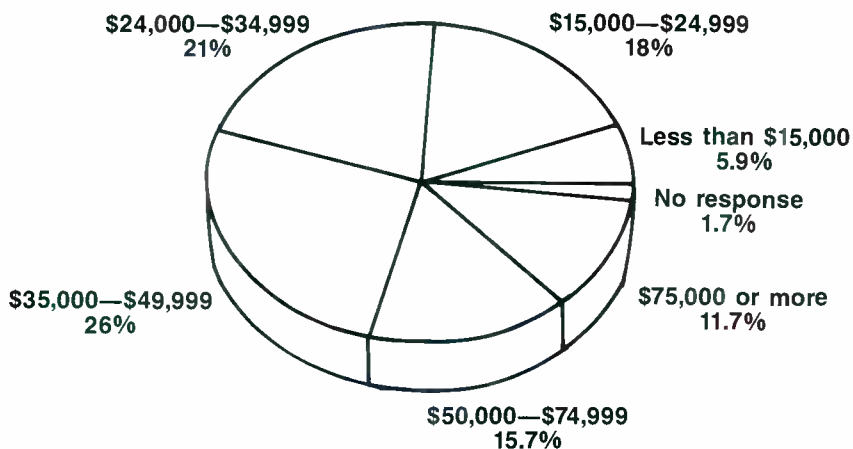


Figure 1. Salary levels for all respondents.

In this year of uncertainty in the pro audio industry, there is this bit of good news: salaries in recording and production facilities have increased for the third straight year.

This is but one of the results of RE/P's third annual Salary Survey, which measured the salaries, benefits and other employment data among the three classifications of RE/P readers: management, technical and production staff. (See the section "How the survey was conducted" for more information.)

Some other results:

- Almost half of the respondents sup-

Dan Torchia is editor of RE/P.

Salary levels	Mgt (%)	Tech (%)	Prod (%)
Less than \$15,000	4.7	5.1	8.9
\$15,000 to \$24,999	17.9	14.4	21.8
\$25,000 to \$34,999	17.4	27.1	21.8
\$35,000 to \$49,999	24.7	28.8	25.8
\$50,000 to \$74,999	18.7	14.4	11.3
\$75,000 or more	13.6	9.3	10.5
No response	3.0	0.8	—
Median (estimate)	\$39,545	\$36,333	\$34,000

Table 1. Salary levels for management, technical and production staffs.

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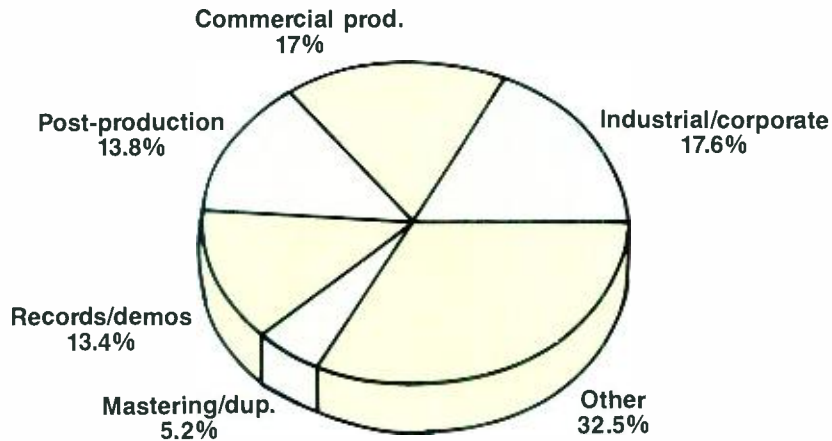


Figure 4. Top facility income sources for all respondents.

Benefit	Ttl (%)	Mgt (%)	Tech (%)	Prod (%)
Medical insurance (paid)	65.0	55.7	77.1	71.0
Dental insurance (paid)	40.7	29.8	48.3	54.0
Vision insurance (paid)	22.2	17.0	25.4	29.0
Short-term disability	28.1	20.9	37.3	33.1
Long-term disability	31.2	20.9	46.6	36.3
Sick leave (paid)	50.5	37.4	69.5	57.3
Vacation (paid)	61.0	48.1	78.0	69.4
Holidays (paid)	56.8	41.3	76.3	67.7
Personal business days (paid)	25.2	22.6	29.7	25.8
Stock purchase plan	10.1	8.1	11.0	12.9
Profit-sharing plan	16.6	17.4	12.7	18.5
Savings plan	13.0	6.4	14.4	24.2
Pension plan	26.8	15.7	36.4	38.7
Compensation deferral plan	16.8	8.9	25.4	23.4
Bonus	22.0	25.5	20.3	16.9
Assn. membership (paid)	15.1	17.0	15.3	11.3
Trad show expenses (paid)	30.6	26.0	48.3	22.6
Tuition refund plan	18.0	10.2	28.8	22.6
Automobile furnished	10.5	14.5	11.9	1.6
Other	6.1	7.7	5.1	4.0

Table 4. Fringe benefits received.

didn't choose the main five categories we listed—corporate/industrial, commercial production, post-production, records/demos or mastering/duplication. Instead, the largest share, 32.5%, opted for "other." And what they listed pointed to the diversification the industry is currently experiencing. Such answers as sound reinforcement, consulting, product sales, rentals and in-house production speak volumes about how the industry is chang-

ing. (See Figure 4 and Table 5.)

How the survey was conducted

The survey was conducted by Vicki Kearns-Vaal, marketing research director at Intertec Publishing, RE/P's parent company. Data in this article were compiled by the Market Research Institute, an independent company.

Questionnaires were mailed to 1,840

RE/P management, technical and production readers on an Nth name, or random, basis. A total of 477 usable surveys were returned, which translates into a response rate of 25.9%.

The questionnaire asked the following questions:

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2. If the respondent was on staff or an independent contractor.
3. The primary type of business.

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Income Source	Mgt (%)	Tech (%)	Prod (%)
Industrial/corporate	19.1	10.2	21.8
Commercial production	11.9	30.5	13.7
Post-production	10.2	16.1	18.5
Records/demos	16.6	8.5	21.1
Mastering/duplication	5.1	6.8	4.0
Other	36.6	28.0	29.0

Table 5. Top facility income sources for management, technical and production staffs.

The readers speak

Despite the good news on salaries, most respondents also voiced uncertainty about the future of the industry. On the questionnaire, respondents were given the opportunity to comment on the industry. Issues included digital standardization, the pace of new technology and home studios vs. for-profit studios.

Here's what some readers said when asked, "Please comment on the most important issue facing the recording industry":

"With the revolution in technologies and the continual merging of media, re-educating industry professionals will become very important in the very near future."

"Customers want studios to keep up with all the new technology but don't want higher studio rates. Studio rates in the Midwest are the same or lower than they were 10 years ago."

"The diverse quality of practitioners, from a guy with two mics and a cassette machine to an engineer in a multitrack studio. It's all 'audio recording' to most people. It's the 'if you have a tape machine and mic, you're an expert' concept. I charge too much, and the cheaper fellow does such a mediocre job, it gives us all a bad name. Yet, we are both 'the same type of expert.'"

"There needs to be a broadened

understanding of the legal and ethical implications of digital sampling."

"Defining a common digital recording format that is cost-effective for all levels of studios."

"Manufacturers making and selling cheap and inferior lines along with pro gear. This allows more home studios, thus making commercial studios unable to charge proper rates and make a reasonable income."

"Large recording studios coming down on privately owned and operated recording studios. We have a right!"

"High-quality random access audio, in which mixers, effects and recorders can be interconnected with no more hassle than analog. It's not enough to have digital control and then have digital effects that don't talk to mixers, and mixers than are the wrong bit word and won't work with certain recorders. I'm not paying a fortune for a digital mixer to find out next year that the model I bought isn't the best for use with the next generation of digital recorders."

"The marketing of new technologies as 'the ultimate' leaves buyers to abandon previous methods and runs the risk of closing out any real innovations, as new technologies are replaced by newer to keep the Japanese electronics industry

running. Every five years, a new method is needed to replace the previous, so that new machines can be manufactured and sold."

"I'm really happy to see the growth in digital recording, which will make competition even greater in the marketplace. Competition among suppliers will make digital very affordable to the smaller studios, like myself."

"Developments keep happening faster than you can pay for the last investment. Hence, there is a lot of problems in compatibility, user parameters and interfacing. More standards need to be followed and shared from one company to another."

"To me, sampling is a new way of exploring new ideas, and making what's old new again."

"Standardize! Companies still can't agree that Pin 1 is ground, Pin 2 is hot and Pin 3 is cold."

"The demise of vinyl is unfortunate. Digital was brought in before it was ready, because of financial issues, not musical issues. True digital recording, with no moving parts, should be the next step, with 140dB dynamic range, 100kHz sampling rate and no phase distortions/modulations. It will be able to be put on ships, with no transducers to muck up the sound."

4. The top income source.
5. Years in the present job.
6. Years in the pro audio industry.
7. Salary level.
8. Average hourly rate if the respondent was an independent contractor.
9. Fringe benefits received.
10. If the company was unionized and if the respondent belonged to a union.
11. If the respondent moonlighted and

- what the top three income sources were.
12. How the initial audio experience was acquired.
13. For owners/managers, years of engineering, production and technical experience.
14. Education level.
15. Age.
16. Membership in professional societies.

17. Trade show attendance.
18. State in which the respondent is located.

In addition, readers were offered the opportunity to comment on what they feel is the most important issue facing the recording industry. (See the sidebar, "The Readers Speak.")

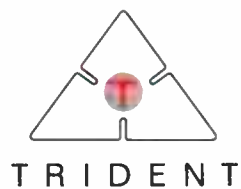
RE/P

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Florida has done much during the last decade to rid itself of the image of being nothing more than a good place to limp off into the sun-drenched landscape and pursue retirement pastimes such as shuffleboard and park-bench sitting. Times are booming in the Sunshine State

Gregory A. DeTogne is a Chicago-based free-lance writer.

Florida's Sunny Future

By Gregory A. DeTogne

In addition to Florida's strong potential to become "Hollywood East," many of the state's recording facilities are flourishing.

these days, so much so that a cultural and economic renaissance has been fueled not only by native Floridians and carpetbaggers from all other areas of the nation, but by many international and multinational concerns.

Against this backdrop, the state's recording industry is also going through a metamorphosis, based largely on Florida's increasing role in film and television production. Presently anchored by two major players, a fledgling center for production arts is emerging in the Orlando area that has turned producers' heads on both coasts.

Recording studios have responded to

these changing winds in a variety of ways. While some have plunged headlong into providing capabilities for complete motion picture scoring, others are seeking to carve out specialty niches in post-production and commercial work. Conversely, many studios aren't yet convinced that the "Hollywood East" hype is for real, and are cautiously waiting for the market to play its hand before making heavy capital investments in directions that may never show profit.

Just because the big boys from Southern California's backlots are moving in doesn't mean that the death knell has been sounded for album work. Record projects continue to flourish, especially in the southern part of the state, where the venerable players continue to hold their own, recording and mixing album tracks for talent from all parts of the world.

This town ain't big enough for the both of us

The Old West cliché could well describe the competition that is taking root in Central Florida between Universal and Disney-MGM Studios in the once-sleepy town of Orlando, which until 1971 probably had a higher population of alligators and armadillos than humans.

It was in that year, however, that things



Aerial view of the back lot and soundstages at Disney-MGM Studios. (Copyright 1989, Walt Disney Co.)

began to change irreversibly. Uncle Walt opened the doors to the Magic Kingdom on a portion of 28,000 acres of land he had purchased in the early '60s for the then-whopping price of about \$200 an acre. The Magic Kingdom was followed by EP-COT Center in 1982.

On May 1st, Mickey and crew took the wraps off of Disney-MGM Studios, which by definition is a complex dedicated to both entertainment and production, as it offers tours of its actual working facilities as well as other "theme park" attractions.

Disney-MGM is not the first attraction of its kind; Universal Studios has operated a tour of its California production facility since 1964. With plans for a similar theme park/production center slated to open in 1990 just a few miles from Disney-MGM. Universal unveiled the production end of its Orlando venture on Oct. 24, 1988.

Rivals in no small sense of the word from a production standpoint alone, both operations will have a profound impact on the state of the industry throughout Florida. But before entering into that discussion, it may be useful to look at what each facility offers.

Universal Studios Florida

Universal Studios Florida lies on 444 acres 10 miles southwest of downtown Orlando. Originally a joint venture between MCA and Cineplex Odeon, the latter party bailed out after being offered around \$150 million for its 50% interest and ongoing services by the U.S. subsidiary of the Rank Organisation PLC, based in the United Kingdom.

According to a publicity department release, Universal's production facilities "accommodate all production needs for film and/or tape, including feature films, episodic television, commercials, videos, audience sitcoms, game shows, soap operas, and special event programming."

In all, Universal's six sound stages can be expanded as needed to create five other sound stages, encompassing a total of 104,500 square feet. Residing next to the sound stages is a support building containing offices, makeup and dressing rooms, rehearsal halls, editorial facilities, a screening theater and conference rooms.

Tenants on the lot include Century III (a post house—more on them later), Lee Lighting, Panavision, Warren Sound Company and Michaelson's Catering. Also scheduled to open in May 1990 is the Universal Studios Florida Backlot, which promises to be a "secure, highly flexible shooting environment offering numerous set locations of various locales and time periods from around the world."

Disney-MGM

Now, let's take a trip across town to the other Goliath, where the Winnebagos are parked like glimmering dinosaurs in a



Century III is the exclusive video post house at Universal Studios Florida.



Artist's rendition of Universal Studios Florida. Production facilities opened in October 1988; the theme park is scheduled to open in 1990.

parking lot the size of the Gobi Desert.

The Disney-MGM studio complex includes three sound stages, a post-production facility, three production office buildings, an on-site costuming department, scene shops and a backlot featuring an authentic New York street and a generic residential street. Designer Milt Forman gave the three convertible sound stages the ability to handle either film or video shoots without sacrificing any of the elements necessary for either medium.

Operations at the post-production facility are managed by The Post Group from Hollywood. To coincide with its geographic location, the organization calls itself The Post Group at Disney-MGM Studios. Equipment at the facility provides engineers with the capability to perform both on-line and off-line editing, interformat editing, digital graphics, telecine, full audio sweetening (including full layover, layback and prelay), ADR and Foley.

Additional resources at Disney-MGM include Walt Disney World's extensive costuming department, a 5,000-square-foot scene shop, a 200-acre tree farm and nursery, and a complete in-house inventory of light, grip and camera equipment rental.

Universal and Disney-MGM are currently the only major players in Central Florida's vision of "Hollywood East." Rumors abound that Paramount, and maybe even United Artists, will soon make their own bids, but none of this has been carved in stone.

But while these big fish try to flex their gills in a new pond, the other fish—mainly the recording studios already established in the state—are scrambling about in preparation for the resulting backlash their business will feel. The strategies they adopt to meet the new market challenges will in large part hinge upon this notion of Hollywood East.

Is it reality, or merely another creation of hype promoted in large part by a state film office more than hungry for the business?

Century's mark

Situated in a 30,000-square-foot chunk of vendor's space, Century III at Universal Studios Florida is the exclusive videotape post-production house on the lot. In keeping with Ted Kaye's entrepreneurial niche philosophy, the post house was originally headquartered in Boston, but decided to sell out and move to Florida, where

the branch facility was expanded into the full-blown studio it is today.

"We initially set up our branch facility in 1985 to hedge for future growth in the state of Florida," says Oliver Peters, facility operations. "We took this step well in advance of Universal and Disney-MGM's presence, and now it looks like we definitely came to the right place at the right time."

In addition to Century's central machine room, the facility features a pair of on-line videotape edit bays, two more off-line videotape edit bays housing an Ediflex system, a film-to-tape transfer suite, computer graphics area, and two audio control rooms that share a common recording studio space.

Realistically, Peters views the current Hollywood East concept as being largely hype. "This market will mature, but I think it will be a 5-10 year process," he says. "Some of the things—true film post services for example—aren't really in place yet. And many in the business down here are asking themselves if they should build that portion of the industry first and hope the business follows, or vice versa. Only time will tell what will happen, and as it evolves it will be self-supporting."

