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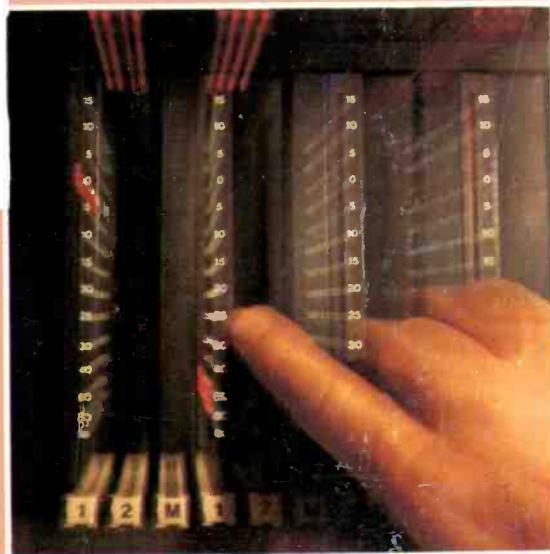
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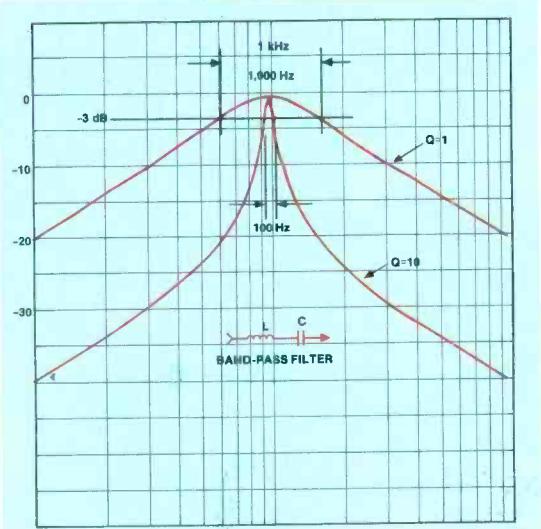
Big Hits From A Smaller Studio . . . Page 90

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Filters . . . Page 70



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R-e/p 2 ■ August 1981

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August 1981 ■ R-e-p 3

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- Live Performance
- Video and Broadcast

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— The Cover —

Upper photograph: The control room at Alpha Studios, North Hollywood, California, which despite its small size has been the recording venue for the Robbie Dupree hits.

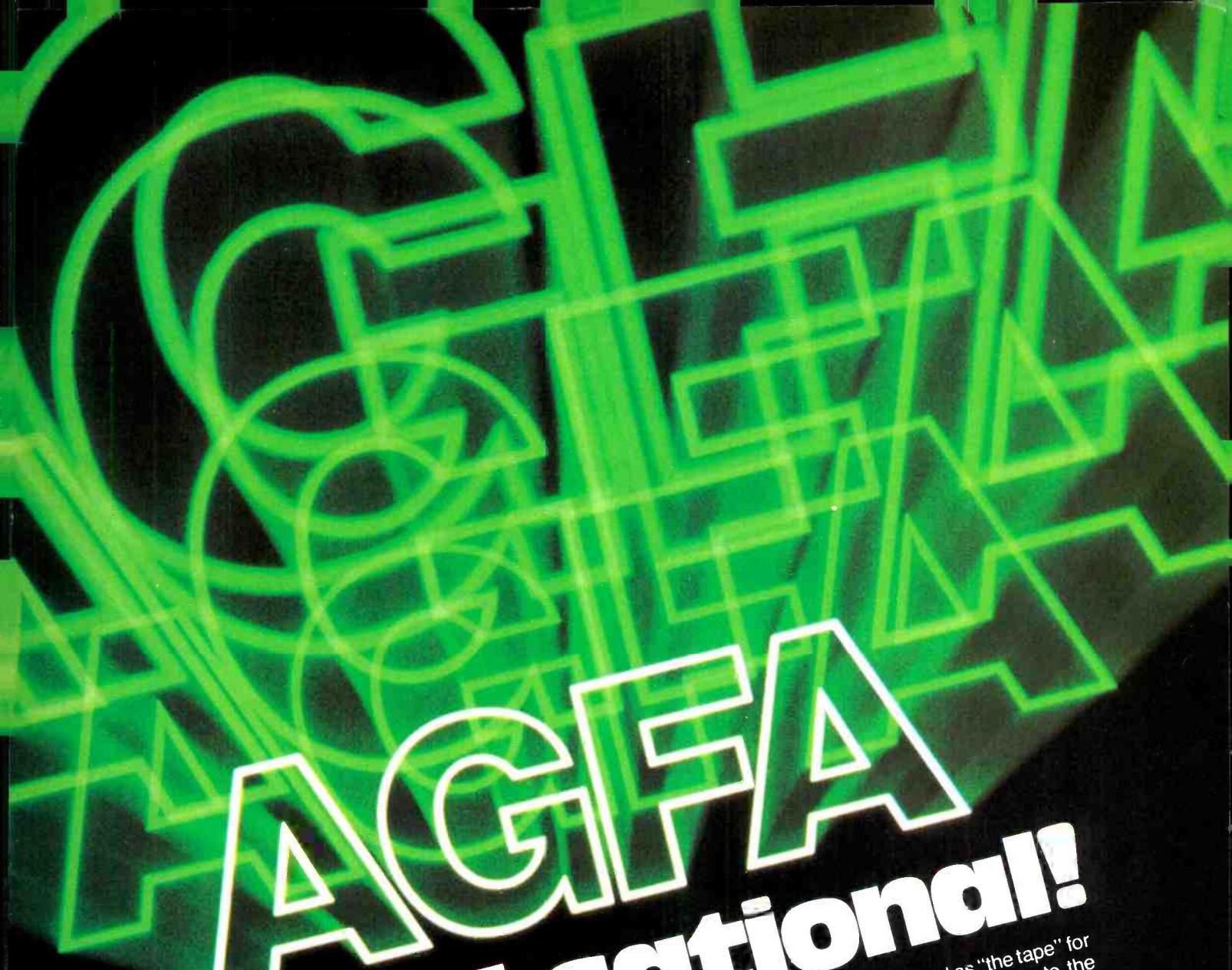
Lower left: Sphere Electronics' new digital fader and attenuator package, designed to retrofit conventional console VCAs, and indicative of the coming consoles of the Eighties.

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- London, England — **FUTURE FILM DEVELOPMENTS**, 36/38 Lexington Street
- Hamburg, West Germany — **SAITEN & SEITEN**, Gartnerstr 109
- Tokyo, Japan — **TRICHORD CORPORATION**, Bunsen Building #3, 1F
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reading and a separate stereo variable frequency EQ for monitor sends. Pan pot controls allow panning to the left or right masters while level controls permit 16 x 6 board operation. The left and right direct channel assign function lets you bypass the group modules for individual sources. Portable operation is a snap with easy access connectors.

And the WR-8716 features plastic conductive faders for greater reliability and smooth, low-noise operation; external power supply for light weight, and switchable 48V DC phantom power for condenser mics.



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You'll command a variable frequency EQ section with 3 frequency settings for the high and low frequencies plus continuously variable

midrange. Stereo echo send replaces the separate mono controls you'll find on competitive boards. And you get two independent stereo monitor controls—one for musician's headphones, one for control room monitors—a special feature for any mixer in this class. And there are other important features

like low noise electronically balanced mic inputs with new high-speed IC's, 16 switchable post-fader solo controls and XLR-type mic connectors.

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SIERRA/EASTLAKE DEVELOPMENTS

Variable Studio Acoustics

As the digital age accelerates the technology of the recording science, we risk depending too heavily on the gadgetry available rather than emphasizing the craft. The journals of the professional audio industry keep us keenly aware of technological advances as they occur. But what about putting a good microphone in the right place in a good room?

At SIERRA/EASTLAKE we invest much time studying the science of acoustics as it applies to the recording art. This continual research has given us a new generation of acoustic design providing the artist as much sonic control and flexibility in the studio itself, as was previously only possible in the control room.

It's called Variable Acoustics. And it transforms the compartmentalized, inflexible studio layout of the past into a totally variable sonic environment, where the entire room, or individual segments, can be acoustically "tuned" from dead to live, or anywhere in-between. The key is not only variability, but the capability to select specific decay times by frequency.

The system is surprisingly simple. Added to the familiar layout of absorptive acoustic traps, is an array of continuously adjustable wall and ceiling louvers, sliding mirror panels and removable carpet sections. The louver panels can be controlled electrically from the control room and are grouped in sections which can be tuned individually.

The benefits of Variable Acoustic Design are many. The studio itself can be designed as an open area; free from the corners and tiny booths which rob musicians of a natural performing environment. The multiple adjustability of the room's acoustics permits the area surrounding each instrument to be voiced individually for proper decay times, while also providing the necessary isolation between instruments. And all without having to reach for EQ or echo send busses! After all, isn't EQ introducing phase shift? Another advantage of a large, open, tunable room is ease in recording large orchestras and big bands.

The SIERRA/EASTLAKE Variable Acoustic Design is a most flexible and functional approach to recording studio acoustics. It's an important element of the industry's only Acoustic Guarantee, in which you are assured, in front, of the exact cost, completion date, and acoustic performance of your custom design.

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views letters news

— The Audio Heritage Center Foundation —

from: Dale Manquen and
Terry Howell
P.O. Box 9923
North Hollywood, CA 91609

We are looking for *R-e/p* readers that are interested in preserving and reconstructing audio history.