Why our first stage monitor



No chrome, no glass

That's the credo of Digital Multi-Media Post's vice president Chris Coan, who emphatically believes that it's "tools and talent" that make a facility, not upscale aesthetics and plush surroundings.

Coan, along with Digital Multi-Media president Marie Hamlin and director/editor Robert M. Storer, has entered the fray in Central Florida by taking a stand in film post-production. To help fuel its efforts, the firm recently hot-rodged the existing Synclavier system by installing a Synclavier 9600 TS 16-track Direct-To-Disk Recorder (the world's largest system of its kind), which veteran music and sound designer Coan uses for creating original music and sound effects, mixing, composing, and scoring for film, TV, videos and commercials.

While other studios in the Southeast have laid claim to having something in their arsenal that was the "world's largest" at one time or another, Digital Multi-Media can additionally boast that it paid cash (around 750 large ones) for its most recent crown jewel.

"We figured that if we were going to invest in the world's largest Synclavier sys-



Not only did Digital Multi-Media buy the world's largest NED Synclavier system; the Orlando post house paid cash for it. Clockwise from left: Chris Coan, vice president; Robert M. Storer, director; and Marie Hamlin, president.

console may well be your last.



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tem of its kind—and pay cash to boot—we had better be in a non-competitive niche,” Coan recalls. “We’ve created that special place by becoming a film post house.”

The need for the new Synclavier became apparent when Coan began composing motion picture film scores with his old system. “It just couldn’t handle that kind of workload,” he adds. “So I discussed the upgrade with my partners, approached NED and jumped into the pond with both feet. None of us wanted to go into debt for the equipment, so we paid cash.

“That way, we kept our overhead low, and if we run into a situation where we don’t have a project for three or four days, we’ll lock the doors, give our assistants a long weekend and go deep-sea fishing.”

Y’all come to Tampa

Ron Rose admits that five years after he relocated to Tampa from Detroit, he caught himself saying “y’all.” If the name doesn’t sound familiar, his voice may. Rose began a career in radio broadcasting at the age of 15. Then, while still in the Motor City in 1970, he began doing commercial voice-over work. By 1974, he was building his first studio. Today, he operates two facilities: one in Detroit, and another in Tampa, which opened in 1985.

A man who once topped off a Detroit

party by letting guests flog a Toyota with a red-white-and-blue sledgehammer, Rose’s sometimes-madcap antics are well overshadowed by his business savvy. While the scramble in Central Florida continues to be centered on film production, Rose has distanced himself from the scene and carved his own market with an 8- and 16-track audio post-production facility, doing a healthy trade in commercial work, voice-overs and slide/film narration.

Outfitted with two studios named “Cheers” and “Casablanca,” the former is an 8- and 16-track suite sporting a Sony 1-inch BVH-2000 and a 3/4-inch 5850, while the latter is an 8-track room. Ron Rose Productions also is big on maintaining a complete sound effects library (a look into the vaults reveals 70,000 cuts, including many new releases on CD), and handles high-speed video and audio duplication work. Slide-film pulsing is available too, along with a computerized expediting and shipping service.

“The biggest thing we’ve done as of late is add our area’s first satellite uplink and downlink service for recording spots,” says studio manager Michael Stram. “Now, it’s completely possible to direct a session from here with the talent in New York, Los Angeles or wherever there’s another uplink. On the other hand, clients can additionally uplink talent, music, or finished

spots from Tampa to wherever else on the planet there’s a downlink.”

Who really cares

about Hollywood East, anyway?

Clint Smith doesn’t, at least not a lot, and not yet. Like Digital Multi-Media’s Chris Coan, he has a laid-back, yet professional, attitude about his work. And like Ron Rose, he’s insulated himself well away from the Central Florida fracas.

To find Clint Smith, clients have to head down A1A (or the turnpike, depending upon how fast you want to get there) to West Palm Beach. Once there, you’ll be standing face-to-face with Saturn Sound Studios, which Smith owns and operates with his partner Allen Peerson.

Geographically isolated from the Miami/Fort Lauderdale markets, as well as Orlando and the West Coast scene, Smith’s mainstay is regional business in the form of audio-for-video, music-to-video, voice-to-picture, demos for upstart rock groups and a little of everything else. Saturn Sound’s regular client roster also includes a gamut of industrial types such as local sugar companies, Florida Power & Light, and Pratt & Whitney.

An 11,000-square-foot, 1-room, 24-track analog facility, Saturn Sound isn’t actively pursuing feature work. Smith enjoys the comfortable position he’s in and doesn’t

Florida manufacturing

Although Florida’s pro audio manufacturing activities may not rival that of the West Coast, it is nonetheless active. Perhaps most notable is the Sony Professional Products manufacturing plant in Fort Lauderdale.

Before Sony owned it, the plant was the headquarters for MCI’s manufacturing activities. MCI is now a division of Sony; in its days as an independent, it was the only pro audio firm manufacturing both consoles and multitrack tape recorders.

MCI was originally opened in 1955 as Music Center Inc., a hi-fi shop owned by Jeep Harned. Through word of mouth, Harned gained recognition for repairing and customizing audio equipment. It was Harned’s relationship with studio owners and audio professionals that would encourage the growth of an audio community in south Florida.

Criteria Studios in Miami was the

primary testing center for MCI. Criteria’s very first console was customized by Harned, and it was there that many of MCI’s first consoles were sent. Criteria owner Mack Emerman said, “I’m very proud of my relationship with Jeep Harned and I’m glad to have been involved with the product development for MCI”.

Much of the technology that recording engineers now take for granted were MCI innovations, such as in-line console architecture, console automation and the autolocator.

Providing customization and quality is still the key. The MXP 3000 series console with optional plasma metering, 20, 36 and 56 input module frames and a selection of equalizer and microphone preamp designs allows for an estimated 42,000 possible combinations.

Tape machines manufactured at the plant are primarily the Sony

APR series. This series includes the new APR 24 multitrack, and the APR 5000 series 2-track machines with optional center-track time code. Both are designed around computer intelligence that allows for built-in smart synchronization and electronic alignment.

Other companies

Florida is home to these manufacturers and distributors:

- Apex Machine Co., tape duplication systems, Fort Lauderdale.
- CT Audio Marketing, distributor of the C-ducer microphone, Boynton Beach.
- Dimension Music & Sound Effects, music and sound effects libraries, Jupiter.
- Promusic, music libraries, Fort Lauderdale.
- Studio Master Systems, console automation systems, North Miami Beach.

have a huge nut to make every month, so he can come and go as he pleases. Much of his gear is second-hand, but it's all paid for.

"Exotic electronics are great, but if they don't relate to your clients on a regular basis, you may as well use them for boat anchors," he says. "The clients we have can't hear the digital difference, don't need it, and don't want to pay for it either, so why invest? When the time comes, we'll make a move toward the technology if necessary, but not before."

Despite the fact that Saturn has no need for a digital upgrade, Smith still sees the wisdom in expanding his analog world. "I'd like to have a 1-inch video room to gather up some of the commercial work that's around, and to get involved with posting industrials. Dolby SR noise reduction on my 24-track is a distinct possibility as well."

Further south

Just south of Alligator Alley and before AIA runs itself into the ocean at the end of the Florida Keys, you pass through greater Fort Lauderdale and Metro Dade County, the most populated portion of the state. In the latter sector lies Miami, which is where Florida's recording industry hit stride internationally in the '60s. Today, studios in this region are keeping close



The "Cheers" 8- and 16-track studio at Ron Rose Productions, Tampa.

tabs on the rumblings upstate while continuing to do a healthy business in the more traditional areas of album work, commercials, and demos.

For our purposes, we'll look at two facilities within this market: River North in Fort Lauderdale, and Criteria in North Miami.

Once a favorite spot for wild-eyed spring break orgies, Fort Lauderdale has sent the college party crowd up north to Daytona, and begun to revitalize its downtown district. In the heart of downtown lies River North Studios, which, as its name implies, is situated right on the New River Canal.

Occupying an historic Mediterranean-style building complete with its own courtyard, the facility has been in operation since 1982 and is owned by Pauline Cayia. At present, album work accounts for 50% of New River's business. In total, there are two rooms available, one a newly opened MIDI studio (Studio B), and the other a 48-track Neve room with Necam 96 automation and Studer A-800 tape machines. With rates beginning at \$65 an hour, Studio B is the busiest at the moment; artists and producers alike have been booking it for composition, sound-for-picture, voice-overs, spots and 24-track work.

Looking at the motion picture work going on in the central part of the state, studio manager Virginia Cayia feels that South Florida's studios aren't getting all of the audio post work they could be.

"For the most part, producers still seem interested in shooting down here and then going elsewhere for their post-production," she says. "However, we're hoping to change all of that in the near future."

One unique change that has come to River North is the establishment of Sync-Link technology. A money-saving and innovative scheme devised by chief engineer Larry Janus to establish a 2-way digital link with nearby video house Selkirk Communications, SyncLink effectively harnesses the powers of satellite or

Training tomorrow's engineers

In the field of audio education, Florida has been a leader for many years.

The University of Miami is known internationally for its innovative audio engineering program, and contributes a great deal to the southern Florida audio community.

The university provides interns and graduates to local national and international studio facilities, hosts a local chapter of the Audio Engineering Society, is a resource of audio consultants and serves as a beta test sight for newly developed products.

Founded in 1975 though the efforts of associate dean Ted Crager, the University of Miami school of music was the first school in the country to offer a bachelor's degree in music engineering. Coursework concentrates on three principal

areas: music, audio engineering and electrical engineering.

In addition to four years of academic study, many hours of hands-on time are devoted to student projects. The program offers a highly respected bachelor of music degree, with intensive coursework in advanced theory-based audio, digital technology, acoustics, sound synthesis and video post-production. In addition, students earn a minor in electrical engineering. A master of science degree in audio engineering is beginning its third year. The graduate program includes studies in advanced digital audio, video post-production, psychoacoustics, digital system design, software engineering, artificial intelligence and computer architecture.

More than 100 students apply for

admission to the program each year but only 20 are admitted due to the limited space available that is essential for a quality education. This will be aided when a new \$2 million studio is completed in 1990.

Full Sail

Full Sail Center for the Recording Arts, now in its tenth year, offers a variety of programs including exclusive training programs on the New England Digital Synclavier and the Neve V Series console.

The school moved into a new 7-room facility this year, and is unique in that it can easily accommodate teaching and commercial sessions. (See the October issue for a detailed look at the new facility.)

microwave hookups at a fraction of the cost.

"The reason I came up with this idea stems from the fact that studios that do a lot of audio for video eventually wind up putting the finished product on 1-inch Type C videotape," Janus says. "Because we were starting to get a lot of that type of work, I found myself faced with either buying a 1-inch machine or continuing to lose the layback portion of the business to someone else. Rather than investing in

a 1-inch machine and having to deal with its associated headaches, however, we worked a deal with Selkirk to link our facility with its 1-inch machine via a coaxial cable that runs down the alley."

Adding to the ease of the arrangement was an existing coaxial cable that was already strung down the alley to facilitate Selkirk Cable (Selkirk Communication's sister company, which occupies the same building). Because the cable wasn't being used, Janus stepped in, hooked up a digi-

tal processor and a modulator at each end, and set up two exchange terminals for less than \$2,000.

Still world-class

Celebrating more than 30 years in the business since owner Mack Emerman convinced his first client to sit behind the console, Criteria Recording Studios can consider itself "legendary" without falling victim to hyperbole. Known as Atlantic Records South in the '60s, James Brown, Aretha Franklin and countless other greats cut their tracks within Criteria's walls.

World-class status followed the studio into the '70s and '80s, and today the tradition is still as alive and kicking as ever. Criteria's Studio A is large enough to seat a full symphony orchestra and features a 90-foot hard cyclorama. Also equipped with movable inner walls, acoustics can be easily changed to suit a variety of special needs.

Designed with modified LEDE concepts, Studio C is well-suited for those who desire a creative environment free from disturbances of any kind. Housing a permanent vocal booth with a bass trap, it also has its own entrance and bath. Cypress walls and a stained glass skylight grace Studio D, which is primarily used for overdubbing and mixdown.

John Storyk and Criteria designed the East Wing Studios, which are the showpiece of the studio's new wing. Also in the new wing are the Criteria Cutting Center, offices, two private lounges, and a 2-story atrium with a rustic stone waterfall.

Divided into upstairs and downstairs studios, each of the East Wing rooms have matching, symmetrically designed control rooms equipped with SSL 6000E consoles with Total Recall, while a Mitsubishi X-800 32-track digital recorder can be accessed from either area. Downstairs, the studio is laid out in an irregularly-shaped area with two iso booths, a drum area and a "live" area. With a ceiling height of 27 feet, acoustics are further enhanced by two motorized "Acousta-Wings" which can be remotely adjusted to any angle. The upstairs studio, while smaller in size, can be acoustically combined with one of Criteria's live chambers to create some interesting effects.

As Criteria heads into the '90s, its world class status undiminished, it continues to diversify in its capabilities and client base. Not surprisingly, given Miami's unofficial role as the Phantom Capitol of the Southern Hemisphere, Criteria is beginning to see a larger influx of South American clients. Audio for video and film is on their mind as well, and studio manager Joel Levy believes Criteria has what it takes to be competitive against his Central Florida counterparts.

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SPARS: a new decade

The Society for Professional Audio Recording Services was conceived at a hotel bar in Los Angeles and born on Jeep Harned's yacht on Florida's New River. Throughout its 10-year history, the organization has been instrumental in providing studio owners with technical and business information necessary to stay in business.

SPARS began as a way to foster communications between audio professionals and manufacturers in the early part of 1979. When Jeep Harned of MCI, Mack Emerman of Criteria and other studio owners from around the country got together on that fateful boating trip, they were looking to fill the communications gap between the audio manufacturer and studio owner.

Today SPARS fills the gap between manufacturers and end-users by organizing interfaces, at which

manufacturers can meet with studio owners to discuss equipment design. SPARS also provides information through member referrals, a series of audiotapes, seminars, the SPARS in-house publication Datatrack and a regular column in RE/P.

SPARS also administers an independently administered studio exam, which allows studio managers to evaluate the technical capabilities of potential employees.

Since 1987, the organization has returned to its Florida roots by being based in Lake Worth. Shirley Kaye, now the executive director, is a former Florida studio owner.

For more information on SPARS membership and its activities, contact SPARS at 4300 10th Ave. N., Lake Worth, FL 33461; 407-641-6648; fax 407-642-8263.

"I think that facilities like Criteria will be able to attract a lot of business from independent producers," he said. "Although places like Disney-MGM and Universal tout the cheaper rates they're able to offer in Florida, will they in fact be in line with what we can offer? In my opinion, the larger production centers will be forced to adopt rates the way they normally would back in California. That's where we'll be able to step in and help the independent producers by accommodating both their needs and their budgets."

The end of the road

At this point, we've reached the end of our journey. To go further south would mean writing a feature on the state of the Caribbean recording industry. Actually, that's not a bad idea—I wonder how much is left in the expense account...As for Hollywood East, only time will tell.

RE/P

The articles on manufacturing, education and SPARS were written by Ralph A. Cavallaro, a student at the University of Miami. He is also production director of WVUM, Coral Gables, FL, and an engineer/producer at Sync Studios in North Miami. Research assistance was provided by Matthew Vollmer, a student in the U.M. music engineering program.

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Audio Fidelity: The Grand Illusion

By Dennis R. Ciapura

Although audio perfection is a laudible goal, achieving it is unlikely, if not impossible.



Dr. Diana Deutsch (left) with the author at her lab.

Ever since the first sounds emanated from the primitive speakers of the earliest phonographs, recording engineers have sought to achieve accurate reproduction of the live performance in the firm belief that this was actually an achievable undertaking. After all, it certainly seemed reasonable to assume that there would eventually be sufficiently perfect microphones and speakers to make perfect fidelity a reality.

This simplistic dream of a logical path to audio karma was born of the altogether plausible concept that microphones could be made to hear like ears and speakers could be made to radiate this perfect analog without audible alteration.