Many of you will remember Jack Mullin's awesome exhibit of audio artifacts at the 1977 Audio Engineering Society Convention. That exhibit stimulated our personal realization of the need for an ongoing active effort by the present generation to preserve those wonderful moments in audio history, and make them available for public appreciation. We spent a year vacillating as to what should be done first. Discussions with Jack, a long-time friend and associate of Dale, left us with one resolve: "AUDIO MUST BE USED TO TELL ITS OWN STORY."

Since 1970, we have collaborated on several unique production ventures, and over the years have developed a technique combining entertaining and educational values we call *Theatronics*. It was suddenly apparent to us that *Theatronics* was the perfect medium to reconstruct history, especially audio history.

In July of 1978, using our own funds, energies, and Jack's antiquities, we organized the Audio Heritage Center Project to conceive and produce a prototype exhibit illustrating, to some degree, our concept of a living museum. We took it to San Francisco for private showings at the 1978 National Radio Broadcaster's Association Convention, exhibited at the 1979 Audio Engineering Society Los Angeles Convention, and at Cal State University Northridge.

In 1980 we began non-profit incorporation procedures, and on January 13 of this year became the Audio Heritage Center Foundation, a non-profit California corporation. Our first exhibition in this capacity was at the Las Vegas National Association of Broadcasters convention in April. We have met many loyal and supportive friends of audio in the last few years, and we thank them for their continued interest and faith.

Our ultimate objective for the A.H.C. is to establish a permanent facility to house the museum and serve as a worldwide center for audio information and education.

"We want to make the public aware of how the methods of audio communication affect their lives by showing the historic evolution of those techniques, and

showing how we can use them to shape our future."

Our immediate objective is to begin developing a series of episode modules, each telling a specific part of the overall audio story (i.e., magnetic recording, broadcast, film sound etc.), and each designed for eventual assembly into a total audio-history experience, an integral part of the permanent museum facility. We hope to find corporate sponsorship for each of these initial modules, that could be used at fairs, expositions, trade shows, schools, or shopping malls with retail tie-ins.

Brand names and logos are very much a part of the audio story, and we know there are many corporations that could benefit by our documentation of their efforts. But we will not re-write history.

We want the audio industry to use its own magic to initiate and build a center so unique and entertaining, it will be of major interest to the general public, and thus be self-sustaining.

As we have sought the direction of the A.H.C., Jack has continued to collect artifacts. Our future is more tangible every day, but we need lots of help. Interested individuals, associations, and companies please contact us for more information.

— On the Right Track —

from: T. Young
Waterbury, CT

I just want to compliment you on the April 1981 issue of *R-e/p*. The article by Ethan Winer on constructing peak program meters was very interesting — as are all of his past articles — and I look forward to future constructional articles by him and perhaps others.

Clifford Henricksen's article on the "mysteries" of the Leslie Cabinet was especially interesting to me. As a freelance live sound engineer I have frequently worked with Leslie Cabinets in need of maintenance and/or modification. The article has certainly given me some insight into solving some of the more common ailments. Personally, I would like a follow-up on more elaborate modifications, or an article by someone else who has perhaps other ideas regarding the Leslie.

I also wish to bring to your attention my interest in your continuing articles on live sound (for example, the Stevie Wonder/Britannia Row piece by Chris Michie in the April issue). There are always neat tricks and methods which are invaluable to me that I learn from such articles.

Keep up the great work!

... continued overleaf —



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— A Leslie Mystery Unearthed —

from: David Starobin

Starr Recording Inc.
Philadelphia, PA

I read with interest the various mixing techniques for capturing the Leslie sound [Unearthing the Mysteries of the Leslie Cabinet, Page 130, R-e/p, April 1981]. Try this: Put a PZM inside the treble cabinet, below the horn. Yep, right there on the wooden shelf by the bearing plate.

It's awesome!

— Video/Music Production —

from: Marc Schwartz

Video Consultant
Ford Audio & Acoustics
Tulsa, Oklahoma

It was a pleasure to pick up your April 1981 issue and discover that it contained enlightening and informative articles on video music production. As both a free-lance video artist and sales engineer... I have been observing the tremendous changes in the record industry and the simultaneous growth of video. The obvious movement towards fully integrating audio and video is being more fully realized as technology moves forward. Space for discussion of the uses for new production systems and techniques is a welcome sight in your publication.

My experience in the audio/video equipment industry has lead me to the conclusion that even with a lack of standardization a product whose concept has enough merit will sell. The sales figures of VHS and Beta format consumer VCRs bear this out. Competing formats that are incompatible is a fact of life in the electronics business and will continue to be as each manufacturer attracts its own segment of the market. The fact that no standards exist for digital recording and video disk is no excuse not to produce product. That conservative attitude is detrimental to the continued health and growth of the video/music industry.

Undoubtedly cable television, satellite technology, digital computer technology, and video recording and playback are no longer ideas of the future. They are in use now and are having an impact that will surely change the face of the recording industry. Emphasis should be put on producing new products and new formats for exploration of the possibilities with new technology. While experience is an important asset, no one has any experience with these new concepts, and old ideas are not valid. New ways of producing must be devised; and as Ms. Dempster stated in her article, "it's wide open."

The most important event that took place recently was the beginning of MTV, Warner Amex Satellite Entertainment's bid to attract viewers to watch music video, full time, 24 hours a day. MTV's radio station approach to video music has opened up an entirely

new can of worms. Now there is an established forum on which music video can be seen nationwide as well as in high fidelity stereo. The importance of this event is that Tulsa was selected because it is the fourth largest cable television market in the United States, and a test market was needed.

— an audio engineer —
from: Clara Werse

Rockwurst Productions
Boston, Massachusetts

...there are so many love songs around these days, appealing to the general crowd, I thought you might be get a kick out of this; a love song written especially for the audio engineer —

"We Were On The Same Track"
(but you reassigned your heart)
© 1980 C. Werse

Chorus:

*We were on the same track
But you reassigned your heart
Thought we had a final mix
From the very start*

*You cut me off, you baffle me
you're tearing me apart
We were on the same track
But you reassigned your heart!*

First Verse:

*You put me into ready
You solo all my dreams
You put my heart in overdub
My VU meters steam*

*But your channel switches
back and forth
My life's in stereo
I know I'm losing signal
But my fader won't let go*

(Chorus)

Second Verse:

*Seems you found another love
To turn your dials for you
She's got all kinds of LEDs
Instead of good old VU*

*She's got phantom power
Instead of batteries
But she ain't got the love you
want
So please come back to me*

(Chorus)

Third Verse:

*How my heart goes vari-speed
When I'm thinking of you
Starts at 30 ips
Then slides down to 2*

*Now I'm so unbalanced
Can't seem to EQ
Keep on panning left and right
Diodes blinking day and night
'til I see that ready light
Guiding me to you.*

(Chorus)



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"In addition to its multi-track recording advantages, our 720 has the flexibility to do all the necessary mixing and signal processing in real time for a mono mix for TV, a stereo mix for FM simulcast, including network satellite feeds, as well as a scratch mix on videotape for later synchronization in post-production editing."

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Lee Herschberg
Director of Engineering
Warner Bros. Records

"Rickie Lee's voice can go from a whisper to very loud, and digital captures that."

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

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

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

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

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

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

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

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

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

A. I'd say, yes, if it's up to me, go ahead and do it with digital. Sometimes, on an analog session when the digital is available, I'll record the first couple of tracks on both machines. Then, on the first couple of playbacks, we'll listen to them side by side. That usually does it right there. There's no comparison.

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

Q. What musical formats are suited to digital?

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

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

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



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

3M Hears You . . .

3M

views

... continued from page 12 —

CONSOLE DESIGN FOR THE EIGHTIES — CENTRALIZED CONTROL OF OUTBOARD ELECTRONICS

by Richard Swettenham

Over the last few decades, the design of multitrack recording consoles has passed through some radical changes, both in complexity and layout. Sweep and parametric equalization sections; cue monitor sends from input channels and monitors, with dedicated echo returns for musicians' foldback sends; combination control-room and stereo/quad mixdown outputs, plus subgrouping during remix — all of these features have gradually found their way into mixing boards.

From these various considerations developed the two main directions in console design: the "separate monitor," and the "in-line" concepts. The origin of the in-line format was partly space-saving; partly ease of manufacture and cost saving; and partly the sharing of facilities between input and track monitor paths. From regarding the monitor mix as a preview of the future mixdown session, it became common to record a stereo tape from this mix to aid in planning the mixdown. Console busses one and two were always used for the real mixdown, for the very sensible reason of minimizing the number of circuit elements in the signal path. When subgrouping was necessary, and only then, other busses were regrouped into the first two. So a switch appeared to transfer the stereo tape-machine feed from busses one and two to the monitor mix.

Then somebody said: "Why don't we always mix the stereo through the monitor system? After all, it only means going through two more amplifiers, and saves duplicating the panpots." For

— the author —

Richard Swettenham went straight from technical college to the famous EMI Abbey Road Studios, London. After five years as a maintenance engineer he joined Argo Records, then a small independent label, and taught himself classical mixing, editing and disk mastering. He was in at the foundation of Olympic Sound Studios, one of London's first and best known independent studios, spending 11 years as Technical Director. In 1969 he founded Helios Electronics to build custom consoles, at the same time consulting to various new studio projects. For the last year he has been consulting to other console manufacturers, and is a partner in Baskind Bissot and Associates, the California-based design company.

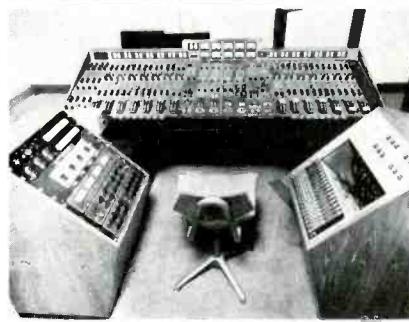
Progress . . .



EMI, Abbey Road . . . about 1954 —



EMI, Abbey Road, . . . about 1960 —



EMI, Abbey Road . . . 1974 —

this school of thought, track monitor and mixdown then became one and the same thing. With the addition of switches to exchange main fader and monitor pot, and to flip the equalizer from input to track, we have the basis of the in-line console. Today the in-line console is the most familiar design found in multitrack studios; a generation of young engineers has grown up whose experience is totally bounded by such consoles, and it may not even occur to many of them that there are virtues and advantages in any other approach.

The main things that have happened since the firm establishment of the in-line console are the introduction of VCA grouping and so-called "logic" switching systems; centrally-controlled assignment; and the promotion of the many competing automation systems. Other than this, the main stream of console design seems to have been concerned with "sales features," and engineering for minimum production cost. To this extent the last few years have lacked the excitement of the early Seventies; but the time for real advance is coming again.



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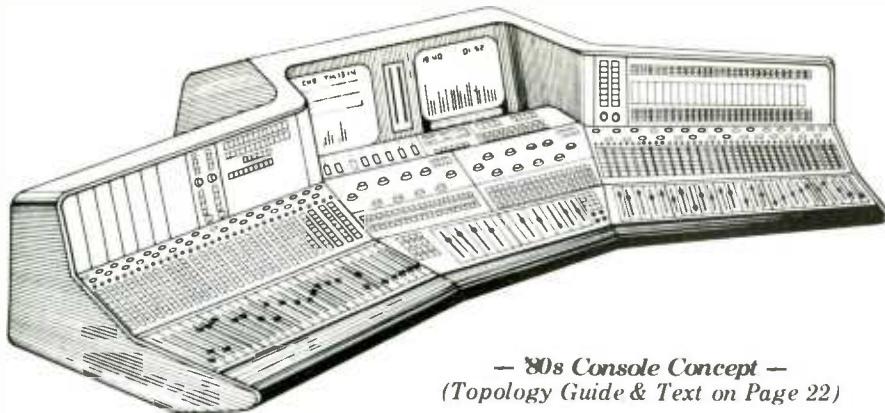
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Ergonomic Considerations

With the in-line design and quantity production techniques came two apparent "fixed rules," which certainly never conformed to ergonomic ideals:

1) The operating area of a console is a flat rectangular surface tilted only slightly from the horizontal;

2) Because input channels are constructed as modules of a certain width, everything else in the console also has to be in a module of the same size.

Such a design philosophy may make life simple for factory production engineers, but it isn't the way nature intended when the human body was dimensioned. Nor is it the way a large organ console or the cockpit of an aircraft are laid out. It is not at all

irrelevant to draw these parallels; where concentration and quick action are essential, either to human safety or to a superb performance (and what else are we seeking in the control room?), sight, reach, and the organization of priority in controls and displays are of top importance. A control surface with several angles coming up towards the vertical is preferable, both for reach and because more usable panel length is generated. If more channels call for extension beyond this width — and they usually do — the logical way to avoid having to use extreme arm reach, stand up, or roll the chair up and down the console, is to pivot the ends round towards the operator until the faders once again fall under the extended hand. Not only have we eased the

original problem, but also created a great deal of usable space which did not exist before, in the triangular areas between the straight banks of channels.

Towards The Future

Let us now come to the real question: "Where are consoles going now?" Well, the "kitchen tables covered with knobs" don't seem to be going anywhere. For those about to ask "Digital?" here is a very brief summary of the situation:

The acceptance of digital multitrack tape as a serious technique does raise the question of whether the console would now be reconceived in digital form. In terms of sound handling from the live studio, the benefits are much more marginal than in the recording process. Console noise and distortion, much improved in recent years, has always been superior to analog tape, and noise reduction has only narrowed that gap. Modern consoles and peripherals contain a vast body of circuitry for signal modification, most of which does its job well, and is thoroughly understood by its operators.

It is questionable whether detectable improvement would be perceived from full console digitisation, at least until the consumer playback medium reaches the same level of quality. There is also, for what it is worth, the subjective impression of "something odd" reported by certain experienced professional listeners on hearing digital master tapes.

One thing is sure though: the console of the future must not be allowed to get any bigger, nor its controls get any smaller or closer together. And, despite the constant demand for more headroom and output level, derived from competitive specmanship, a console's increasing heat dissipation must be halted and then reduced. The quantity of active devices inside console modules cannot increase any further.

So, the directions of development to be considered are two, which can be applied singly or together:

- Simplification of the signal path
- Getting active elements out of console modules.

It was an inevitable consequence of the rationalized production approach to consoles that if you were going to put all your commercial eggs in the basket of one design, you had to please the greatest number, turn out the largest production quantity of one module, and look good in the "knobs per dollar" ratings. So you included the greatest possible number of features you could afford to put in each and every module. Provision of options became difficult or impossible — once hand wiring inside a module is ruled out, every substantial change or option in panel layout requires either a new printed circuit board, or the complication of "universal" boards providing for a number of options by component and wire link changes.

All this tended to lead to an extended

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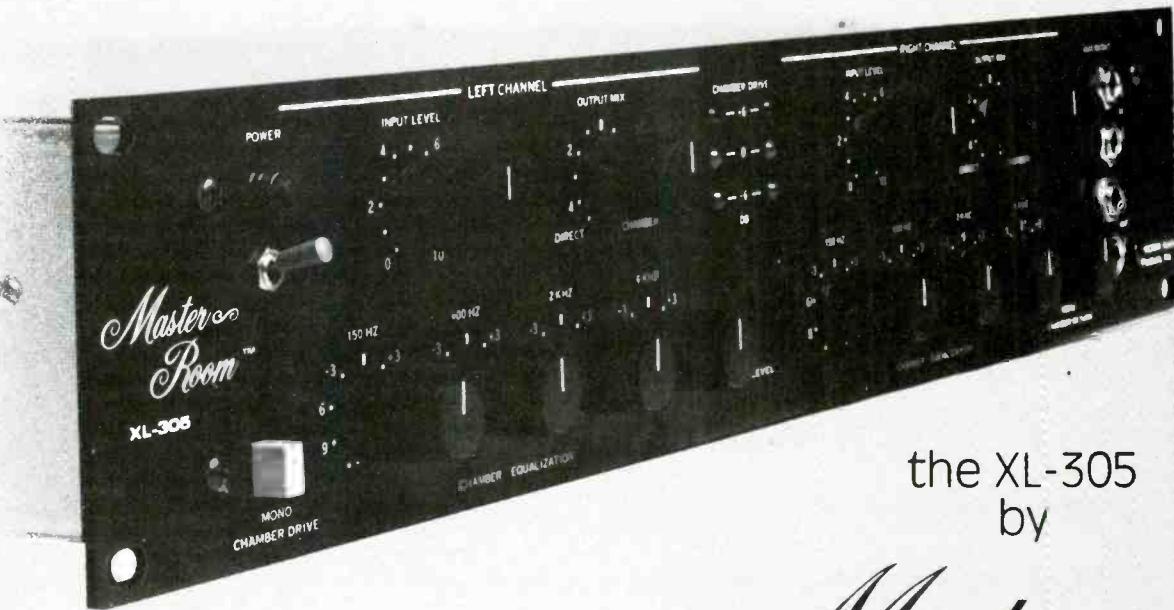
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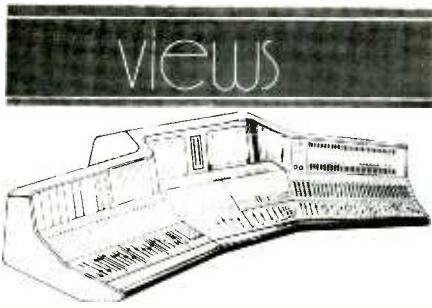
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CONSOLES for the '80s . . .

— continued —

signal path, through very many devices that were not necessarily all doing anything useful to the signal at the one time.

Minimum Signal Path

Now, however meticulous our circuit design, it cannot be denied that a long chain of amplifiers must degrade the signal more than a few — to whatever small an extent. Hence the approach of the future should be based on the philosophy of *Minimum Signal Path*.

The essential functions in a recording chain are: Amplify, Equalize (if necessary), Fade, and Combine. If we are sensible about it, this can mean one mike pre-amp, equalizer (switched out when not needed), one VCA as fader, and an active combining amplifier giving the proper level to drive the recorder. In the "one mike/one track" case we can omit the combining amp, and go straight to tape. Anything else is

regarded as outboard, switched in only as required. Many top engineers have always patched out unnecessary elements when the system allowed them to do so. It has been found in practice that the resulting cleaning up of sound means that EQ tends to be used less, and that the ancient art of mike placement is often enough to obtain the desired sound.

In mixdown, the signal path is simply EQ, VCA, Mix. Unless audio subgroups are really necessary, which in a system with VCA control throughout is most unlikely, the direct mix to stereo — which serves as track monitor during recording — is the only combining stage, and the track assign system is not part of the mixdown path.

Outboard Electronics

The second approach is a much bolder step: the whole of the basic audio circuitry is removed from the console, which then becomes simply a DC control panel, with the possible exception of those analog processing devices whose controls cannot be extended, and which the engineer must have within his reach.