Mission impossible?

Now, after nearly a century of working the problem, we have acquired enough knowledge to begin to understand how naive we have been. There is much evidence to suggest that it may never be possible to devise microphones that hear like the ear, or speakers with the required radiation properties. The reason is that the role of the brain in the ear-brain system is much more complex than anyone would have guessed just a decade ago. We are in our wonderland, a bit like Alice in her own, finding things "curiouser and curiouser."

The role of the brain is not limited to

Dennis R. Ciapura is vice president of technical operations for Noble Broadcast Group and president of Teknimax Telecommunications, a San Diego-based technical management consulting firm.

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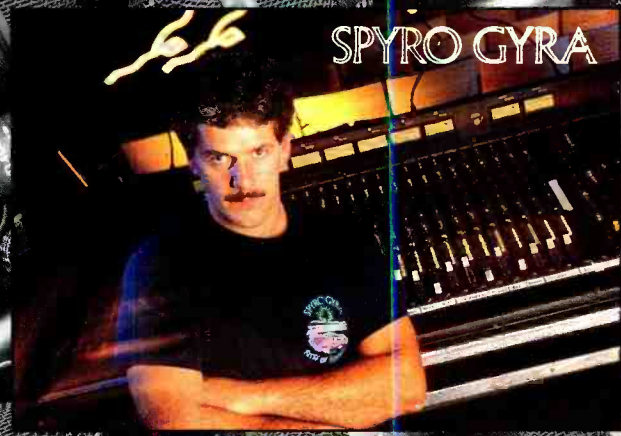
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ism, as is frequently the case with rock, we may lapse into our artist audio palette motif and feel less constrained in our processing. This is different than the relatively minimal processing approach that is typical of most large orchestral productions, but down the line the product will be subject to the same limitations, they just manifest themselves in different ways.

Instead of worrying about reproducing a studio or location sound field, we need to reproduce the field we generated in the control room with all of the electronic toys. In the case of rock recording artists on tour, an interesting reversal occurs: it is very difficult to create a live performance that sounds like the one created in the control room! Unfortunately, the audio people for most contemporary groups have opted for SPLs above the threshold of pain in vain attempts to compensate.

Given the state-of-the-art, it seems highly unlikely that there is anything that we can do short-term to solve the ear-brain vs. electro-acoustical dilemma, but in terms of not making things worse, is there anything we shouldn't be doing? If you accept the concept of the ear-brain system being able to hear through the acoustic environment to the source, there are a number of fairly common audio practices that deserve review.

Control room monitor EQ techniques are particularly suspect. If we hear through the control room acoustics to the speakers, then the only electrical EQ that makes sense is close field equalization of the speakers and nothing more. Any attempt to equalize room responses is likely to cause a perceived spectral distribution that is less accurate than doing nothing, because the ear-brain system will adapt to the raw room sound and hear the total electrical EQ as coming from the speakers. This is why initial attempts at "room" equalization often seem too gross and second, and often third, iterations embodying less and less EQ are required to arrive at something that sounds subjectively correct.

Obviously, an erroneous monitor system response characteristic in a production studio will result in erroneous EQ of the product generated there. In effect, the operators will be producing material that is what they intended it to be only when played in that room.

If the control room, listening room, mastering facility or producer or engineer's home system is "EQed to the room," incorrect processing decisions can result. Although some engineers and producers intentionally attempt to differentiate their product with unusual processing, we occasionally encounter a recording that was intended to be naturally balanced but still has a strange spectral skew, and

one must wonder if there was a monitoring system out there someplace with quite the reverse curve!

Actual acoustical treatment of the room is quite another thing, and the current trend to LEDE treatment appears to be right on target. A reasonably neutral control room minimizes the need for the ear-brain system to generate corrective processing, and this probably results in reduced listening fatigue. Additional electrical EQ through the speakers may have the reverse effect. Remember those rooms that people hate the sound of even though they've done everything possible to "EQ them flat"?

With the concept of hearing through the room in mind, it is easier to understand how we often find new listening environments strange sounding at first, but get used to them after working in them for a while. This same phenomena can also be experienced in working with very familiar acoustical environments after a vacation period, even with our stereo systems at home. The adaptation process happens so subtly and effectively that it is best observed by removing the familiarity factor to experience the initial sonic impression. In fact, this is probably the best way to subjectively assess the acoustic properties of a room. Living with it for a while is probably the worst way.

Does real stereo even exist?

It is also interesting to reconsider the validity of some common microphone techniques intended to bring the sound of the original performance space to the listener. It is tempting to think that a stereo pair suspended in a high frontal position will provide a true stereo field because the very simplicity of the arrangement avoids a lot of potential microphone interactions and almost ensures a balanced mix.

Unfortunately, the eventual loudspeaker output resulting from even this simple and elegant technique will only provide an approximation of the original sound field. The output will certainly contain plenty of L-R that we can call stereo effects, and the localization of individual instruments and groups will be approximately correct as a function of relative L and R amplitude, but that's about as far as the fabled stereo "imaging" goes. Interestingly, if an ideal sound field reproducer was possible, only one radiator would be required to produce stereo.

Trying to reproduce the sound of the concert hall itself is a similar pipe dream. It is probably no more intellectually honest to attempt to capture the sound of the original orchestra and hall than to assemble the same performance in the studio with multiple microphones and

artificial reverberant effects.

Therefore, it certainly doesn't make much sense to compromise microphone technique in any way in quest of some illusive stereo image or hall sound objective when setting up location recordings of orchestral performances. The listener will be far better served by a multiple microphone arrangement and a well-balanced mix with a panned stereo spread and a blend of either artificial or natural reverb. This is particularly true for productions for TV where the mono absolutely must be right.

If we are really honest about what we're doing, we have to admit that there is probably no such thing as real stereo from electro-acoustical media. The best binaural attempts come closer than anything yet developed, but for the most part, the final sound field generated by any means is a simulation.

This may be disconcerting to many working in the field, because at first blush it may seem to drive the purpose from our work to improve the state of the audio art. The saving grace is in realizing that the work is art as much as it is science, but improving the science helps us to better understand the limitations of the medium and improve the art.

Audio perception: another tool

Whether the objective is to reproduce a live performance, a control room synthesis, or more likely a combination of both, we must learn to use audio perception factors as tools of the trade. Just as we need to keep abreast of the latest digital trends, we need to continue to improve our understanding of how people hear.

It's an almost absurdly obvious statement to make, and yet the work of Diana Deutsch, Richard Warren, Roger Shepard and other pioneers in the field of psychoacoustics is not as well-known, understood and applied in studio practice as one would think in view of the potential impact on the effectiveness of the audio product.

We dream of a day when some perfect source can be perfectly recorded and reproduced, and it is unsettling to realize that in spite of all of the advances in audio reproduction, in the end we are like travelers who have crossed vast expanse in quest of some elusive objective only to peer over the crest of the final mountain to find another vastness beyond. It is this vast expanse of human audio perception that we must come to better understand if we are to create sonic product that is more a function of design and less of chance.

RE/P

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specially designed to minimize unwanted cabinet resonance, and high frequency reflection. In summarizing, we have left the best feature of all for last "price versus performance."

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Studio Profile: Le Studio, Canada

By Richard Ealey

How changing patterns of recording and production have influenced activities of one facility during the past decade.

Anybody who works regularly around recording studios soon realizes that each one has a distinct personality. Le Studio is probably unique in a number of respects, but primarily in that it was originally built as a residential facility to serve the requirements and recording projects of one producer.

Over the years, however, the studio has

Richard Ealey is general manager and technical director of Le Studio, Morin Heights, Quebec.



remained up-to-date, maintaining the latest equipment and fulfilling the requirements of producers and engineers. Like all successful studios, this one has responded to the changing fortunes of the recording world with upgrades and enhancements that it felt were essential to remain competitive.

A studio with a view

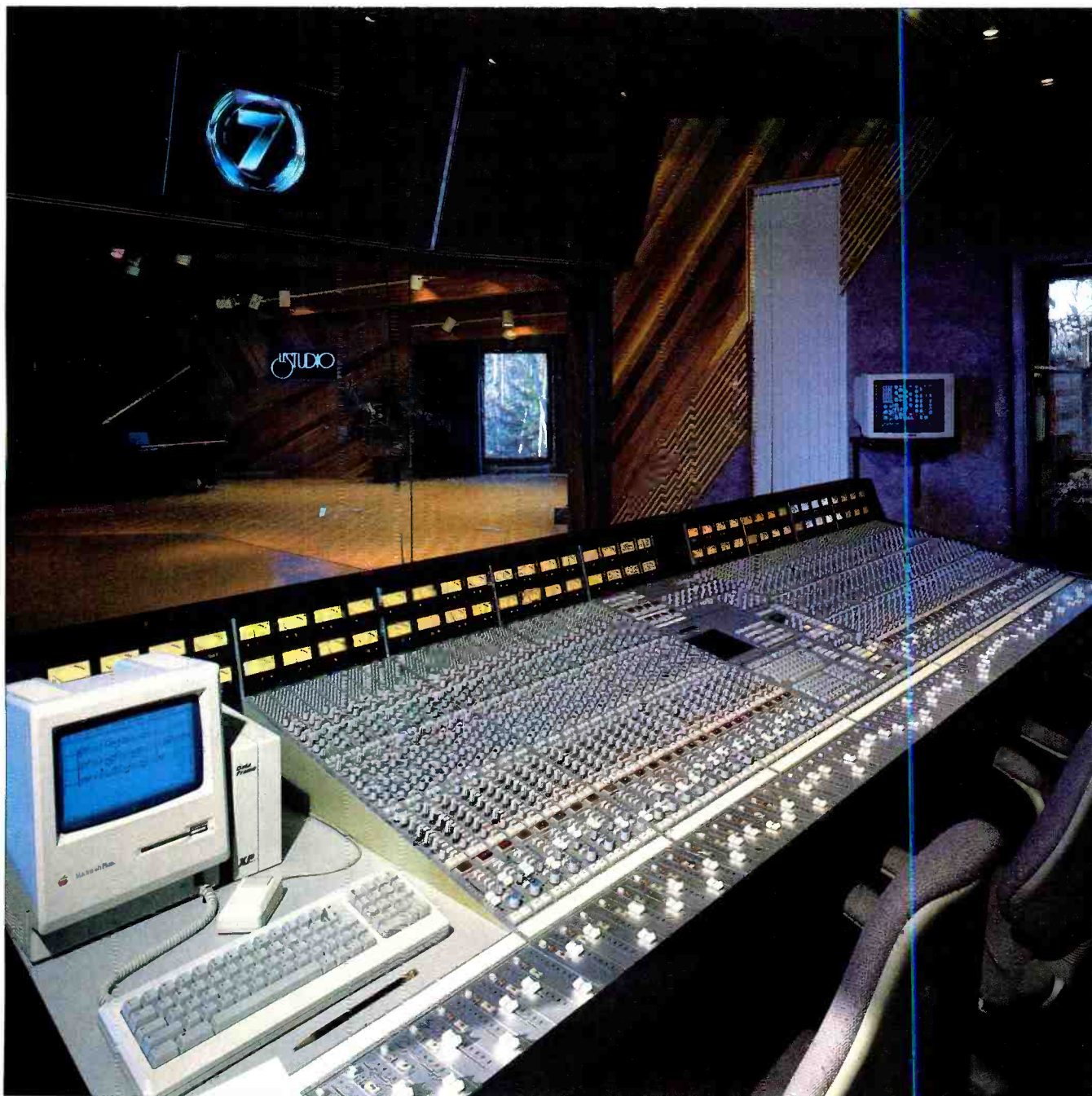
Le Studio began as a personal-use studio for producer Andre Perry who, at the time, was enjoying a great deal of success in Canada and France. In 1974, having worked in leading recording studios

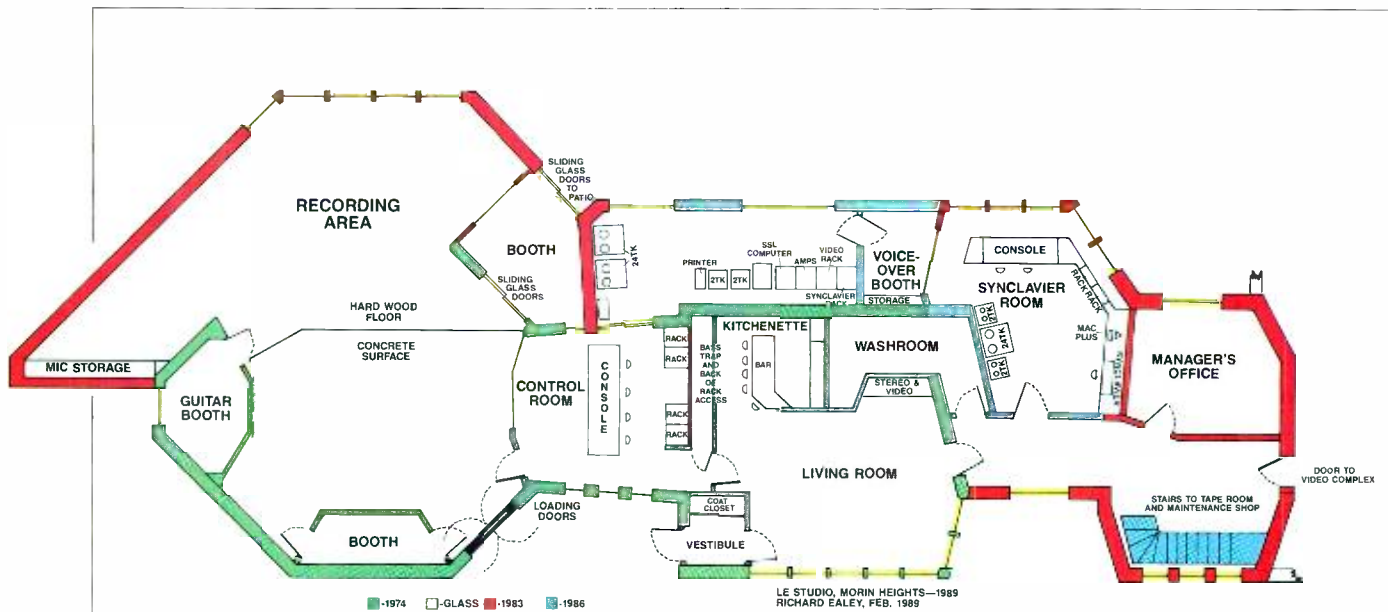
throughout the world, Perry decided to construct a facility near his home in Morin Heights, an isolated village located in the mountains some 45 minutes north of Montreal.

With no formal training in acoustic design or electronics, Perry built a 1-room studio that offered a stunning view of the nearby lake through both the studio and control room windows. This was Perry's third studio design. Previously, he had designed two smaller rooms for his own projects. Working with him on Le Studio was Nick Blagonia, the studio's original chief engineer.

Perry's idea was to mix high-tech recording hardware with a relaxing ambience, so that science could compliment art. His original design, which remains to this day (with several updates and extensions), comprised a large building shell with large cross-beams to support the roof. In that way, he reasoned, he could remove and rebuild the internal walls as necessary, without having to worry about the load-bearing outer walls supporting the roof structure.

Today's studio comprises a main SSL-equipped recording and remix room, plus a dedicated post-production and sweeten-





Le Studio floor plan, showing the original facility and additions in 1983 and 1986.



Le Studio is located in a remote area 45 minutes north of Montreal.

ing room, centered on a New England Digital Synclavier system. Also housed within the building and connected via audio and video tielines is a full-function editing and video post complex.

Perry's basic acoustic design involved building 12-foot bass traps in the rear of the current control room ceiling. The control room itself sits on its own concrete slab, isolated from the studio area and the

rest of the building. Sound that is incident on the rear wall of the control room is vented into a shop area on a lower floor.

As was the fashion a decade ago, the recording area was designed to be pretty dead. There was a small wooden floor close to the large picture window and its view of the lake, and large areas of carpeting in the front, close to the drum and piano booths. Also in the fashion of the

day, there was a large drum booth, lined with highly absorbent padding to give the engineer the high degree of sound isolation deemed essential in the mid-1970s. The room flares from the front to the rear, which not only emphasizes the view from the picture windows, but also ensures that there are no major parallel walls to cause flutter echoes across the room, or from the ceiling to the floor.