Thus we have come full circle from the tube-operated equipment of long ago, with banks of exchangeable amplifiers connected to a passive console, and regained its benefits on a higher level, since it is no longer necessary to send the audio signal itself back and forth.

In the rack, audio control cards can be laid out for optimum circuit considerations of stability and crosstalk reduction, without constraints of space or panel-control layout. The need for shielded and balanced cable is vastly reduced as the physical signal paths come down from yards to inches. The assignment matrix and active combining amplifiers can occupy minimum space and be optimally shielded; indeed the whole audio system may be protected from the strongest RF fields, and elements subject to thermal drift may be temperature controlled as closely as desired.

Maintenance advantages are obvious — a fairly small family of active cards can replace all positions in systems of very varying size and complexity, whose "character" is defined by the console. A malfunctioning card may be exchanged at the rack, possibly located outside the control room, without disturbing a nervous producer. In a live performance situation, with suitable switching and patching a doubtful element may be bypassed via a spare card, and then exchanged at the first break. The possibility to update plug-compatible cards when a worthwhile improvement in performance is achieved should be good news to an industry that has become used to replacing whole consoles on a five-year cycle or less.

The cost saving of using standard cards in the rack, and standard electronics industry packaging formats for them, opens the door for the return of virtually open-ended custom design possibilities in the arrangement of the control console itself. Heat is gone, and depth behind panel and weight are minimized. Modular construction in the panel area is no longer essential for cost or serviceability, but can be used where appropriate. Additional sections can be added to a control panel as need arises. Also, since the cost of the console part is envisaged as less than 30% of the system value, replacement of quite large sections — or conceivably of the whole panel surface — can be contemplated when changes of operating technique or the availability of new control and display components make it desirable.

Advantages are available in panel space saving by calling up functions associated with every channel, but presented only once as panel controls. This has been put forward as a feature of a fully digital system (for example, the EMI Digital Mixing Console, currently being used for classical sessions at Abbey Road Studios). To realize the full space-saving advantage, however, it does not necessarily require the digitizing of the audio signal; it is simply a function of how the control of the rack by the console is exercised.

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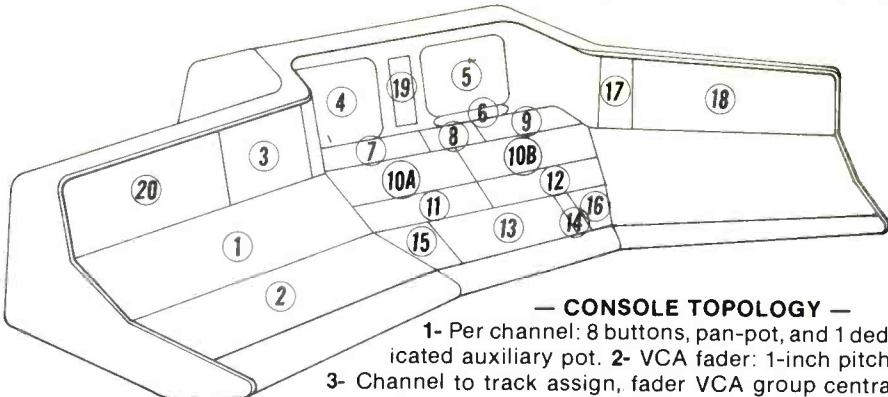
CONSOLES for the '80s ...
— continued —

has been argument in the pages of *R-e/p* and in various AES papers about the performance of different VCA devices, and the possible advantage of digitally-addressed attenuators as faders. But the VCA has been improved considerably over the last 10 years (and what opamps could we use with confidence in 1970?) for use as the basic element of compressors, noise reduction units — as well as nearly all automation systems — and is now a solidly accepted industry device. Its application to functions other than gain control has hardly been explored until recently, and it now forms the basis of remotely-addressable equalizers and filters.

DC Voltage and Logic Control

In the system envisaged, communication between console and rack is effectively by means of DC voltage levels and logic on-off states. The sophistication of the link may be determined by the requirements and size of the system; note that the same set of panel controls will work the same set of audio cards however we send the information.

In the very simplest terms, and for a

**— CONSOLE TOPOLOGY —**

- 1- Per channel: 8 buttons, pan-pot, and 1 dedicated auxiliary pot.
- 2- VCA fader: 1-inch pitch.
- 3- Channel to track assign, fader VCA group central assign.
- 4- Display: Auxiliary VCA levels: Assignments.
- 5- Display: 24-track PPM.
- 6- Tally LEDs for track record enable and record on. (Or color change on display.)
- 7- Aux send levels (assigned).
- 8- Automation master buttons and legend display.
- 9- Autolocator (e.g. Q-Lock).
- 10A- 10B- EQ panels (see text).
- 11- Function buttons, some dedicated, some user assignable.
- 12- Alphanumeric keyboard (optional), otherwise #7 moves down.
- 13- 8VCA group faders.
- 14- Grand master fader.
- 15- Stereo machine remotes.
- 16- Talkback, studio light dimmer, red-light, etc.
- 17- Control and studio monitor select and level.
- 18- Track monitor and track mode select.
- 19- Stereo PPM.
- 20- Space for controls of outboard equipment or analog modules.

small system, control could be via direct DC, carried on multi-pair telephone wire; the more elements to be controlled, the more wire. The next step would be to multiplex all the control signals by serial scanning. For this we could use more or less directly the kind of encoder-decoders used in the earlier automation systems to lay the data on audio tape. However, to be as flexible as possible, and provide for longer term develop-

ments, the optimum would be to use existing data logging hardware at each end of the link. At first sight this might seem overkill, but it enables a further, fairly obvious, step to be taken. If we chop the data bus and insert an interface to magnetic disk or tape memory, we then have an automation and setting recall system that can remember absolutely everything!

Console Layout

Given these dimensions of freedom, how do we employ them? We could, of course, build a console that looks just like a present day one with the usual column of knobs on the pitch of the faders. If a user felt most comfortable with this, it would present no problems. One of the objectives we set up, however, was to strive to reduce console size if we possibly can, without sacrificing facilities.

Among other things, we can now make any control act as master on any other, or act in addition to it. We can choose which functions will be assignable — to be called up on demand — and which ones remain on dedicated controls to be instantly accessible.

We can produce a destination matrix in which each crosspoint is not only on or off, but can have programmed gain or loss. And we have the ability to make any panel control become something else. However, care must also be taken to reject concepts which force us to do in a serial manner things that we would normally wish to do simultaneously.

The following is one possible realization of a console arrangement for multitrack music recording:

It seems to be generally agreed that it is safest to retain a separate fader for every input signal, whatever form the fader may take. If the pitch of the faders is no longer dictated by a module packed with components, we can make it the minimum that feels comfortable to the hand, say 1-inch. If space is even

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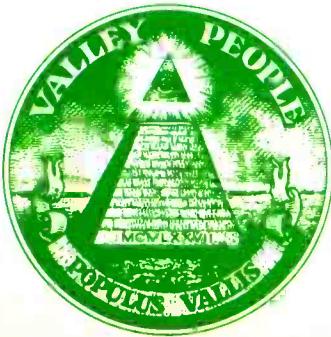
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CONSOLES for the '80s . . .

continued from page 22 —

tighter, $\frac{3}{4}$ -inch or 20 mm is quite feasible, and indeed has been used in conventional consoles.

Immediately behind the fader will come those controls which have to exist on a per channel basis: six to eight pushbuttons, including "Call EQ" and "Call Aux" connecting the channel to the centralized control and display of these functions. We also need an assignment set-up switch, mike/line select, and input overload indication. There will be a panpot, input gain trim, and possibly one dedicated Aux Send pot, for use mainly for reverb. All other channel controls may be centralized.

Two central equalizer panels would be provided in the middle of the console, set back behind the run of the channel controls. Touching the "Call EQ" button in any channel engages one EQ panel, lights a numerical indication of the channel number to which it is now connected, and displays either on the panel or on a graphic display the existing settings in that channel. Because, on engagement, the panel must not alter the setting it finds until the controls are touched, its controls must not have any inherent position, but just be a means of making changes.

One means of achieving this was proposed some years ago by Paul Buff in his "Great Equalizer" design. Frequencies and quantities of lift and

cut were set by rows of touch-sensitive pads, with indicating LEDs above them and calibrations printed on the panel. Status of the engaged channel appeared on the LEDs, and could be modified experimentally by sliding the fingertip along the row, or jumping to a desired setting by touching the desired values. This, like other later systems, provided discrete steps of changes.

If it is felt to be more instinctive to use rotary knobs, the panel layout might look more like a rack-mount outboard equalizer. However, these controls cannot now be conventional pots with a physical maximum and minimum end stop, but rather incremental devices such as optical shaft encoders that add or subtract small amounts to the values existing when the knob is turned.

The next EQ call button pressed above another fader will engage the second EQ panel. The idea of having two such panels, though not essential, is to permit the equalization of two channels to be "held" for manual modification during a take. The panels remain engaged to the last channels called until a further button is pressed, when control passes to the new channels. A "copy" button is also possible, which would permit the same setting to be dumped into any number of channels.

A similar panel with continuously rotating knobs or thumbwheels would control the set-up of Aux Send levels

from each channel when engaged by the Call Aux button of the channel. Control of input gain could also be in this panel. Buttons would transfer the Aux control pre- or post-fader in the channel being addressed, and LEDs would indicate the position of the level control; alternatively a full graphic display of levels could be provided.

Assignment of channels to tracks could be indicated by numerics above the faders. In the vast majority of cases two assignments per channel will be sufficient, so there will be two pairs of digits, with perhaps an LED to indicate the existence of further assignments. Located also in the center area of the console may be the set-up buttons (one per track) for assignment, and perhaps an alphanumeric keyboard for writing information to displays and to memory, for subsequent recall and hard copy printout. All console functional commands would be given by dedicated and clearly labelled buttons.

A further facility easy enough to provide by software would be "Relabel Faders." For mixdown, instead of being tied to the sequence 1, 2, 3 from one end of the console, the tracks would be rearranged to appear under the control of the most convenient central run of faders to fall physically under the engineer's hands.

Once the console length has been reduced by choosing a narrower fader pitch, and the depth of panel behind the faders greatly reduced by centralizing many functions, there is adequate space at a short arm reach behind the channels for control of monitoring, tape machine track modes, compressor controls and meters, and perhaps some favorite analog processing modules — all on clearly visible semi-vertical panels.

All metering and other display could be concentrated behind the central control area; for example, on two video screens, of which one could show EQ, Aux, and assignment information, and the other a track level PPM display. Alternatively, there might be LED or plasma level displays, a dot matrix panel for graphics and alphanumerics, and conventional level meters.

This article merely intends to give an indication of the field opened up by the separate-audio mixing concept. For each different application — location trucks, film dubbing, television studios, and even concert sound reinforcement — the ideal human engineered console panel may be configured, and linked to a suitable package of control elements located separately.

In addition to the standard hardware family, users would be able, where necessary, to configure special processing modules, or specify rack backplane wireable options. In its fully developed form of the control interface, user-exclusive software would enable the tools available to the creative engineer to be constantly extended and refined.

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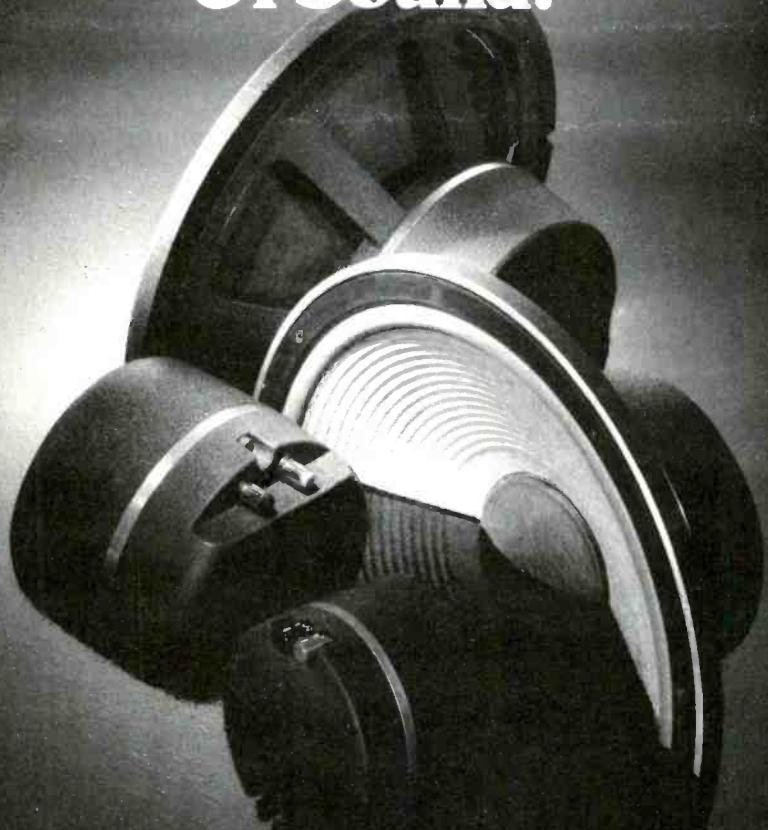
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MITSUBISHI AND AEG-TELEFUNKEN REACH AGREEMENT ON DIGITAL RECORDING

The German electronics concern has many years of experience in the development and production of professional audio recorders, and has been active for a long period in the research and development of digital recording. On the other hand, Mitsubishi Electric has already created a standard for this technology which, the company claims, has been proved in practical recording use in several countries, including the United States and Japan.

AEG-Telefunken will join the Mitsubishi PCM format for professional PCM stereo and multi-channel audio recorders on an exclusive OEM basis. By this agreement, the Mitsubishi PCM format will be introduced under the AEG-Telefunken brand throughout Europe, except for Sweden.

WESTLAKE AUDIO MOVES TO NEW LOS ANGELES LOCATION

After 10 years on Wilshire Boulevard, the Westlake Audio Professional Sales Group has moved to Santa Monica Boulevard in Los Angeles. Centrally located in the heart of the recording and

broadcast industry, the new facility will feature greatly expanded sales and service capacity.

The old telephone number, (213) 655-0303, will continue to be operational for an interim period, although the new primary number given below should be noted for future use.

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SLEEPY HOLLOW/ VALLEY PEOPLE LICENSING DEAL

Under the terms of the new licensing agreement, Valley People Inc. will now have exclusive manufacturing and distribution rights to all Sleepy Hollow products. At present, Valley People will be marketing and manufacturing the Sleepy Hollow Headroom Horseman I and II: interface devices that compensate for the differences in level and impedance between semi-pro -10 dBV levels, and pro-audio/broadcast +4 and +8 dBm standards.

According to Winn Schwartau of Sleepy Hollow, and Norman Baker of Valley People, the manufacturing and marketing agreements will permit expanded U.S. sales in pro audio/video, semi-pro and broadcast markets, as well as the European marketplace through Valley People's established dealer network.

QUINTEK APPOINTS EAST-COAST DEALERS FOR AMS UNITS

The three recently-appointed dealers for the AMS line, including the new Model DMX 15-R Digital Reverb, which features stereo outputs and full 18 kHz bandwidth, are as follows:

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652 Glenbrook Road
Stamford, CT 16906
(203) 348-4969
Professional Recording & Sound
1616 Soldiers Field road
Boston, MA 02135
(617) 254-2110

PEOPLE ON THE MOVE

- C.W. "Willie" Scullion has been appointed national sales manager of Ampex Corporation's Audio-Video Systems Division. Scullion, who will direct U.S. sales activities for the division's complete line of professional audio and videotape recorders, cameras and computerized editing systems, succeeds Howard Lilley, who has been named regional manager of Ampex Australia Pty. Ltd.

- Anthony H. Langley has been appointed as vice president sales of Rupert Neve, Inc.

- Peter Horsman has been appointed to the newly-created position of national sales manager, Professional Products, for Phase Linear Corporation. In his new post, under the direction of sales vice president Bruce Lowry, Horsman will work to establish a broad-based national network of professional audio dealers and representatives for the company's line of power amplifiers, graphic equalizers and active crossovers.

- Joe Bean has joined Studer ReVox America as a sales representative, and will concentrate on developing the broadcast market for Studer professional lines in the Southeast. Bean comes to Studer after 3½ years as a sales representative for Audio Consultants, a Nashville-based studio supply and design company.

- Ampex Corporation's Audio-Video Systems Division has expanded its marketing staff with the addition of three new sales engineers: Gareth Nelson, who will be responsible for sales in 13 Midwest states and coordination of Ampex's dealer program within the region; James Walsh, who will be responsible for product sales in Wisconsin, Minnesota, and North and South Dakota; and Richard Lipson, who will handle video sales in New York and western New England.

- Ken Hirono has been appointed operations manager of the recently established Otari Electric Deutschland GMBH, Dusseldorf, West Germany, which will serve as sales and service center for all Otari products in Europe.

- Jim Guthrie has been named national sales manager for Sony Professional Audio, and will be responsible for implementing marketing strategy through the company's network of representatives and dealers.

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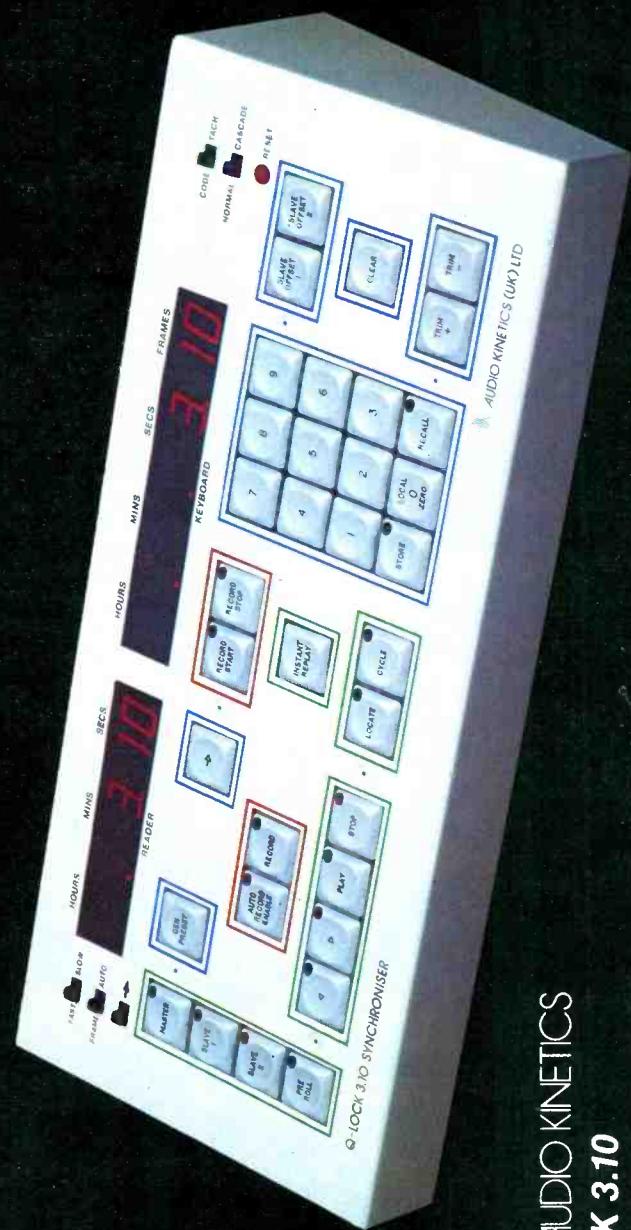
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REO Speedwagon