Technology and the studio

Around the fall of 1986, we realized that space in the control room was becoming a premium. Like many facilities, we discovered that musicians like to record overdubs in the control room. In addition, we were running more and more 46-track sessions, which meant that the hardware was crowding.

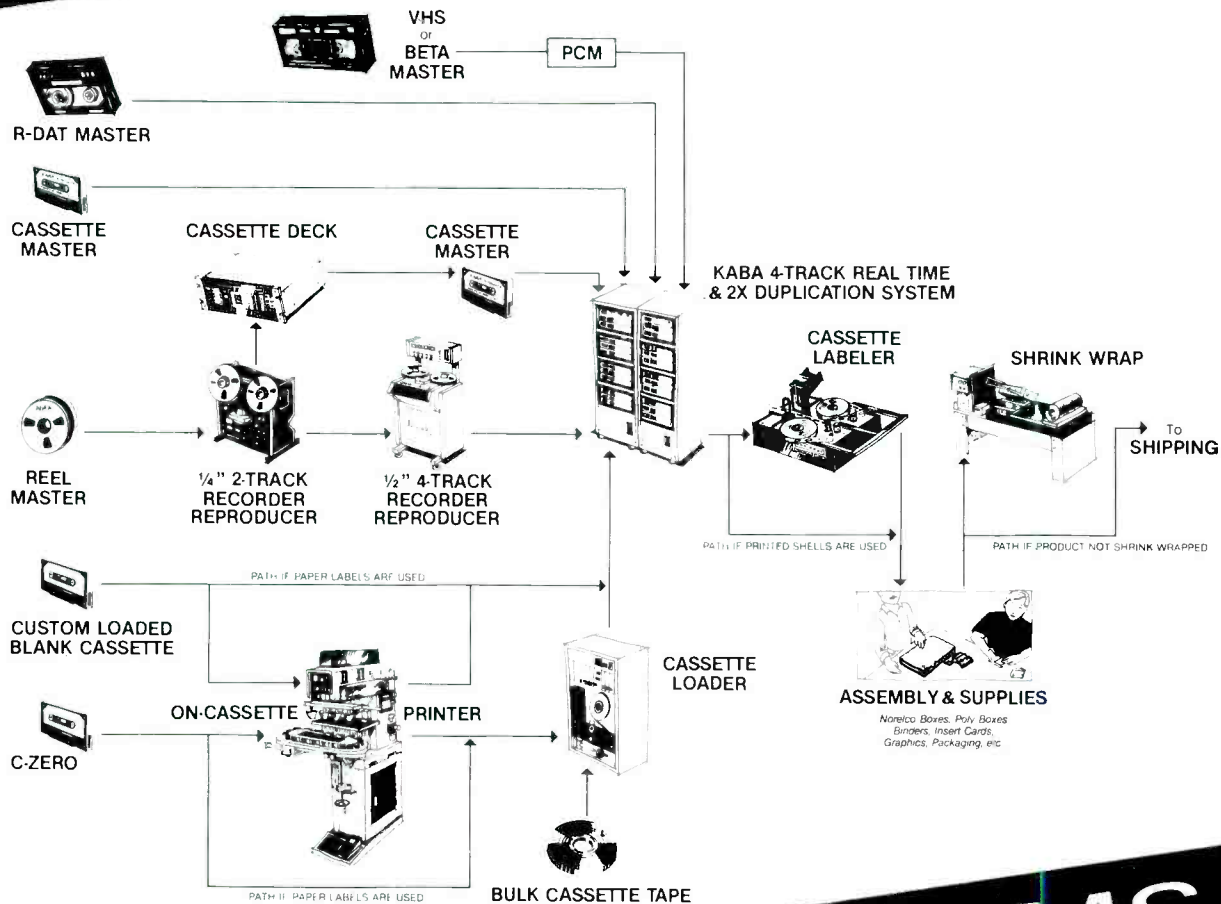
A separate machine room was added to the right of the control room, one that would be shared with a room that had been built in 1983 as an extra lounge. That room was used to house the Synclavier system. A sliding glass window was added to an outside wall of the control room to form a side alley for tape machines, console automation computers and NED racks.

Even though this addition meant that the acoustics in the control room would be somewhat asymmetrical—with a large glass window to the right of the console and an essentially carpet-covered wall to the left—no major differences in sound were detected after the redesign.

As well as providing more space in the control room, removing the multitracks showed how noisy a pair of 24-tracks and computer fans can be. During critical digital mixing sessions, it was now possible to hear a great deal more of what was hap-

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Equipment list

Console: Solid State Logic 4056 G Series with Total Recall and Studio Computer; 112 line inputs, 56 mic inputs, 32 group outputs.

Multitracks: Studer A800, Otari MTR 90-24.

2-tracks: Studer B67 high- and low-speed, Studer A80.

Amplifiers: Studer, MacIntosh, BGW.

Monitors: UREI 813, Yamaha NSM10, Acoustic Research 18S, Tannoy 3233.

Outboard gear (partial list): Focusrite 110s, Lexicon 224 XL, AMS RMX16, Yamaha REV-5, BBE 802, Aphex Type B Aural Exciter, dbx 161s, UREI LA3As.

Synclavier: 32 sampling voices, 32 FM voice synthesizer digital music system, 200-track sequencer, 32MBytes of RAM, 1GByte of on-line optical memory.

Synclavier suite equipment: Yamaha PM3000 console, Studer A820, Southworth Ham Box with Apple Mac Plus, UREI limiters, Rold DEP 5s, Alesis Midiverb IIs, BBE 802, Yamaha REV-7, Aphex Compellor, Audio Logic Gates, Yamaha TX 816.

pening in the mixes. An added bonus to the new arrangement was that the seconds could use the machine room for making safety copies of multitrack masters, archiving mixes, laying time code on worktape reels and editing session tapes. A 2-foot crawl space beneath the machine room floor was built to hold the longer cable runs, which allow the 24-tracks to be moved around as necessary.

A separate air-conditioning system was also added for the new machine room. The existing air conditioning was converted to heat pumps. Unlike studios located in warmer climates, the studio could make use of the colder outside temperature—it reaches -20° during the winter months—instead of relying on a water-cooled system.

Power supply

Morin Heights has an excellent power company that, because of a local skiing center, installed a high-capacity system early in the studio's life. The lake is the primary ground. Originally, a ground spike was used, but because the soil is rather sandy and subject to changing humidity, a large copper net on the lake bed was used.

When the machine room was added, it was also an opportunity to rewire the studio and control room. The original wiring had been left long so that the machines and rack system could be moved, if neces-

sary. A lot of the slack in the cable runs was removed, and by going through every connection, the grounding scheme was standardized.

The local ground reference in the control room are the Christmas Trees in back of the main rack and patch panel. All other grounds are star-referenced to the racks, preventing unnecessary ground loops. Belden cable is used throughout the facility, with Monster Cable for the monitors. Connections at the Christmas Trees are soldered, with crimp-on terminations at the SSL console.

Recording area modifications

During the spring of 1983, the recording area was enlarged and the acoustics were livened up. The floor area was enlarged by about one-third by building over the lawn area beside the studio's picture window. Because all of the plans had been drawn up and the foundation poured beforehand, the entire job from start to finish took a team of 30 carpenters only 10 days to complete.

By simply extending what was there, without altering wall angles, the overall open feel and sound of the room was preserved. To make the space more live-sounding, some carpeting was taken up to expose the walls, and hardwood walls increased the reverb time. Last year, the liveliness was increased further by removing even more carpeting and laying another eight to 10 feet of wood planking on the floor.

Having now removed the remaining carpet, there is a large area of bare concrete in front of the room—close to the control room window—which is covered with epoxy paint (very good place for recording drums and percussion). In the rear are wooden floors. Throw carpets are used when necessary.

By removing a lot of the sound-deadening materials and adding wooden panels, the original drum booth was also modified to be fairly live; it now functions very well as a guitar booth. The original vocal booth is being used primarily these days as an artists' lounge.

During this time, the seals on the studio's airlock doors were also replaced, greatly reducing noise spillage. The original double glass between studio and control room, angled to prevent splash and parallel surfaces, has never needed any maintenance nor upgrading.

Almost all guitar and bass overdubs are now done in the control room, with the amps in the studio. Vocals are tracked in front of glass with gobos.

Control room hardware

The original monitor system was de-

signed and built by Perry and Nick Blagonia using JBL components. Eventually, this system was replaced with UREI 813s, powered by bridged Studer A68 amplifiers. No room or system EQ is used on the monitors. In June 1989, the UREI 813s were replaced with a Quedsted Q412B MkII monitoring system. It is a tri-amped cabinet that uses the new soft-dome tweeter technology and features Quedsted power amps (1.5kW into 2Ω) on the woofers. For close-field monitoring, Acoustic Research AR-18s and Yamaha NS-10Ms are used.

The original console was a Trident A Range, which was replaced by a 40-input SSL SL4000 E Series in the fall of 1979. Resident staff engineer Paul Northfield had worked on Kendun Recorders' original B Series, and was impressed by its flexibility and automation power. Perry contacted SSL in England and the studio ended up with the second SSL to be installed in an American studio (serial #11), Kendun's being the first.

During the nine years that the studio had the E Series—it was replaced last October with a new 56-input G Series—the console proved to be extremely reliable, including the studio computer system. Our clients were so familiar with SSL's Total Re-

call that that function would have been missed as a working tool. After looking at several options, the studio decided to remain with SSL.

The G Series is six inches wider than the E Series, which had producer's desks on each side. The console changeover took less than two weeks, working pretty much around the clock. Some of the wiring had been done ahead of time, with a remoted patchbay. The single producer's panel on the left-hand side is custom-made to extend horizontally to MIDI and patchbay ties on the back panel—rather than being raked to match the console—so that a Macintosh or effects unit could be in that area.

The current compliment of multitracks consists of Studer A-800 and Otari MTR-90 24-tracks in the SSL room and a second MTR-90 for the Synclavier Room. For synchronizing the Studer and Otari machines, there is a TimeLine Lynx time code system. The A-800's two outputs—sync and repro—are very useful: the sync output is used to pre-trigger gates and samplers.

For mastering, we use a Studer A-80 analog ½-inch with transformerless line amps, and a full JVC BP-90 digital audio

processor and AE-90 digital editing system, which was purchased almost eight years ago.

When necessary, the studio rents a Mitsubishi X-850 digital 32-track. In fact, we have struck a deal with Mitsubishi Canada that leaves the X-850 here at the studio. We pay rental fee any time it is used on a session. The X-850 is usually here about seven months of year, but the studio still feels that the digital multitrack market is too uncertain to commit to a purchase within the foreseeable future.

A studio for all seasons

Le Studio prides itself on keeping up with the changing needs of its wide client base. From its humble origins a decade and a half ago as a residential studio, with dead-sounding acoustics and analog technology, it has grown into a digital-capable facility with a large, open-sounding studio area.

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ENGINEER/PRODUCER INDEX

Key

Name (Title Code); Address; phone number. **Credits:** Client/Artist (Credit Code-Subcode), Project Title (Facility Used).

Title Codes:

E (Engineer); P (Producer); E/P (Engineer/Producer).

Credit Codes:

CP (Commercial/Advertising Production).
Subcodes: R (Radio); TV (Television).

MP (Music Production).

Subcodes: S (Single); A (Album); AT (Album Track); AR (Album Remix); SR (Single Remix).

PP (Post-Production).

Subcodes: F (Film); MV (Music Video); CI (Corporate/Industrial).

A

John Eric Alexander (E/P): 311 W. 43rd St., New York, NY 10036; 212-581-8560. **Credits:** Warner Brothers (CC/PP-TV/F), Lethal Weapon II promos; WNET/PBS (CP-TV), Metro Week in Review; COTV Emeraudes (CP-TV), Play for Keeps; Tri-State Volvo Dealers (CP-TV), Protection; City Lights' Productions (PP-F), Torn Apart.

Bill Anderson Jr. (P): Box 148296, Nashville, TN 37214; 615-868-0425. **Credits:** Landmark Communications (PP-CI), Fire or Don't Fire (various); Teddy Nelson (MP-S), Louisiana's Callin' (Reflections); Randy Weiss (MP-S), Christmas Contrast (GCN Studios); Joanne Cash Yates (CP-TV), Joanne Cash Yates Live...(remote).

Mark Anderson (E/P): 2323 Wilson St., N.E., Minneapolis, MN 55418; 612-781-7032. **Credits:** Glen Helgeson (MP-A) (World Productions); Recessive Traits (MP-A), Recessive Traits (home); Sarcastitones (MP-S), Digga (home).

Tommy Joe Anderson (E/P): Box 450727, Atlanta, GA 30345; 404-284-0948. **Credits:** Ruth Slenczynska (MP-A), Ruth Slenczynska Live (Brenau College); Mac Morgan (MP-A), Enoch Arden by Strauss (ACA Digital Recording); Tony & Mary Ann Lenti (MP-A), Forgotten Piano Duets (Lander College); Steven Hall

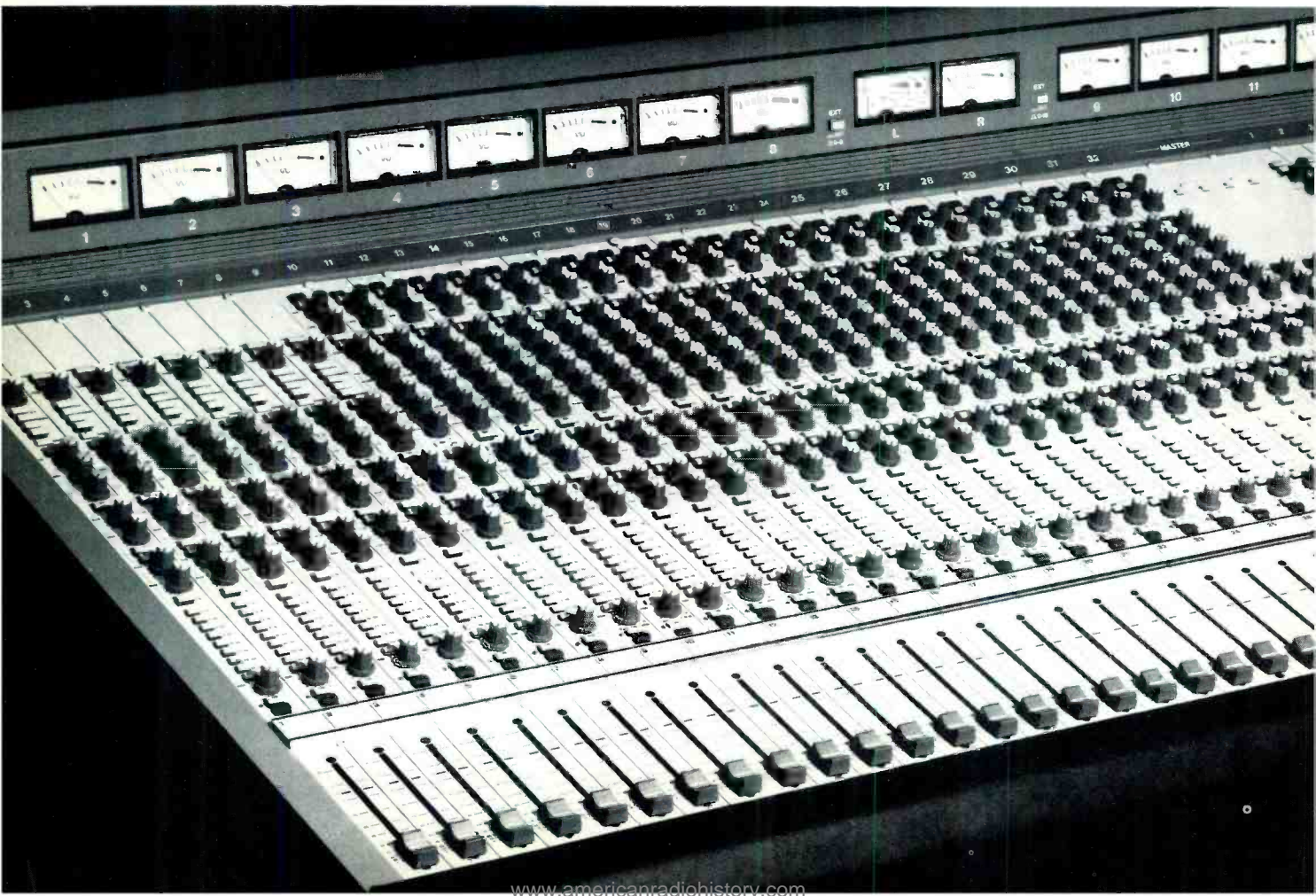
(MP-A), Steven Hall—Pianist (ACA Digital Recording); Kenneth Fischer (MP-A), Kenneth Fischer—Saxophone (ACA Digital Recording).