co-producer & engineer —

KEVIN BEAMISH

by Robert Carr Staff Feature Editor

REO Speedwagon's album *Hi Infidelity* is expected to become the second biggest-selling album in the history of CBS Records by mid-summer, and has an outside chance of catching up with Boston's debut album if sales continue at their current pace. No small part of that success is due to co-producer and engineer Kevin Beamish. Once a recording musician himself, Kevin took a slight detour in college to obtain a degree in mathematics, with a minor in physics and music, from California State University at Stanislaus. After graduation, however, his technical and musical background made a career in engineering a logical choice. Since his first job at Los Angeles' Crystal Recording Studio in 1974, Kevin Beamish has put together an impressive list of credits, doing dates for the likes of Nigel Olsson, Lenny Williams, Freda Payne, Airto, Flora Purim, The Miracles, Marilyn McCoo & Billy Davis, Lamont Dozier, and many more. The following interview took place at Kendun's Studio D, Burbank, California, during overdub sessions for a new album by the Henry Paul Band.

R-e/p (Robert Carr): Now that you're just producing — as opposed to engineering and producing — do you still have the urge to run over and twist knobs?

Kevin Beamish: Yes, it's difficult to avoid doing it once you've been in control. I'm sure I'm talking for the other engineers-turned producers in the business, such as Keith Olsen, Alan Parsons, and Roy Thomas Baker. You get to a point where the engineering is so much a natural part of making a record that you feel like you have to do it. The problem, as you mentioned, is how do you delegate that authority?

It's so hard, because you've learned to trust yourself in engineering. It's so fast when you're producing and engineering, because you know exactly what you want and you don't have to tell

somebody "go back to here," you're doing it. You're rolling back to the place while talking to the artist. This hand is doing this and you're watching the meter at the same time. You get to the point where it's all one motion; it is a flow of creative activity.

The only drawback to that is you don't always want to worry about the engineering. Even though you can handle the technical aspects in your sleep, you want to just sit there and devote all your concentration to the music part of it. That's the hardest part, because sometimes you get bored. It's fun running the tape machine and doing everything that you've always done.

But I believe that in management or in big corporate business, the successful high-level managers are ones who can

delegate their responsibility and feel good about it. The unsuccessful ones are the people who can't do that — who feel totally responsible for everything, and just can't give up any of the important stuff. I'm not doing any engineering on the project that I'm working on right now, other than saying what I like and don't like about the sounds and the music.

R-e/p (Robert Carr): You're keeping your hands off the board.

Kevin Beamish: I'm keeping them off as much as I can. As a matter of fact, through the whole tracking I didn't come into the studio except to listen back. I stayed out with the musicians, conducting and guiding them along. I didn't worry about meters, levels or

... continued overleaf



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anything — other than the first day when I supervised getting the sounds. It was hard, but it certainly made for a better record, because I was more involved with the musicians, as opposed to sitting there having to worry about the technical aspects. I was involved with the *emotional* aspects of the music instead; whether you like it or not music is emotional, not technical.

R-e/p (Robert Carr): Is there a technique to being a good co-producer, as opposed to being just the engineer or just the producer?

Kevin Beamish: Yes there is. My particular situation with REO Speedwagon is much more than just a co-producer. We have several diverse talents and opinions in REO Speedwagon, of which I'm the center where everything pulls against and comes back in. In other words, on occasion I have to be psychiatrist as well as mediator and arbitrator, in addition to making the records.

To be a successful co-producer is really difficult. Every engineer who has any musical ability thinks that he can be a co-producer, just by throwing ideas out here and there. That is not it. Any engineer who's worth anything from a musical point of view is going to come up with ideas; that doesn't make him a co-producer. It's a totally different thing.

A co-producer is *not* less than a producer; he's an additional producer on a session, and there is a big difference. In my case, I'm totally involved from day one with the songwriting, the arrangements, months and months of rehearsals, and pre-production. I mean, you don't walk into a session cold not knowing the songs, the arrangements, or what key anything is in. I can play on the guitar every one of the songs I have recorded. To me, *that* is what production is all about.

R-e/p: What does the pre-production entail? Is there a certain pattern that you follow, or is it still evolving?

Beamish: Well, as far as pre-production goes, I start right with the songs. I pick the songs or, if there are extras, I will pick the songs that I think are the ones to go with. I don't believe in recording a couple of extra and picking out the best ones, unless there are two

that I think are just as good.

R-e/p: Sometimes, a song will sound really good when you're writing or rehearsing it, and then once it's recorded, it's like a different song — a "Jekyll and Hyde" situation.

Beamish: In that case, it's your fault for doing it, because if something is good as a demo you should make it better. I'm not saying that it doesn't happen the way you just described it. It definitely does; some things don't turn out the way you expect them to. To me, if they are going to turn out different than you expected them to, they should turn out *better* not worse.

If you have one extra song you just can't decide on, you don't go in with the idea of seeing which one comes out worse, and throwing it out. You go in to see which one comes out better and use that one; it's sort of a different slant on your attitude.

R-e/p: Keep that positive attitude.

Beamish: Exactly! From choosing a song and going to rehearsals, I'll arrange, re-arrange, or anything that a song needs. I'll check keys, tempos; always have a metronome going; always tape all of the rehearsals to make sure it's really coming together. Rehearsal is a time to figure out what is going to happen for the song, although it always changes a bit in the studio. You hear things that you might not have heard during rehearsals.

R-e/p: So you work out all the parts before the fact — even things that would be an overdub, or used as background material?

Beamish: Not necessarily the background vocals. That's really the least of my worries at that particular time, but I'll definitely look at how the different guitars will interact. The worst thing you can do is have three guitar players fighting for the same spot — playing the same part. You have to find out who is doing what and why. Sometimes you have to come down to the fact: "Look! We can cut this better without you, Mr. Guitar Player #2, and you can't worry about egos." You have to do it for the sake of making a better record.

So we work out all parts in advance, even though we may not cut them like that. Sometimes it's advantageous to cut three or four pieces — as opposed to cutting the whole band — just because

the more people you have, the more likely they are to make mistakes. Studio time is costly. The record companies are always on your tail for bringing things in under budget. You really have to do your homework, and make sure your songs are in the right key. If you get pumped up in the studio, and you always play everything fast, you have to make sure you know what the tempos are; when they feel right; when they actually lock into the groove. And then have a metronome on hand to be sure the band is playing them right.

R-e/p: I get the impression that the way you record a song would change according to the tune, or the particular group.

Beamish: I never like to record with less than three or four musicians. I think that cutting records in a piecemeal fashion is not the same as making *music*. I mean, you can start with a click track and add your drums and so on, but I don't think that's a very judicious way of making records. I think that what the listener hears is feeling and performance — not technicality, beautiful drum sounds, and perfect records. I'm convinced that we put far too much emphasis on technicalities, rather than on putting *emotion* into making music.

R-e/p: You feel recording has become too sterile?

Beamish: Very sterile. I made several perfect records which later proved to be very boring, and very stale. The opposite is true with REO Speedwagon. They always wanted to do the perfect record, and we finally did it on *Hi Infidelity*. Yet, seven out of the ten songs on that album are demo tracks.

R-e/p: You aren't happy with the seven tunes?

Beamish: I'm totally happy with them, but they are demos. What I'm saying is that we went into the studio after rehearsing for a long period of time — about two months worth of rehearsals, arrangements and writing. The band was at its peak as far as the rehearsal of songs. We walked into Crystal Studios in Los Angeles just to demo the songs; just to hear what we had. We cut 10 songs in two days, working about four or five hours each day. Immediately after we cut each song with the full band playing, the lead singer [Kevin Cronin]

Kevin Beamish with engineer Tom Cummings



On *Hi-Infidelity* seven out of the ten songs are demo tracks . . . "Keep On Loving You" was a demo [we] recut . . . that's a slow ballad, flaws will show up in a slower song quicker than in a fast song!

Crystal is one of the studios in Los Angeles that appeals to English rock 'n' rollers as well as to R&B clientele. You may wonder what the connection is between those two types of music. The fact is that they both like a huge sound.

Crystal is not a new studio, so it's not really acoustically "designed." It was built before the advent of all this technology and design. Crystal is a huge control room with tall ceilings — it's the liveliest control room with sound bouncing around everywhere, but that's the way the studios in England were in the early days. Even now there are a lot of them like that. You get that huge drum sound — the biggest kick-drum sound you will ever hear. Nigel Olsson, with whom I have done several albums, wouldn't record his drums anywhere else but in Crystal, just because what appeals to him is that huge kind of auditorium sound. Yeah, it does sound a bit like The Hollies due to the popness of it, and the way that it's echoed.

R-e/p: Did you put echo on all the tracks?