B

Michael Bard (E/P): 2315 S.E. Lincoln, Portland, OR 97214; 503-230-8880. **Credits:** Dan Balmer (MP-A), Becoming Became (Sound Impressions/Newton-Bard); Will Vinton/California Raisin Board (PP-F), Raisin Jackson (Newton-Bard); Payless Drug (CP-TV), 50th Anniversary (Newton-Bard); Will Vinton/Fuji Videotape (CP-TV), Your Own Imagination (Newton-Bard/Mix Magic); Vision Works/Sequent Computers (PP-CI) (Spectrum).

Ves Bennett (E): Box 90580, Washington, DC 20090; 202-543-1003. **Credits:** Tony P by T.J. Thompson (TV-MV), promo spots (Midi Workstation); Gallaudet University (TV), Deaf Mosaic series (Gallaudet Studio D); Fresh Productions (TV-MV), Fresh Groove series (Fresh Studios).

Keith Brown (E/P): 6039 N.W. 54th Court, Johnston, IA 50131; 515-270-1953. **Credits:** Kragie/Newell Advertising (CP-R/TV), Prairie Meadows Racetrack (Audio Art Recording Studios); Busby Productions (CP-TV), Townsend Engineering (Audio Art Recording



Studios); Taylor Mills (MP-A), Band of Gypsies (Audio Art Recording Studios); Melvin James (MP-A/SR), The Passenger (West Minist'r Sound); Kragie/Newell Advertising (CP-R/TV); Yo-Lite/Lips/Lite Fantastic (Audio Art Recording Studios).

C

T.C. Coley Jr. (E/P): 3205 Los Feliz Blvd., Suite 8-160, Los Angeles, CA 90039; 213-660-7527. **Credits:** CBS News/Jacobs and Gerber (CP/MP-TV), CBS News Awards (WoodHolly Productions); WFAA-TV 8 Dallas/Jacobs and Gerber (CP/MP-TV), WFAA-TV 8 News (WoodHolly Productions); WCBS-TV 7 Boston/Dexter, Dryer & Lai (CP/MP-TV), WCBS-TV 7 News (Music Lab); 7-Up/Dexter, Dryer & Lai (CP/MP-TV), 7-Up (Music Lab).

D

Tom Deakin (E): 4917 Cordell Ave., Bethesda, MD 20814; 301-951-3900. **Credits:** HR Productions/The Boys (CI), Don't Smoke (Balance Sound Studios); Tommy Rifle (MP-S), Beat Dis Evangelist (Balance Sound Studios); Coastline Productions (CP-R); Athlete's Foot

(Balance Sound Studios); Teresa Gunn (MP-AT), Savage Garden (Balance Sound Studios).

Michael DeLuca (E): Box 4693, Pittsburgh, PA 15206; 412-241-1494. **Credits:** Celeron Productions (MP-A), Etan't Dunee (Celeron Productions), Banner Day (MP-A), Banner Day (Celeron Productions); WQED FM (CP-R), Radio Fund Drive (MIDI studio).

Bruce Dinehart (E/P): 2500 E. Vancouver, Broken Arrow, OK 74014; 918-355-3020. **Credits:** Kenneth Copeland Ministries (CP-TV/R), The Winning Formula (A Place of Praise); Oklahoma Natural Gas (PP-CI), NewsView (A Place of Praise/Summit Post); Marsha Benecke (MP-A), In Majesty (A Place of Praise); The Nanci Corporation (PP-CI), The Winning Edge (A Place of Praise); Teleios Pictures (PP-CI), Demo 89 (A Place of Praise).

Jim Dotson (E/P): 1818 1/2 N. Main, Santa Ana, CA 92706; 714-541-2397. **Credits:** 21 Windows (MP-A) (South Coast Recording); Misguided (MP-A) (South Coast Recording); Boogie Zaabo (MP-A) (South Coast Recording); SST Records/The Final Tourguides (MP-A), The Melting Plot (South Coast Recording); The Scarecrows (MP-A), Demolition (South Coast Recording).

Steve M. Durrant (P): 2060 Halifax St., Regina, Saskatchewan, Canada; 306-566-9848. **Credits:** MCA Records (CP-R), Big Valley; Safeway Foods (CP-R), Fun, Food, Football; Gold Seal (CP-R), Flaked Light Tuna;

Dairy Producers (CP-R), Slimline Light Yogurt; Saskatchewan Roughriders CFL Football (CP-R), Network Intro's, Extro's promos, network spots.

E

Eric Elwell (E/P): 8725 W. 121st Terr., #806, Overland Park, KS 66213; 913-491-6640. **Credits:** Full Circle (MP-A), Full Circle (Red House Studio); The Backsliders (MP-A), Snap It (Red House Studios).

Andy Ernst (E/P): 69 Diamond St., San Francisco, CA 94114; 415-864-4641. **Credits:** Malo (MP-A), Malo 7 (The Art of Ears); Andro and Ross (MP-S/SR), Should've Known Better (The Art of Ears); Flynamic Force (MP-A/SR), We Want to Rock You (The Art of Ears).

Jim Ervin (P): 29836 W. Rainbow Crest, Agoura Hills, CA 91301; 818-889-8479. **Credits:** Malibu Records/Eva Boyd Harris (MP-A), Little Eva—Back on the Track Again (Indigo Ranch); Wizard Group/Patrick Kirkland (MP-S), Fatal Optimist (Genetic Music), Baby Dica Productions/Jim Ervin (PP-F), Pandora's Lair soundtrack (Genetic Music); Wizard Group/Jim Ervin (CP-TV), Lady Tinsel Town (Blue Monkey Studios).

Steve Ett (E/P): 247 Centre St., New York, NY 10013;

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ENGINEER/PRODUCER INDEX

212-219-8485. **Credits:** Def Jam/LL Cool J (MP-A/S), Walking with a Panther; Def American/Andrew Dice Clay (MP-A), Andrew Dice Clay Live; ILL Labels/ Nevermore (MP-A), Nevermore; Atlantic Records/The Wise Guys (MP-SR), Time for Peace; Def American/The Four Horsemen (MP-A), The Four Horsemen.

F

David Feinberg: All Night Records, 208½, N. Washington, El Dorado, AR 71730. **Credits:** Michial Bell (CP-R), Los Rivera (All Night #1); Rockin' Guys (CP-R), Monkey Beating on Trash Cans (All Night #1); Nick Aisles & His Nupt Jeweltones (CP-R), Long Walk (All Night #1); WallaSound (CP-R), Just Another Brick (All Night #1); Howlin' Mike (CP-R), The Howlin' Mike Sessions (All Night #1).

Glenn "Dr. Jam" Fields (E/P): 89-74 Springfield Blvd., Queens, NY 11428; 718-740-4806. **Credits:** Dope Beat/Best Performances/Lyrics in Effect (MP-SR/S), Rough Material (North Shore Sound Works); Dope Beat/Best Performances/Lyrics in Effect (MP-SR/S), A Bit Too Smooth (North Shore Sound Works).

Ray Fister (E/P): 8339 S. 76th St., Milwaukee, WI 53132; 414-425-5482. **Credits:** The Sittin' Ducks (MP-AR), Live at Gatsby's Cafe (CPI); Econoprint (PP-CI), Econoprint (CPI); Tony Rybka (MP-S), various (CPI); Wisconsin Bell (CP-CI), Success '89 (remote, CPI); Jonn's Interiors (CP-TV), Fresh (CPI); Northbrook Hospital (CP-R), Kidnet (CPI); Sky Harbor Band (MP-S), various (CPI); Tews (CP-R), Everyday is Tews Day (CPI); Fox & Hounds Restaurant (CP-R), What's for Dinner (CPI).

S. Fitzstephens (E/P): 235 W. 76th St., 10-C, New York, NY 10023-8214; 212-580-9825. **Credits:** Lance Tait (MP-AT), In the Key of Z (Seltzer Sound); Mark Newstetter (MP-AT), demos #4 (Private Room); Bill Mulligan (MP-A), Bill Mulligan (several studios).

Lynn Fuston (E): 2125 Bernard Ave., Nashville, TN 37212; 615-292-2283. **Credits:** A&M Work Records/Russ Taff (MP-A), The Way Home (Digital Recorders/Gold Mine); Reunion Records/Greg & Rebecca Sparks (MP-A), Sparks (Bennett House); Home Sweet Home Records/Luke Garrett (MP-A/AR), This is Certainly Different (Goldmin/Soundshop); Warner Brothers/Dave Mullins (MP-A), Dave Mullins (Hummingbird); Newbord Records/James Lynn Jr. (MP-S), Isn't He Lovely (home).

G

Hirsh Gardner (P): c/o Gardner-Borress Productions, 401 Second Ave., Suite 12G, New York, NY; 508-683-1190. **Credits:** Mass Enigma Records (MP-A), Take You Home (House of Music); Chrysalis Records (MP-A), Vinney Vincent Invasion (Sound Design Studios); Unattached Throbbing Lobster Records (MP-A), Unattached (Courtlen Studios); Vice (MP-A), Vice (Courtlen Studios); Vice/Rockworks Productions (MP-A), Vice (Courtlen Studios).

Paul Giltitz (P): Box 573, Port Roberts, WA 98281; 206-945-0623. **Credits:** McCracken Educational Serv-

ices (MP-A), Songs of the Tiger (BullFrog Recording); Charlotte Diamond (MP-A), Diamonds & Dragons (BullFrog Recording); Charlotte Diamond (MP-A), Qu'il y ait Toujours le Soleil (BullFrog Recording); Charlotte Diamond (MP-A), Diamond in the Rough (BullFrog Recording); Charlotte Diamond (MP-A), 10K Diamond (BullFrog Recording).

Jon Stuart Goldberger (E/P): 210 W. 70th St., #1601, New York, NY 10023; 212-496-5492. **Credits:** Blue Note/Elaine Elias (MP-S), Two-Way Street (Duplex Sound/Skyline); SBK/Jonny P. (MP-A), Connect the Dots (Duplex Sound); SBK/Dazz Band (MP-A/S), Rock the Room (Duplex Sound); MCA/Brenda K. Starr (MP-SR), I Still Believe (Duplex Sound); Evergreen/Racoons (CP-TV), Racoons TV Show (34th Street Music Productions).

H

James C. Hall III (E/P): 115.01 196th St., St. Albans, NY 11412; 718-525-1372. **Credits:** Nights (MP-S/A/SR/AR), Nighttime (Total Eclipse Recording); Steven O. Bensen (MP-S/SR), SOB! (Total Eclipse Recording).

Ron Hanson (E/P): 37 Barcelona Drive, Fostoria, OH 44830; 419-435-8331. **Credits:** Kenny Reeves (MP-A), Kenny Reeves Live Downtown (Moseka Recording); Kevin Collen (MP-A), Earth Angel (Moseka Recording); Kenny Reeves and the Hanson Brothers (MP-A), Timepiece (Moseka Recording).

Gary S. Hickinbotham (E/P): 213 A Pat Garrison, San Marcos, TX 78666; 512-396-4352. **Credits:** Gary P. Nunn (MP-A), For Old Time's Sake (Fire Station Studios); A&M Americana/Tish Hino Josa (MP-A) (Fire Station Studios/Mad Dog Studio); Antones/Doug Sahn (MP-A), Juke Box Music (Fire Station Studios/Aryln Studio); Super Beat/Augie Meyers (MP-A), Sausalito Sunshine (Fire Station Studios); Noise International/Watchtower (MP-S), Dangerous Toys (Fire Station Studios).

J

Paul E. Jackson Sr. (E/P): #951 Shandra Drive, Ballwin, MO 63021; 314-227-0479. **Credits:** FBC Ellisville (CP-R), Life Worth Living (Paul Jackson Creative); S&P Productions (PP-CI), CitiCorp—Own the Future (Audio Arts); FBC Ellisville (PP-F), Power of Love (Paul Jackson Creative); Missouri Against 5&7 (CP-R), Don't Bet on It (Studio G); KWK-FM/Doubleday (MP-A), Moonshine II (Aries Audio/KWK-FM).

K

R. Eric Kauschen (E/P): 2079 33rd Ave., San Francisco, CA 94116; 415-566-7178. **Credits:** City College of San Francisco (PP-CI); CCSF Orientation (CCSF/Peter Miller Recording); City College of San Francisco (CP-TV); CCSF Telecourses (CCSF/Peter Miller Recording); Audio Institute of America (PP-CI), AIA (Peter Miller Recording); Headbangers (MP-A), Headbangers

(Peter Miller Recording); Eric Kauschen (MP-A), Digital Mayhem (San Francisco State University/Peter Miller Recording).

Richard Kaye (E): 417 Teaneck Road, Apt. 2A, Ridgefield Park, NJ 07660; 201-440-8618. **Credits:** Absolute Music (CP-TV), NBO-BMW Giveaway (39th Street Music); Mark Price (PP-CI), Thumbs Up, America (Giant Sound); Absolute Music (CP-TV), Canon-EOS (39th Street Music); OAR Productions/Billy Scott (MP-S), Love You All Over Again (39th Street Music).

Bobby Kelly (E/P): 1510-B McCormick St., Greensboro, NC 27403; 919-272-5120. **Credits:** U.S. Air/Piedmont Airlines (MP-A), U.S. Air Jazz Orchestra (The Process Studios); Long, Haimes & Carr (CP-TV/R), McDonald's Reunion Special (The Process Studios); Boys Choir (MP-A), Boys Choir (The Process Studios); Billy "Crash" Craddock (MP-AT) (The Process Studios); Tornado (MP-A) (The Process Studios).

L

Duane Lamb (E/P): 2906 N. State St., Suite 320, Jackson, MS 39216; 601-981-4656. **Credits:** Amos Polk (MP-S), Welcome—In Your Heart (Bruce Lamb Productions); Kenny Baker (MP-S), Beautiful Friendship (Bruce Lamb Productions); Melissa Dean (MP-S), Keep on Reachin' (Bruce Lamb Productions); LaSonya Harris (MP-S), Between You and Me (Bruce Lamb Productions); Thomas Bruce/Duane Lamb (MP-S), Heartbeat (Bruce Lamb Productions).

M

Paul Madar (E/P): 4945 Primrose Ave., Indianapolis, IN 46205; 317-257-3742. **Credits:** Bob Sander (MP-A), Bob Tales—Live Storytelling Album (Octave Audio Services); Stories, Inc. (MP-A), 2nd Annual Hoosier Storytelling Festival (Octave Audio Services).

Rob Martens (E/P): 1289 N. Dixboro, Ann Arbor, MI 48105; 313-662-0667. **Credits:** Don Wharton (MP-A), Pulling Together (Solid Sound); The Chenille Sisters (MP-A), The Chenille Sisters (Live at the Ark); Gemini (MP-A), Growing Up Together (Solid Sound).

Gregory McNeer (E/P): 3217 Hughes St., Huntington, WV 25704; 304-429-5566. **Credits:** Eric Eckhart (MP-A), debut (Chandler Audio); Territories (MP-A), Territories (Chandler Audio); The Change (MP-A), The Change (Chandler Audio); St. Michael (MP-A), St. Michael (Chandler Audio).

Frank J. Moore (E/P): 10347 106th St., Ozone Park, NY 11417; 718-848-2675. **Credits:** Silent Partner (MP/PP-S/MV), In Your Eyes (Monkey Hill/home/SUNY Old Westbury); Frank Moore (MP-S), Across the Town (home); Joe Venezia (MP-S), Do the Waz (home).

Robert B. Mugrdechian (E/P): 300 Glen Ave., Palisades Park, NJ 07650-1715; 201-461-0812. **Credits:** WHTZ/Z-100 Radio New York (MP-SR), Neneh Cherry—Buffalo Stance/Paula Abdul—Forever You Girl/Bobby Brown—Every Little Step, On Our Own/Donna Summer—This Time I Know It's For Real/Madonna—Like a Prayer/Soul II Soul—Keep On Movin'/Pajama Party—Yo No Se/Stevie B.—In My

Eyes/Milli Vanilli—Baby Don't Forget My * (Clear Cut Recording/RBM Studios).

N

James Roger Nelson (E/P): 2155 Bennett Creek Road, Cottage Grove, OR 97424; 503-942-5877. **Credits:** Jimmy Blue & DATA (PP-MV), Welcome to the Future (DesiTrek Studios); Sham (MP-AT), Feet Back and Spread Em (DATA Studios); Northwest Media (PP-F), Diary of a Dying Planet (DATA Studios).

Ralph Nielsen (E/P): Box 77, Mountain City, TN 37683; 615-727-5070. **Credits:** Methyl Ethyl & Moonshine/Barbara Huss and Suzi Wilson (MP-A), Possibilities (Mountain Ear); Timberline (MP-A), Goldrush (Mountain Ear); K-Tunes/Alice Kay Adams (MP-A), Tennessee Homecoming (Mountain Ear).

P

V. Parla Jr. (E): 136 Arlington St., Boston, MA 02116; 617-423-0008. **Credits:** Collins Mgt./Aerosmith (PP-MV), Christmas Party video (PSI Recording); Aerosmith (PP-MV), Boston Music Awards Absentia Gratus (PSI Recording); Panache Editorial/U.S. Trust Banks (PP-F), Courtroom (PSI/Penthouse Film Theatre).

Mark Paul (P): 10120 SW. Todd St., Portland, OR 97225; 503-297-8720. **Credits:** The Oregon Quartet (MP-A), The Old Songs (Phusion Recordings); Bill Shirra (MP-A), This May Be the Last (Phusion Recordings); En Rapport (MP-A), Mixed Alternatives (Phusion Recordings); Eclipse (MP-A), Sink the Bells, Tuck the Pauls (Phusion Recordings); The Bonnetts (MP-A), Overseas Flight (Phusion Recordings).

Bob Pickering (E/P): 104 Highland Lake Drive, Highland Village, TX 75067; 214-601-2172. **Credits:** Toby Arnold & Associates (CP-R/TV), Music Library (TA&A); Charley Pride (CP-R/TV), Justin Boots (Cecca Sound).

R

Tom Reeves (P): 5 Lancaster Court, Merrimac, MA 01860; 508-346-4888. **Credits:** Ralph Cerbone (MP-SR), Rehab Rock 'n' Roll (Oak Grove); Grade Ulta (MP-AT), Clean Shot (Oak Grove).

Paul J. Rich (E/P): 1721 Olean Road, South Wales, NY 14139; 716-652-3750. **Credits:** Lone Canyon Band (MP-S), Lonesome Me/Together (Nine Pines); Bill E. Bakker (MP-S), This Time/Love for Free (Nine Pines); Sandy Janice (MP-S), So In Love/You Do That to Me (Nine Pines); Scooter and Thumper (MP-S), Always and Forever/We're Still Here (Nine Pines); Greenfield's Restaurant (CP-R), Greenfield's Tonight (Nine Pines); Debbie Lane (MP-S), These Nights/Cruising (Nine Pines).

Mario Rodriguez (E): 3804 Atlantic Ave., Brooklyn, NY 11224; 718-946-1957. **Credits:** Apollonia (MP-SR).

Same Dream (Cove City/Shakedown); Reid (MP-S/SR), One Way Out (Cove City/Shakedown); Martika (MP-SR), I Feel the Earth (Cove City/Shakedown); Al-phaville (MP-SR), Romeos (Cove City/Shakedown); Stage Dolls (MP-A), Stage Dolls (Skyline).

Mike Rosenman (P): 45-14 215th Place, Bayside, NY 11361; 718-224-7424. **Credits:** The Upstartz (MP-SR), Lawnchair Hero (Recordamatt); Corp. for Educational Radio & TV (PP-F), China at the Crossroads (Sauna Studio); Jamie Morad (MP-A), Jamie Morad (Unique Recording); Commercial Workers (CP-R), The Dey's Difference (Sauna Studio); The Upstartz (MP-A), The Upstartz (Unique/Recordamatt/Sonic).

S

Mark Seagraves (E/P): 623 W. Guadalupe Road, #137, Mesa, AZ 85210; 602-892-1024. **Credits:** Semper Rock Productions (MP-A), Jen-Jen—Boots (Chaton Recordings/Absolute Music); John Badiaco (MP-S), Jobless—Rock/Blues (Pantheon/Badiaco Studios); Robert Richards (MP-S), Phantom of the Opera (Absolute Music); No Bananas Productions (MP-S), Diamonds are Forever (Absolute Music); Trendmark Productions (CP-R/TV), Best Carpets (No Bananas/Absolute); Jules Heller Productions (PP-Cl), Heller Art Opening (Absolute Music).

Larry Seyer (E/P): 1319 Lost Creek Blvd., Austin, TX 78746; 512-328-6633. **Credits:** Asleep at the Wheel (MP-A), Western Standard Time/AATW 10 (ARS/Arlyn/Firestation/Bee Creek/16th Ave. Sound); Ricky Van Shelton (CP-R), This Bud's For You (16th Ave. Sound); Darden Smith (MP-A), Darden Smith (ARS/16th Ave. Sound/Arlyn); Pepsi Co. (CP-R), Today's Pepsi Taste (Arlyn).

Scott Spain (E/P): 5760 Ponderosa Blvd., Hansville, WA 98115; 206-638-2911. **Credits:** Tachyon/Rob Quist (MP-A), Great Northern Band (Record Plant); Tachyon/Jack Gladstone (MP-A), Wolves on Sea and Plains (Granny's House); Tachyon/Kyle McKinney (MP-A), Kyie (Klub Kev's); Northwest Sound/Kenny & Tzipora (MP-A), Kenny & Tzipora (Klub Kev's); S2 Productions/Sir Real (MP-A), Sir Real (Klub Kev's).

T

Howard Toole (E/P): Box 121482, Nashville, TN 37212; 615-373-5890. **Credits:** Mason Dixon (MP-A), A Down Home Christmas/Homegrown (Burns Station); Jim Andrews (MP-A), Doppelgitarre (various); Phyllis Horne (MP-A), Phyllis Horne (Room at the Top); Carol Stober (MP-A), Country Sampler (Burns Station).

V

Tony Valera (P): Box 6691, San Mateo, CA 94403; 415-340-9507. **Credits:** Warner Brothers/Michael Cooper (MP-S/SR), Do You Love Me (Bruce Tambling/Starlight); Deff House Records/TTPMC (MP-S/SR), Treat Her Like a Lady (Bruce Tambling Sound);

Track Records/Ohio Players (MP-A), Back (Sonic Art Studio); Brandon (MP-S/SR), Moves/Push Up on Me (Bruce Tambling Studio/Dragon/OTR).

W

Keith Watkins (E/P): 811 Lee Blvd., Lawton, OK 73501; 405-357-2177. **Credits:** Summer Breeze (MP-S), She Still Thinks About You (Ultra Sound); Larry Simpson (TV/R/Cl), Oklahoma Land Run Centennial (Ultra Sound); Summer Breeze (MP-S), Heartaches and Heartbreakers (Ultra Sound).

Fred Weinberg (E/P): 16 Dundee Road, Stamford, CT 06903; 203-322-5778. **Credits:** McDonald's International (MP-F), Space Adventure (Weinberg's Laserlabs); Lincoln-Mercury (CP-TV), Nothing Moves You (Home Base/Soundtracks); The Hot Latins (PP-MV) (CBS/Worldwide Audio); Budweiser/Jose Feliciano (CP-R/TV), Beach Party (Weinberg's Laserlabs); Latin America Awards (MP-TV), El Maestro awards (Radio City/Soundtracks); Weston Films (TV-F), Hiawatha (Weinberg Studios); Perdue (CP-MP), Factory (Home Base); Sun and the Moon Films (CP-TV/F), The Sun and the Moon (Worldwide A/V); Plax mouthwash (CP-TV), Two Halves (Home Base); Kentucky Fried Chicken (TV-CP), Fresh Meal Deal (Weinberg's Worldwide).

Vince Wheeler (E/P): 3350 Ulmerton Road, Clearwater, FL 34622. **Credits:** Paramount Pictures/Robert McGuinn (MP-AT), demo (Florida Sound); Jack Hartman/Educational Activities Inc. (MP-A), Angry Feelings (Florida Sound).

Craig White (E/P): 1901 Crested Butte, Edmond, OK 73034; 405-282-2729. **Credits:** Felix Linden (MP-A), Before the Music Ends (White Rose Studio); Perfect Creature (MP-A) (White Rose Studio); Harvey Derrick (MP-S), America is Burning (White Rose Studio).

Peter B. Wilder (E/P): 61 Main St., Burlington, VT 05401; 802-863-8652. **Credits:** VT ETV (PP-Cl), Crossroads (Advance Music Center); Christine and the Dream (MP-AT), demo (Advance Music Center); Collins, Lang and Connolly (CP-R), miscellaneous jingles (CL&C); SSK Productions (CP-R), Sunshine Kids (TKO Studios).

Tom Williams (E): 32 Reed St., #1, Cambridge, MA 02140; 617-868-3726. **Credits:** The Gordons (MP-A), 100 Holidays (Downtown Recorders); Weisman Video Productions (PP-Cl), D. H & S training video (Field Production Audio); NHK-Japan Broadcasting (CP-TV), Super Seminar #3 (Field Production Audio); Handsome Brothers Music Service (PP-Cl) (Downtown Recorders).

Jeff Wormley (E/P): 311 Poland Ave., Struthers, OH 44471; 216-755-1331. **Credits:** Terry Barrett (MP-A), Ying Yang Telephone (Syndicate Sound); The Shark Bites (MP-S), Seen It Happen/Telling Yourself (Syndicate Sound); Jay Garrett (MP-AT), The Kiss You Forgave (Syndicate Sound); Dave Sipusic (MP-AT), Catch Me if You Can (Syndicate Sound); George Lang (MP-S), You're My Christmas (Syndicate Sound).

RE/P

TRACKS

A

AudioWorks Recording: 7479 S. Teller St., Littleton, CO 80123; 303-972-4255; Bill Prentice, owner. **Credits:** Andy Salas (CP-R), Psalm 150 (RE/ME: Bill Prentice; ME: Andy Salas); Sabatani (CP-R/TV), Strikes Back (RE/ME: Bill Prentice); Caught in the Act (CP-R), Caught Twice (RE: Bill Prentice; ME: Bill Prentice, Aaron Swilley); The 40th Day (PP-MV), Day At the Shots (RE: Bill Prentice; ME: Bill Prentice, Aaron Swilley).

A Place of Praise: 2500 E. Vancouver, Broken Arrow, OK; 918-355-3020; Bruce Dinehart, owner. **Credits:** Oklahoma Natural Gas (PP-CI), NewsView (RE/ME: Bruce Dinehart).

B

Body Electric Studios: Box 1491, Bolingbrook, IL 60439; 312-759-9311; Tim Collins, studio manager. **Credits:** AT&T Network System (PP-CI), 946-947 Connector Cleaning (RE/ME: Brian Basilio; AE: Bruce Dickert); Norwest Mortgage (CP-R/TV), Norwest—The American Dream (RE: Brian Basilio; ME: Bruce Dickert); St. Margret's Hospital (CP-R), various spots—July (RE/ME: Brian Basilio); AT&T International Sales (PP-CI), A Passion For Winning (RE: Bruce Dickert; ME: Brian Basilio); AT&T Market Operations (PP-CI), ACP/BCP—Sales Training (RE: Bruce Dickert; ME: Brian Basilio).

Blank Productions: 1579 Hope St., Stamford, CT 06907; 203-968-2420; Bob and Lola Blank, owners. **Credits:** APM Music (CP-TV), NBC Sports Theme (RE/ME: Bob Blank; AE: Kristin Stone); Sunday Productions (CP-TV), Zest (RE/ME: Bob Blank; AE: Kristin Stone); Golden Girl Productions (CPTV), Walktron (RE/ME: Bob Blank); Spirit Feel/Shanake (CP-TV), Marion Williams CD promo (RE/ME: Bob Blank); Sunday Productions (CP-TV), Pringles 3 Girls (RE/ME: Bob Blank); Sunday Productions (CP-TV), Sure Deodorant (RE/ME: Bob Blank; AE: Kristin Gambini); Sunday Productions (CP-TV), Elias Productions (PP-F), Rude Awakening (RE: Bob Blank; ME: Sherman Foote; AE: Kristin Gambini); Metropolitan Life (PP-CI), Million Dollar Roundtable (RE/ME: Bob Blank; AE: Kenny Blank); FWP (CP-TV), Runaway Club (RE/ME: Bob Blank; AE: Kenny Blank); Electra Records (PP-MV), Ruben Blades LP (RE: Bob Blank, Sammy Valasquez; AE: Kristin Stone); Twinsun Music USA (PP-CI), Million Dollar Roundtable (RE: Bob

Key

Facility Name: Address; phone; contact name/title. **Credits:** Client (Credit Code-Subcode), Project Title (Recording Engineers; Mixdown Engineers; Assistant Engineers).

Codes

CP (Commercial/Advertising Production).
Subcodes: R (Radio) TV (Television).

PP (Post-Production)
Subcodes: F (Film) MV (Music Video) CI (Corporate/Industrial)

Blank, Kristin Stone; ME: Bob Blank; AE: Kristin Stone); Thos. Valentino Inc. (PP-CI), SFX Library Creation (RE: Kristin Stone); DDB Needham International (CP-TV), Brent Mussberger for State Farm Insurance (RE/ME: Bob Blank; AE: Kristin Stone).

C

Countdown Studios: 13644 SW 142nd Ave., Unit D, Miami FL 33186; 305-253-2400; Rique Alonso, studio manager. **Credits:** Arista Records (CP-R), What You Don't Know (RE: Lewis A. Martinec, Mike Couzzi, Cesar Sogbe); CBS International (CP-R), Come Home (RE: Cesar Sogbe); Arista Records (CP-R), C'Mon Feel the Need (RE: Lewis A. Martinec; AE: Cesar Sogbe); CBS (CP-R), Voices In Your Head (RE: Lewis A. Martinec, Cesar Sogbe); Polygram (CP-R), Shout It Out (RE: Cesar Sogbe).

Cow and Hen Productions: 439 King St. E., #5, Toronto, Ontario, Canada M5A 1L5; 416-364-9813; Edward Hutchison, owner. **Credits:** Dreams and Realities (PP-F), Invisible Protector (for TVO) (RE/ME/AE: Edward Hutchison, Phil Strong); Greg Miron (PP), Mop In the Attic (RE: Edward Hutchison); Tom Girling, National Anthems for Skydome (RE: Edward Hutchison).

D

Data Studios: 2155 Bennett Creek Road, Cottage Grove, OR 97424; 503-942-5877; Valerie E.C. **Credits:** News Center Cable 34 (CP-TV), News Center 34 (RE: Valerie E.C., David Allen Lynch; ME: Valerie E.C., John Eastman); Jimmy Blue & Data (PP-F), Welcome to the Future (RE: James Roger Nelson, Doug Durbrow; ME: Doug Durbrow, Valerie E.C., Jimmy Blue; AE: Marilyn Buller).

Digital Multi-Media Post: 502 N. Hudson St., Orlando, FL 32811; 407-293-3390; Marie Hamlin, president. **Credits:** Quest Studios (PP-F), The Spring (RE: Chris Coan; ME: Robert Storer); Pyramid Films (PP-F), Loot (RE: Chris Coan; ME: Robert Storer; AE: Leo Procopio); Media Link (PP-TV), Lyn St. James (RE: Chris Coan; ME: Robert Storer; AE: Leo Procopio).