Beamish: No. It was done on individual tracks while it was being mixed. There was no echo on bass guitar and bass drum necessarily; maybe some for effect here and there, but not overall. It's used especially on the vocals, and the drums in general have a nice big slap echo.

While we were doing the mix it was like, "should we use this much echo?" or, "are we going to get panned for doing this?" I kept thinking, "No! If I was the fan, and I was sitting in

McNichols Arena or in The Los Angeles Forum, that's what it would sound like. Obviously, it wouldn't sound as good as the record, but it would have that spaciousness and that big long delay and decay on it. That's what we went for and, sure enough, it comes across on the radio as sounding live, but without being overly echoed.

R-e/p: And yet it's all clean!

Beamish: It uses the technology to better the performance, and doesn't do it the other way around. In other words, it doesn't use the technology to make a performance; technology, in this case, doesn't get in the way. We don't have 24 tracks there just to fill up every one with a different part; instead we have 24 tracks for the versatility. In a lot of cases, like I said, we didn't need all of them — just 12 or 13 tracks out of 24.

But it's a good thing we had it, because if the 24-track technology hadn't been there we wouldn't have been able to make this album. We would have gone into a demo studio, and done it on 4-track. Then we wouldn't have been able to redo the things that we needed to correct; we wouldn't have been able to recapture this album. In fact, we did it on 24-track just as a safety measure, and it worked to our advantage. We came out with a product that was basically fabulous; we could fix up certain parts that needed to be fixed up. It's just the way you use the technology; you *don't* let it use you.

R-e/p: Technology tends to run away with a lot of engineers and producers.

Very often an artist will lay down a track, and achieve a great intensity or energy on tape. Then some time later — it doesn't have to be a long period of time — let's say the lead vocalist goes back into the studio, but is unable to recreate that intensity for an overdub or punch-in. Is there something you can do from an engineering standpoint to help marry those two parts together to recreate that energy, or to make them blend better?

Beamish: You are at the mercy of how the artist feels. That's why when I cut a track, I immediately have the artist sing a vocal to it. It's not necessarily to sing the vocal, but to sing a vocal while he's in the vibe of cutting a song. You've spent a couple of hours doing it; everything gels together in everyone's mind. That's what makes a take. Then, while you still have that particular vibe going, put down a vocal; maybe blow a solo over it; maybe put down a couple of rhythm guitar parts while you're in the same groove. The hardest thing to do is to recreate what you got, and how you got it. Sometimes there is no reason why you got it other than everything just came together at the same time.

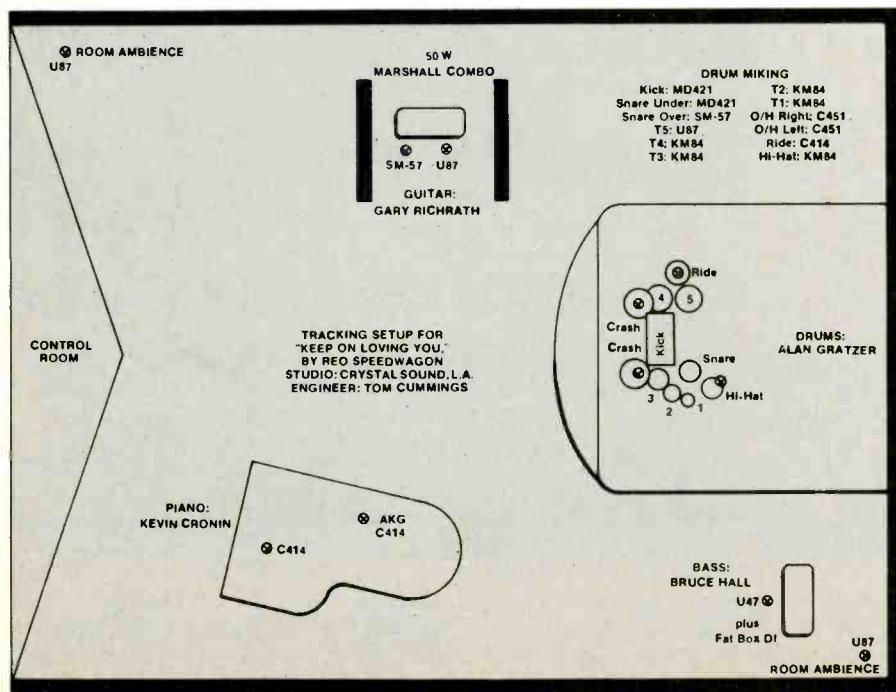
One thing that I definitely learned from this last REO album is that there is still magic left in recording. For a while there I thought that we had learned how to overdub all the magic out of the music. That's why I insist on having the artist there singing along as we are cutting the tracks. It helps the musicians get the feel. Sometimes, when you're playing the bare-bones skeleton of a track, you're trying to make it technically right, and you lose all the feel. If you have the singer singing in your earphones while you're cutting, it helps a lot.

R-e/p: Have you seen a change over the years in your approach to engineering?

Beamish: Yes. I used to think that the most important thing on earth was how wonderful my records sounded, and I have learned that it doesn't really matter how your records sound. Sound is *not* what a record is all about. The song and performance is what makes a record happen. I used to beat my brains out to get the most incredible sounds, but often what that can do is frustrate musicians. They're sitting out there waiting to play while you're fooling around with the sound of the snare drum. What you have is actually the sound of the snare drum, but you're just trying to beat your own ego into shape by making it sound bigger than life.

It's a fine thing to do, but you can't get hung-up on it. When it comes down to the final analysis, it's not the individual sounds that make up a mix; it's not how the snare drum sounds, or how the bass drum sounds, or how the guitar sounds. It's how the mix is in general — how the individual parts come across as a

For awhile I thought we were overdubbing all the magic out of the music. That's why I insist on having the artist in there singing as we are cutting tracks!



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

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

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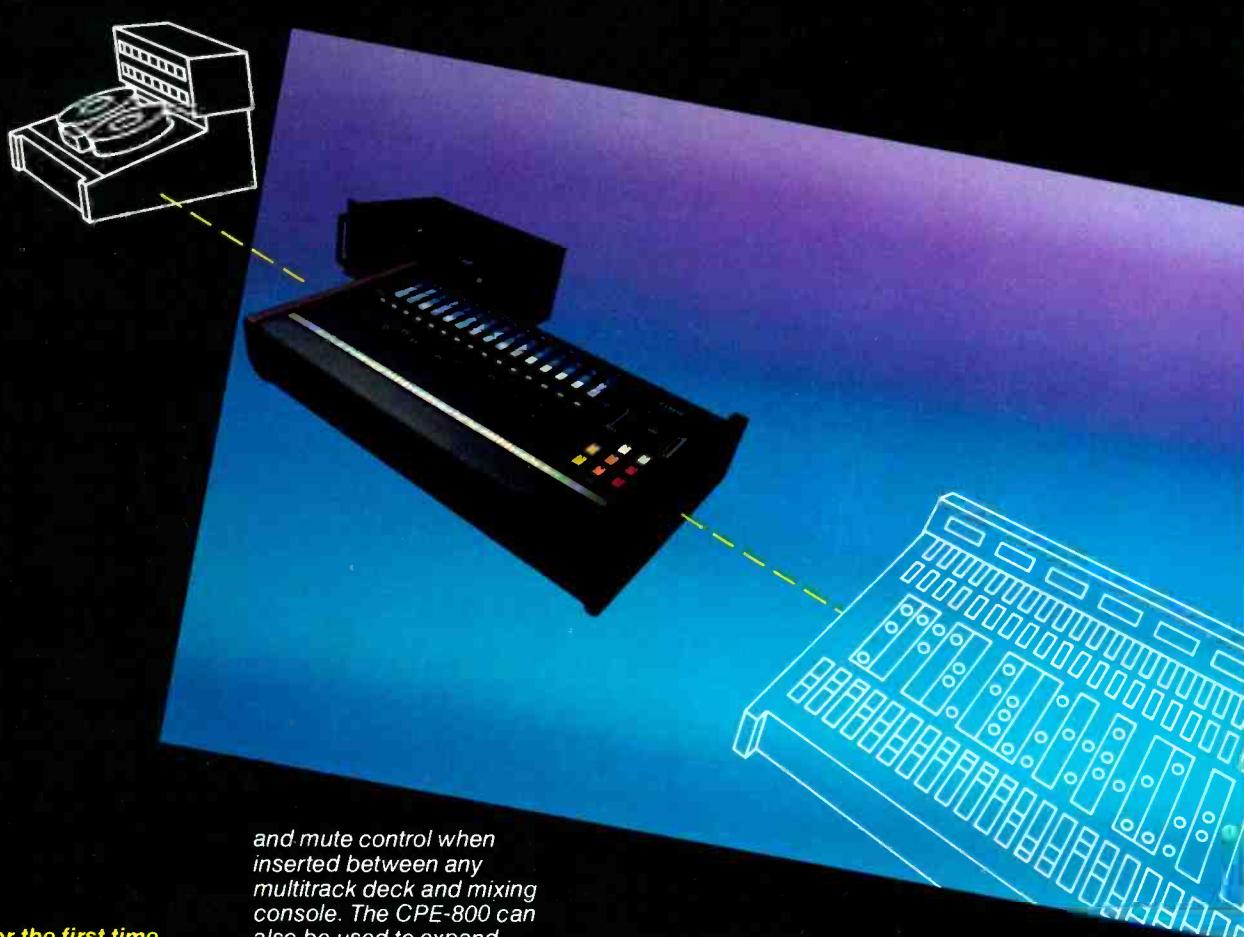
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RSS

We Design the Future

... continued from page 36 —

complete sound. The overall mix is the sound.