Digital Music: 119 Spadina Ave., Suite 747, Toronto, Ontario, Canada M5V 2L1; 416-345-9055; Patricia Hope, studio manager. **Credits:** Mickymar Productions (TV), Street Legal theme (RE: Brad Mulligan); DDB Needham/The League of Sonic Science (PP-CI), Seldane Flamenco etc. (RE/ME: Paul Bonish; AE: Brad Mulligan); J. Walter Thompson Advertising (PP-CI), OV Beer Bluebombers (RE/ME: Paul Bonish; AE: Brad Mulligan); DMB&B Advertising (PP-CI), Zest Brother and Sister (RE/ME: Paul Bonish; AE: Brad Mulligan); J. Walter Thompson Advertising (R-CI), Vaseline Intensive Care (RE: Brad Mulligan).

E

Editel Sound: 651 Beacon St., Boston, MA 02160; 617-267-6400; Dana Giedrys, director of sales.

Credits: Reebock (PP-CI), E.R.S. In-Store Videos (RE: Bob Reardon; ME: Chris Anderson); DF Sullivan (CP-R), ADAP Auto Parts jingle (RE/ME: Chris Anderson); The Discovery Channel (CP-TV), Station ID Package (RE/ME: Mike Szakmcister); The Boston Museum of Science (CP-TV/R), King Herod's Dream (RE: Rick Sweetser; AE: Bob Reardon); The ITVA (PP-CI), The ITVA 21st Annual Conference (RE: Chris Anderson; ME: Bob Reardon).

F

Fantasia Productions: 142 Berkeley St., Boston, MA 02116; 617-262-4150; Michael Paul, president. **Credits:** Reebock International (PP-CI), Energy Release System (RE: Jordan D'Alessio; ME: Jordan D'Alessio, Michael Paul); Bozell, Inc. (PP/CP-CI/R/TV), Thom McAn First Step (RE: R. Brad Safford; ME: R. Brad Safford, Michael Paul); Hill, Holiday, Connors, Cosmopolis (CP/R), Boston Globe Home Delivery (RE/ME: Andy Learner); Bull, Inc. (PP-CI), Series 4000 Printers (RE/ME: Jordan D'Alessio); Videocraft Productions (CP/PP-R/TV/MV/CI), The Best Game In Town (RE/ME: Jordan D'Alessio; AE: Sherwood C. Doud Jr.).

G

Granny's House Recording: 1515 Plumas St., Reno NV 89509; 702-786-2622; Patti Tipton, manager. **Credits:** Geffen (PP-MV), Whitesnake (RE: Keith Olsen, Shay Baby; AE: Holly Sharpe, Bjorn Thorsrud); Polygram (PP-MV), Dirty White Boy (RE: Gordon Fordyce; ME: Beau Hill; AE: Holly Sharpe, Bjorn Thorsrud).

I

Innervision Productions: 11783 Borman Drive, St. Louis, MO 63146; 314-569-2500; Jim MacMorran, senior audio engineer. **Credits:** Monsanto (CP-TV), Show-down Herbicide (RE/ME: Jim MacMorran; AE: Scott Betz); United Way (CP-TV) (RE/ME: Jim MacMorran); Carpetland USA (CP-TV), 18 Hour Marathon Sale (RE/ME: Jim MacMorran); Six Flags of MidAmerica (CP-R), Ride Experience (RE/ME: Jim MacMorran; AE: Scott Betz).

International Sound: 80 N.E. 168th St., Miami, FL; 305-652-0777; Patti Blanchard, studio manager. **Credits:** Arista (R), Expose (RE: Cesar Sogbe; ME: Lewis Martinec; AE: Steve Whaley); United Stars (R), Richard Cocciante (ME: Mike Couzzi; AE: Steve Robillard); Bobby Brown (R), Bobby Brown (RE: Cesar Sogbe; AE: Richie Perez, Steve Whaley); Atlanta Artists (R), Milli Vanilli (RE: Chris Rutherford; AE: Cesar Sogbe); Island Records, Bandera (RE: Eric Schilling).

M

Manhattan Digital Recording Studios: 235 W. 56

St., New York, NY 10019; 212-262-3570; Nick Armington, co-owner. **Credits:** Eric Solstein Productions (PP-Cl), Diamonds (RE/ME: Nick Armington); Lars Lofas (PP-MV), Love Comes Down (RE: Lars Lofas, Nick Armington; ME: Lars Lofas, Nick Armington, Sean McAll).

N

National Video Center/Recording Studios: 460 W. 42nd St., New York NY 10036; 212-279-200; Andrew Lustig, vice president. **Credits:** MacNamara, Klapp & Klein/OMNI (CP-TV) Aristotle 30 (RE/ME: Bill Ivie); Purple Canyon (PP-TV), Skywatching (RE/ME: Bill Ivie); BBD&O (CP-TV), General Electric (RE/ME: Gary Chester); Leo Burnett (CP-TV), Oldsmobile (RE/ME: Gary Chester); David Horowitz Music (CP-TV), Burger King (RE/ME: Gary Chester).

The New York Music Deli: 135 W. 26th St., Penthouse, New York, NY 10001; 212-463-9748; Mark Kovach, creative director. **Credits:** Iverson Associates (PP-Cl), Citibank Industrials (RE: Mark Kovach; AE: Leisa Harris); TAJ Productions (CP-TV), (RE: Mark Kovach, Bob Mitchell; AE: Leisa Harris); Dean Friedman (CP-TV), Boon British Adventure Series (RE: Joe Mendelson, Mark Kovach; ME: Joe Mendelson; AE: Leisa Harris); Dean Friedman (PP-MV), RCA—

Summer Holiday (RE/ME: Joe Mendelson; AE: Leisa Harris); Sloan/Kassell—H/E Productions (PP-Cl), Tiffany's A Royal Wedding Video (RE/ME: Mark Kovach; AE: Leisa Harris).

P

Physonic Studios West: 8306 Wilshire Blvd. #597, Beverly Hills, CA 90211; 818-765-0782; Lawrence Duhart, manager. **Credits:** John Klemmer—MCA (PP-MV), Music (RE/ME: Lawrence Duhart, Steve Zipper); M.C. Everlast—Warner (PP-MV), Forever Everlasting (RE/ME: Lawrence Duhart); Matt Robinson—Warner (PP-MV), Funky Reggae Project (RE/ME: Lawrence Duhart); Divine Styler—Epic (PP-MV), Divine Styler (RE/ME: Lawrence Duhart).

S

Sear Sound: 353 W. 18th St., New York, NY; 212-582-5380; Walter Sear, owner. **Credits:** Reeltime Dist. Corp. (PP-F), Banned (RE: Bill Titus; ME: Walter Sear; AE: Ivan Ortiz); Madonna Films (PP-F), Helgoran (RE: Walter Sear; ME: Bill Titus; AE: Ivan Ortiz).

Slipped Disc Productions: 15 Asqah Drive, North Kingstown, RI 02852; 401-461-6877; Bob O'Neil, engineer/producer. **Credits:** On We Go (CP-R), On We Go (RE/ME: Robert A. O'Neil; AE: John Turner); B&B Cycle (CP-R), Radio Advertisement (RE/ME: Bob O'Neil); Eat or Out Inc (CP-R), Radio Advertisement (RE/ME: Bob O'Neil).

Southern Tracks Recording: 3051 NE Clairmont Road, Atlanta, GA 30329; 404-329-0147; Mike Clark, manager. **Credits:** MCA/Goldust Records (MP-A), ZIP-PERS (RE/ME: Greg Archilla, AE: Tag George, Russ Fowler); Alligator Records (MP-A), TINSLEY ELLIS (RE/ME: Russ Fowler); Polygram Records (MP-A), Burch Sisters (RE/ME: Doug Johnson; AE: Greg Archilla); Starsong Records (MP-A), Mylon LeFevre & Broken Heart (RE: Joe Hardy; AE: Greg Archilla); Buddie Bui Productions (MP-A), Atlanta Rythm Section (RE/ME: Brenden O'Brien; AE: Russ Fowler).

T

Total Eclipse Recording: 115-01 196th St., St. Albans, NY 11412; 718-525-1372; James C. Hall III, owner/chief engineer/manager. **Credits:** Nights (PP-MV), Nighttime (RE: James C. Hall III; ME: James C. Hall III, Angela Taylor; AE: Eddie Scott, Mark Lawrance; Yvonne Yound, Susan Taylor).

REP

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STUDIO UPDATE

Northeast

39th Street Music Productions (New York) has installed an SSL 56-input G Series console and will upgrade to 48 tracks. 260 W. 39th St., 17th floor, New York, NY 10018; 212-840-3285.

Dreamhire (New York, Nashville) has taken delivery of a Sony PCM3348 48-track digital recorder. The company has available for rental a Focusrite 12-channel sidecar console, a Calrec Soundfield mic, a Forat F16 sampler and a Neve Prism EQ and dynamics unit. Ken Thornhill and Brian Macaluso have joined the New York staff. 137/139 W. 25th St., New York, NY 10001; 212-691-5544; or 1217 16th Ave. S., Nashville, TN 37212; 615-321-5544.

Two Sony MXP 3000 consoles have been added to studios 7 and 8 at **Howard Schwartz Recording** (New York). Also, custom machine control panels have been incorporated in the audio post studios. 420 Lexington Ave., Suite 1934, New York, NY 10017; 212-687-4180.

Soho is the location for **The Magic Shop** (New York), a new 24- and 48-track studio featuring a custom 40-input automated Neve console, an oversized control room and an acoustically designed live room with 20-foot ceilings. A MIDI center houses a hydraulic system for easy and efficient MIDI work in the control room. The console is fully automated with a new in-board Mega-Mix system, which runs on the Macintosh SE and features off-line editing and digital gates. Staff includes Steve Rosenthal, owner and chief engineer, Fred Bobrow, chief programmer, and Greg Hanks, studio maintenance. The studio was designed by Larry Carswell. 49 Crosby St., New York, NY 10012; 212-226-7035.

Brigg's Bakery (New York) has tripled its machine room size with the installation of an MTR 100A and the creation of a satellite production area for PCM-mastered real-time copies. The expansion will provide for the random access (direct-to-disk) option scheduled for installation in the fall. Owner/mixer Lee Murphy received an Emmy nomination for his sound design work on the PBS series "Reading Rainbow." 122 W. 88th St., New York, NY 10024; 212-787-4242.

The Toy Specialists (New York) has added two Sony tape machines to its in-

ventory, the 48-track PCM-3348 and the 24-track PCM-3324A. 333 W. 52nd St., New York, NY 10019; 212-333-2206.

A Panasonic SV-3500 DAT recorder and Technics 905 cassette mastering decks have been added to the main studio at the **Music Factory** (Norristown, PA). Additional studio gear includes AKG 451 condenser mics and AKG 240 headphones. The Musician's Referral Network has been created by the Music Factory to help those interested in finding band members, studio players, replacements for gigs, song writing, collaborators and others. A fee of \$20 includes an initial interview, photo, recording session and a three-month listing. Ford and Washington Streets, Suite 300, Norristown, PA 19401; 215-277-9550.

Videomix (New York) has added audio engineer Noel Smith to its staff. 123 W. 18th St., New York, NY 10011; 212-627-7700.

Roar Productions Recording (Columbia, MD) has added a Lexicon LXP-1 digital reverb unit and a Lexicon MRC MIDI remote controller that will automate signal processing gear and control of the Yamaha DX and TX synthesizers. Additions in the MIDI studio include a Kawai K-1 digital synthesizer, a Ross 16-channel console with Tannoy monitors, and a Sony Trinitron color video monitor. Roar has ordered 15 samples from Northstar Productions, which brings the collection for the Akai S-900 sampler to more than 100. 6655-H Dobbin Road, Columbia, MD 21045; 301-596-2600; 301-381-1440.

Blank Productions (Stamford, CT) has purchased Rocktron II single-ended noise reduction units for use in transferring old analog masters to R-DAT. In addition, Rane 31-band graphics and Valley People limiters were purchased for a special CD project for Major Records. The two rooms at Blank were upgraded with E-mu Emax SE hard-disk samplers. A Fostex R8 used for video lockup was added to Room K. 1597 Hope St., Stamford, CT 06907; 203-968-2420.

Midwest

Sound Images (Cincinnati) was awarded a regional Emmy in the Original Composition/Arrangement category for its song "Celebrate Cincinnati '88." The song was

used by WCPO-TV, Cincinnati, in the March 1988 program of the same name. 602 Main St., Cincinnati, OH 45202; 513-241-7475.

Editel/Chicago and **TMK-Elias Music** have announced an affiliation between their corporate production divisions. The alliance is to benefit Editel and TMK-Elias corporate clients by offering a high-end video production/post-production package supported by original music production.

Southwest

Construction has been completed at **Jam Productions'** (Dallas) new 4,000-square-foot, two-room facility. The two control rooms feature Harrison MR4 recording consoles and Sony JH24 multitrack recorders. 5454 Parkdale Drive, Dallas, TX 75227; 214-388-5454.

Dallas Sound Lab (Irving, TX) has named Johnny Marshall executive vice president and staff programmer for DSL's Synclavier system. Four Dallas Communications Complex, Suite 119, 6305 N. O'Conner Blvd., Irving, TX 75039-3510; 214-869-1122.

Southern California

Filmcore (Hollywood) has added a Panasonic SV-3500 DAT machine to its sound room. 849 N. Seward, Hollywood, CA 90038; 213-464-7303.

The second Neve/Studer room at **Track Record** (Hollywood) has been equipped with a 60-input Neve V Series console and a Studer 820 machine. A Mitsubishi X-880 digital 32-track with Apogee filters has also been added to the room. 5102 Vineland Ave., N. Hollywood, CA 91601; 818-761-0511.

Skyline Recording (Topanga Park) has been purchased by Britt Bacon and John Eden and has been renamed Topanga Skyline Recording. A Neve V Series MK III console with 60 inputs and Necam 96 automation have been added. Other new equipment includes a Lexicon 480, PCM 70 and PCM 60, an AMS DMX 1580, an Eventide H3000, Drawmer gates and limiters, Focusrite equalizers, four Yamaha SPX 90s, an EMT stereo plate, an MCI JH16 24-track available in 16-track head-

It's A Matter Of Taste.

stack, an Otari MTR 12, a Sony 2500 DAT machine and a Sony F1 with PAL Betamax or U-matic. 1402 Old Topanga Canyon Road, Topanga Park, CA, 90290; 213-455-2044.

Soundworks West (Los Angeles), recently purchased from the Gordy Company by Alan Ramer and Robert Diez d'Aux, has announced its initial staff appointments. Paul Sloman has been named director of recording operations; Ron Lagerlof, chief technical engineer; Tim McCoomb, technical engineer; Candice Moore-Dooley, traffic manager; and Clyde Tate, account executive.

Northern California

Kelly Quan Research software has been added at **Soma Sync Studios** (San Francisco), giving the 24-track facility complete edit-list capability and automated assembly. In addition, a JVC CR850 3/4-inch deck has been purchased. Larry Oppenheimer has joined the staff as sound engineer. 372 Brannan St., San Francisco, CA 94107; 415-546-1374.

Northwest

Chris Douthitt and Jim Baer, engineers at **Spectrum Sound Studios** (Portland, OR), shared honors with Brown Dugan & Associates for work on their "Symphony" television spot, which won a TELE award. Their 1988 Christmas radio program and "Columbia Harbour" radio campaign were awarded Silver Microphones. 1634 S.W. Alder St., Portland, OR 97205; 503-248-0248.

McCoy Recording Studios (Medford, OR) has changed its name to Oregon Sound Recording. A recent upgrade included the purchase of a Ramsa WRTM20 console, an Otari MX-70 16-track and dbx 180As for all channels. Additions in the MIDI studios are E-mu Emax, Kawai K-1, Kurzweil PX1000 and Sound Process software for the Ensoniq Mirage. 125 S. Central, Suite 209, Medford, OR 97501; 503-773-2113.

Manufacturer and dealer announcements

North Star Audio has received an order from Sony Classical Productions for 12



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STUDIO UPDATE

Bruel & Kjaer type 4011 19mm cardioid microphones and four pairs of Bruel & Kjaer's 3529 microphone kits.

AMS Industries has received an order from Channel 4 Television, London, for a 48-channel Virtual Console System. The system will be used in live stereo broadcasting. Also, a Virtual Console System was installed at Scottish Television. Recent AudioFile orders include Universal Recording, Chicago; Comlogie, Los Angeles; Waves, Los Angeles; Digitec, Puerto Rico; Tyne Tees Television, Newcastle, UK; Novaga Films, Lisbon, Portugal; and Stebbings Recording Studios, Auckland, New Zealand.

Soundmaster has delivered an Integrated Audio Editing System to the BBC to be in the "television central" operations based in London.

Neve has installed a 8232 console at Scruggs Sound Studio, Nashville. Manhattan Center Studios, New York, has taken delivery of a VR console with moving fader automation.

A **Trident** 80B 39/24/24 console has been installed at the newly constructed A to Z Studios, La Verne, CA.

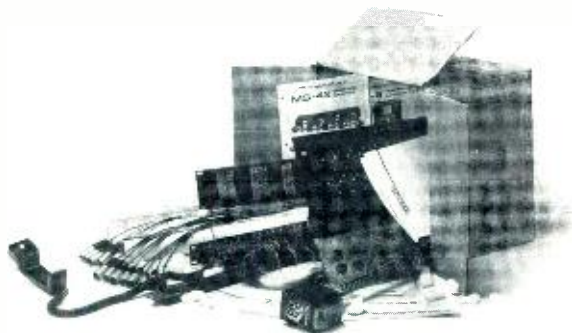
BSS Audio has delivered two DPR-402 compressor/de-essers and two DPR-502 MIDI noise gates to Peter Gabriel's Real World studio. The Power Plant has taken delivery of a DPR-402 and a DPR-502. The BBC's new Maida Vale 5 studio complex has installed the AR-416 4-channel active DI and a DPR-502. Other UK studios adding the DPR-402 include Videasonics, PWL, Good Earth and RAK. Adding to their personal FX racks are producers Steve Lipson (DPR-402 and DPR-502) and Mike Hedges (DPR-502).

A **Tascam** ATR 60/4 multitrack has been purchased by Clair Brothers, the sound contractors for The Who, for use on the group's world tour. SOB Studios has upgraded its facility with an ATR 80/24.

Studer Revox has installed A820-24 recorders at Howard Schwartz Recording (New York) and The Enterprise (Burbank, CA). Music Animals has placed an order for five A827-24 analog multichannel recorders. Zomba Audio, London, has ordered six A827-24s.

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THE CUTTING EDGE

By Laurel Cash

A Resourceful Remote

Sometimes, a new product comes along that is so unique and utterly simple that I have to stop and ask myself, "Why hasn't anybody thought of this before?" By its simplicity, this same unique and simple product can be difficult to describe.

One of these little wonders has once again wandered past my nose. It is the "Practically-Anywhere-Anything Remote" from RTEC.

The "Practically-Anywhere-Anything Remote" has five user-assignable buttons that can control any function or series of functions. It can control *any* relay or contact-closure operated device, or devices. These may be of the normally open or normally closed variety, as there is the provision for the user to select this for each device via the rear panel.

But the most remarkable part of this system is that it utilizes only a *single* twisted-pair wire of any type, to control the device or devices over any distance up to one mile away! (If you've ever had to run any long-distance multi-pair machine remote cables, you'll know how much money and time this will save you.)

What this means in plain English is that it can talk to a MCI-JH110 2-track (remember those?), an Otari 24-track (or Studer or Sony or Tascam, etc.), a coffee maker, a 1-inch VTR, or any combination of them. And it can do it whether they are in the same room with you, or across town.

Let me give you an example. Let's say you are a multi-room facility. You need to start a video tape machine remotely. However, when your facility was constructed, nobody made provisions for the multi-pair cable that runs to the VTR's remote. No problem. You no doubt have mic lines or tie lines throughout your facility. Simply patch into one of them and your worries are over.

And because it has five buttons, it can also be used as a tape machine remote with start, stop, fast forward, rewind and play. It can be used to start/stop more than one machine, or as a remote control of

several cart machines in a radio station. You get the idea.

And the price? The "Practically-Anywhere-Anything Remote" consists of two pieces. The RK-50 Remote Keypad and the MC-50 Machine Controller are sold as a system for a list price of \$750. However, the keypad and controller may

be purchased separately in case you need one controller and several remote keypads.

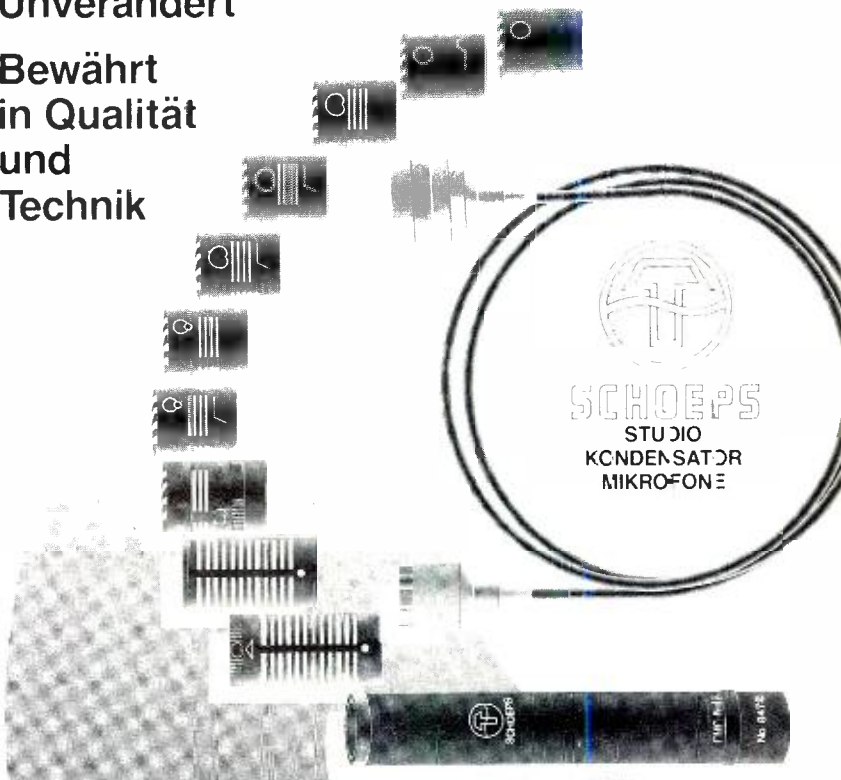
It is also worth mentioning that a 10-button and 15-button version are in the works and will soon be available.

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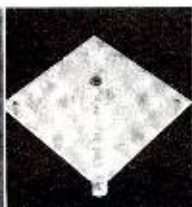


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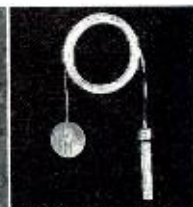
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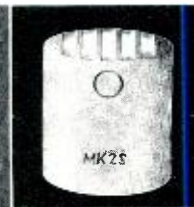
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Laurel Cash is RE/P's executive consultant and a Los Angeles-based free-lance writer

NEW PRODUCTS

Opcode Systems software for E-mu Proteus

A Macintosh software package for the E-mu Proteus sampler, the Proteus Editor/Librarian allows control of sound parameters and storage of sound patches. Included is a fully integrated Patch Librarian that allows storing and organizing of thousands of sounds on a single disk. Other features include a preset editor, a master parameter editor, a program map editor and a tuning editor. List price is \$199.

Circle (131) on Rapid Facts Card

Opcode Systems software for Korg M1

This Macintosh software package for the Korg M1 synthesizer is similar to that for the E-mu Proteus. The Editor/Librarian features five integrated editors for different aspects of the M1: the program editor, the effects editor, the combination editor, the drum kit editor and the global editor. List price is \$249.

Circle (132) on Rapid Facts Card

Passac Unity-Eight

The Unity-Eight is a single-rack space 8x4 line mixer with two separate stereo sends and returns for external effects. The unit features a signal-to-noise ratio of 90dB and frequency response of 15Hz to 20kHz. List price is \$524.95.

Circle (133) on Rapid Facts Card

MegaMix InBoard Series

The MegaMix InBoard Series automation system from Musically Intelligent Devices features MegaGate recallable, automatable signal gating on each channel; each can be set in one of three gate modes: Local, Recorded and Matrix. The system includes MegaMix software for either Apple Macintosh or Atari ST computers.

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OPTO-ADAPT RS-232 to RS-422 adapter

The OPTO-ADAPT from Computer Dynamics Sales is an optically isolated, plug-in RS-232-to-RS-422 adapter that provides error-

free communications over distances of more than 5,000 feet. Suggested price is \$120; an 8V to 15V external power supply is available for \$10.

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Electro-Voice speaker systems

EV's Extended Range speaker line now includes the SH-1810-ER speaker systems. The SH-1810-ER is a 3-way, full-range main speaker system that can be biamped or run passive full-range. The system features a 60°x40° horn-loaded design for large room coverage and constant directivity. The SH-1810L-ER is a modular 18-inch subwoofer system; the SH-1810H-ER is a high-output, mid/high enclosure. The optional 1810P mounting system is used to assemble the modular system.

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Rhodes MK-80 and MK-60

The MK-80 and MK-60 digital keyboard instruments, designed to produce all of the Rhodes electric piano sounds of the last 20 years, feature a proprietary custom chip that provides power to shape responses. The MK-80 includes an 88-note keyboard, a macro edit function, four control sliders, a 2-line LCD, a pitch bender and a user memory. The MK-60 is a 64-note, oil-damped keyboard that features an octave-shift function, two stretch-tuning modes and an auto-bend function.

Circle (128) on Rapid Facts Card

Calculated Industries time calculator

The Time Master is a pocket-sized calculator that calculates directly in the following time formats: hours, minutes, seconds, hours-minutes-seconds, hours-minutes and minutes-seconds. The Time Master works with points-in-time values in either 12- or 24-hour clockings. A built-in stopwatch-timer function and an hourly rate key are included. The suggested retail price is \$59.95.

Circle (127) on Rapid Facts Card

Gauss test head

The model 1131 test head, designed to assure quality tape duplication, is a 4-track head block with azimuth and motorized pinch-roller tension controls. It works with the Gauss 1120 analyzer and 1110 composite generator, and mounts directly on duplicating slave units to play back test signals from recorded tape at high speeds.

Circle (136) on Rapid Facts Card

Cintas VAC C-60

C-60 bulk cassette tape is available in 12,500-foot lengths, both in CMX ferric oxide and

CRX chromium dioxide formula products. The 12,500-foot pancakes are packaged 20 in a box, 1080 in a pallet.

Circle (138) on Rapid Facts Card

Yamaha loudspeaker systems

Yamaha's Professional Audio Division has introduced five loudspeaker systems to complement its line of sound reinforcement loudspeakers and stage monitor speakers. The S3112MT is a 3-way system with a 12-inch low-frequency driver and is priced at \$445; the S3115HT is a 3-way system with a 15-inch low-frequency driver, priced at \$775; the S2115HIII is a 2-way stage monitor with a 15-inch low-frequency driver, priced at \$645; the S4115HIII is a 2-way system with a 15-inch low-frequency driver, priced at \$695; and the SW118II is a subwoofer with an 18-inch low-frequency driver, priced at \$525.

Circle (135) on Rapid Facts Card



Recortec computers

Recortec's new line of PC-compatible, industrial computers feature a sealed Lexan front panel to protect from dust and moisture. Three models provide the video display protocols most commonly used: EGA in model RME-142; VGA in RME-143; and multiscan in RME-144. The computer line features either a motherboard or passive backplane with a plug-in CPU card, 286 or 386 CPUs, and zero wait state memory operation. Prices start at \$1,195.

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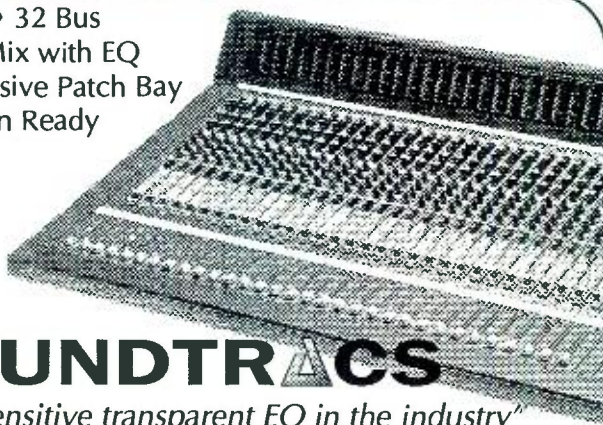
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NEW PRODUCTS

mechanisms and new packaging. Included in the series: SM Sound Master high-bias tape in 10-, 20-, 30- and 60-minute lengths; AM Acoustic master normal bias tape for A/V applications, available in 30-, 46-, 60-, 90- and 120-minute lengths; AL Acoustic Master/Leaderless normal-bias in 30- and 60-minute lengths; ZM Duplicate Master normal-bias in an unlabeled cassette with 5-screw construction, available in 30-, 46-, 60-, 90- and 120-minute lengths; and the ME Medical Master unlabeled cassette in 60-, 90- and 120-minute lengths.

Circle (137) on Rapid Facts Card

Paso Series 5000

Paso Sound Products' new line of high-performance packaged amplifiers, the series 5000, consists of the T5020, T5030, T5060 and T5120 integrated amplifiers and the T5121 power amplifier. Power outputs are 20, 30, 60 and 120W, respectively. The T5121 provides electronic overload protection circuitry with inputs for line level, 600 telephone page and/or pre-amplified microphones. The entire line can be rack-mounted with an optional kit.

Circle (140) on Rapid Facts Card

Publications

H.W. Sams “Audio Technology Fundamentals”

Written by Alan A. Cohen, the book provides a brief, comprehensive overview of the electric and electronic circuitry used in typical audio systems. The author assumes only a basic understanding of math and electronics principles. The 250-page text covers topics including the audio chain, sound measurement, operational amplifiers, filters and troubleshooting. The retail price is \$19.95.

Circle (141) on Rapid Facts Card

“Sound Recording Handbook”

Available from H.W. Sams and written by John Woram, this reference book provides information on recording and audio technology for the intermediate to advanced professional audio engineer. Subjects such as sound basics, microphones, speakers and consoles are covered. The 600-page text retails for \$49.95.

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Hardware and software updates

Cubit now Cubase

Steinberg/Jones has changed the name of its new sequencer Cubit to Cubase. The program uses Steinberg's M-ROS (MIDI Real-time Operating System), which provides constant system activity even after exiting to a different program. The suggested retail price is \$495.

Circle (144) on Rapid Facts Card

Cakewalk certified for compatibility box

Twelve Tone Systems has certified that its software programs Cakewalk 2.0 and Cakewalk Professional 2.1 work successfully in the OS/2 DOS compatibility box. The OS/2 is a multi-tasking operating system from IBM and Microsoft for IBM PCs. Cakewalk software is not copy-protected and allows the selection of alternate IRQs and port addresses, two facts that explain the success with the OS/2.

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Passport's NoteWriter II

NoteWriter II is a major new upgrade to Passport's NoteWriter music graphics program. It provides a flexible music engraving program in an easy-to-use system, and includes the Symbol Library, which contains NoteWriter's music symbols and the capability to expand, modify and design others.

Circle (146) on Rapid Facts Card

New England Digital Release 2.1

Release 2.1 is a Macintosh-based software package for NED's PostPro and Direct-to-Disk line of digital multitrack recorders/editors. The new EditView audio editing system, which represents all audio cues as blocks, is featured. Also included is the Optical for Direct-to-Disk software, which permits users to access NED's 2Gb optical drive from its audio event editor software.

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AMS TimeFlex

TimeFlex has been released by AMS Industries for use on AudioFile. This feature creates the ability to compress or expand the length of recordings, which previously were too short or long, in order to make them fit into a prescribed time slot.

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