R-e/p: Even though you get a good solo sound, it doesn't mean that it's going to sound great in the track?

Beamish: That's right, exactly. You can make the world's greatest sound on an instrument and it just might not fit in at all.

One of the best things that an engineer can do is to always have the multitrack tape machine in record mode. In other words, if the vocalist goes out to sing, or the guitar player is playing a solo while you are in the booth screwing around with a limiter or whatever, put the machine in record when you're running it down, because you are inevitably going to miss that one magic moment. It has happened over and over again over the years. So what if the levels are screwed up, or the

hard to get that magic. If you miss one — because you were worried about something less important than the performance — you are making a serious mistake.

R-e/p: I've listened to a lot of tracks from supposedly good engineers, and when I put it on the speakers, I can't pick out where the instruments are in the mix. While they are not exactly "muddy," they are not distinct.

Beamish: Well, I think that engineers in general like to have a big stereo sound. Back in the old days they almost used to cut drums in mono, and it wasn't really that big of a spread. Now we use six tracks on drums, and the toms and cymbals will be in full stereo. Everything from right to left is just totally drums, and so you don't have anywhere to go. So what do you do? You track the guitar, double it, and you have

R-e/p: A lot of Hi Infidelity was recorded at Kendon's Studio D. How did you like that particular room?

Beamish: I think the Solid State Logic [B-Series 40-in/32-out] console is probably the best that there is. I believe that the transformerless console is the way to go. It makes for an incredible difference in the transient response, especially on things with a lot of snap to them, like the bass drum, snare drum, bass guitar, and so on, which are totally eaten up by transformers. If you have too many transformers in your line, you can take all the life out of an instrument. Transformers don't pass all the signal fast enough. This SSL console is incredible. The tape recorder is a Studer A-800, which is by far one of the best multitracks.

The Sierra Audio SM-3 monitor speakers powered by Studer A-68 power amps are absolutely flat, and that is where I run into disagreement with their design. Flat only means flat to a technician. We are currently building studios that are so perfectly right, that they sound terrible. In other words, the speaker that is absolutely flat, with no colorations whatsoever, doesn't sound good to me. The reason why speakers sound good isn't necessarily because they are flat, but because they have particular characteristics. JBL loudspeakers sound like JBL speakers, because they have that particular coloration to them, and I actually like JBLs.

There are a lot of different attitudes about monitoring systems. I like the particular characteristics of a speaker if it makes it more pleasant to listen to, and easier for me to listen for long periods of time. You just have to be careful when you are mixing that you don't let those colorations and characteristics get in the way of the total overall sound. You have to listen on several different sets of speakers to make sure that you are not making a mistake.

So, in answer to your question, I've done a lot of work at Kendon's Studio D. It's a superior state-of-the-art room. I like to work there. There are a few places I like to work that are less nice than that, and yet they still seem to get good sounds. One thing that an engineer has to be good at if he is going to be an independent engineer, is being able to get a good sound at many different and varied studios. A lot of engineers say, "Well, I can only work here or here." That's only because they are probably used to the particular sound of that room. It's a poor showing on their part that they can't go out and record a session anywhere. A good independent engineer should be able to work anywhere and make it sound good.

R-e/p: Is there any particular piece of outboard gear you find yourself coming

“Often the engineer/producer’s preoccupation with getting incredible sounds frustrates the musicians . . . they’re sitting around, while you’re fooling around!”



... in Studio 'D' . . . the SSL console, floppies and a variety of monitors —

limiter is not right on the vocal. Sure enough, he sang it great but . . . you didn't have the machine in record.

When the musician is out there, regardless of whatever you're doing, punch record. If you have to erase and go over again, fine, but if you've missed that one natural moment, then you may never get it again. Those magic moments are rare.

R-e/p: If you've got that energy on the track you can always double-track it and mix up more of that energy track, or supplement it with a fresh one.

Beamish: That's true. Or, things like: so you didn't have quite enough high end on it, or the sound wasn't quite right, or the levels jumped around. These are things that you can deal with. What you can't do is get the artist to be magical on every take. You work so

that in stereo. The next thing, you use digital delay on the guitar.

Everything gets to be so stereo that there is no definition. It makes for a great overall sounding record, but you have to be very careful with it, otherwise you run into problems with lack of distinguishability on certain things; you have to use your echo judiciously, otherwise you will wash everything out.

It's just a matter of technique and how you hear things. A lot of people slide through mixes by putting delay on anything, and using their echo just to cover up the poor sound of their mix, as opposed to using echo to accentuate and help the liveness of it. It's definitely a matter of how you use your tools; whether you use them as a crutch, or as they were meant to be used — to make it sound better.

If you miss one because you are worried about something less important than the performance . . . you are making a serious mistake!

back to frequently? Or maybe a favorite piece that you like to use?

Beamish: Well, to create the digital glaze I use a Lexicon Delta T, and for vocal limiting I own a Vocal Stresser, which is by far the most versatile instrument. The Stresser's limiter is so fast, and doesn't color the sound whatsoever. A lot of limiters are fast, but you can hear them work. You can't hear this unit work. It's the most incredible de-esser that I've ever used. You can put the unit's equalizer section into the side chain of the compressor. If you have a vocalist that has incredible sibilance, you can use the equalizer to find out where those "esses" are, and accentuate them. In other words, boost the problem frequency as loud as necessary, and pump that to your compressor. The compressor sees this incredible "ess" coming at it, and dumps it without affecting the program at all. I have had luck at dumping "esses" 20 dB without affecting the overall sound. It really works well.

R-e/p: I'm curious how you got a couple of sounds on the REO Speedwagon album — like the effect on the voice on the track "Keep On Loving You."

Beamish: It's a combination of several things. First of all, Kevin Cronin is probably the world's best doubler of vocals; he sings the vocal, and then sings another without hearing the first one, and it doubles precisely every time. What we do is have him double the vocal, so we have a natural delay as opposed to a perfect electronic delay.

Then during mixing I use two different kinds of echo. I use a Lexicon Delta T Digital Delay, in addition to an EMT 140 with a slap for the return, which is set for about 13 IPS delay — a little bit under 15 IPS. It's a combination of the double digital delay and the echo that make that sound.

It is a beautiful vocal sound, but credit has to go to Kevin Cronin for being able to double so well. Electronic doubling is fine, but it's sometimes *too* perfect. He doubles perfectly, but it is not electronically perfect; it's humanly perfect. You get random things that your ear can't hear as two separate events, but which almost creates a natural phase in places. It's not far enough apart to actually be able to distinguish what the effect is, but it does create a sound.

R-e/p: On "Don't Let Him Go," the guitar sustain that came in and rang forever. How did you get that?

Beamish: I used a very long decay time — about 4½ seconds — on the EMT 140 with a tape slap before it. What you are hearing when the guitar starts out is just the echo. In other words, there is no signal in there at all. The echo send is pre-fader with the fader off, and all you are hearing is the echo returning.

Each time that particular part comes in, as he is holding the note, we are doing the same thing. We are riding the echo, and moving the fader in and out of the echo, as the echo is coming up and down itself. As the echo is coming up, the signal is moving down, and vice-

versa. It's just constantly swirling around. The sound is always in the EMT, and I just mix it in whenever I need it — it's always there regardless of signal fader lever.

R-e/p: Was that all done as an overdub?

Beamish: No. The part was there before. It was just amplifier feedback, and to accentuate that we put it through the echo system.

R-e/p: Was that the Vocal Stresser you put those high background vocals through?

Beamish: Right. The background singers on "Keep On Loving You" and "Wish You Were There" are Kevin Cronin, Tom Kelly and Richard Page. Tom and Richard can sing real high, and it's just a combination of those three beautifully sweet voices in the same kind of echo I described before that was used on the lead vocal. There is really no trick there at all; it's just how good they sing.

R-e/p: Have you used much automation?

Beamish: I use it all the time in mixing. A lot of people are afraid of automation, because it's a little more complex. Actually, if I cut in a studio that has automation, I use it from day one. After the tracks are cut, it's so easy to have your rough mixes on a floppy disk. When you walk in at the start of the session, or when you change songs, you can get your rough mix together in a few billionths of a second, as opposed to spending over a half an hour or so.

You simply pop in the disk, and there is your rough mix exactly the same way you left it the last time you were in the studio. You can also list all your cues. "Let's go to the first verse." You don't have to reel in and try to remember whether it's 30 seconds in, or 60 seconds in. You just push a button, and there they are.

During the mixing process automation is invaluable, because it frees your hands from making the moves every time, which in turn frees your ears to listen. When you're concentrating on making moves, often times you're not concentrating on listening. It is more important that you *listen*, and the computer does your moves more precisely and correctly every time. You can continually update your mixes and come back the next day or the next week, and set-up is a five-minute job as opposed to a 12-hour one.

The technology is there for the user to use to his own advantage, as long as he doesn't let it get control of him. It really helps, and that's all it should do.



REO Speedwagon and production staff at the presentation of an Ampex Golden Reel Award honoring "Hi-Infidelity." At Kendun Recorders (Burbank) from the left, Kendun's Kent Duncan; mastering engineer Greg Fulginiti (Artisan Sound Recorders); Rick Kelly, band equipment technician; band members Kevin Cronin, Gary Richrath and Neal Doughty (Alan Gratzer and Bruce Hall not pictured); engineer Tom Cummings; co-producer Kevin Beamish; Dick Antonio, Ampex Magnetic Tape Division national sales manager; and Elizabeth Frye the band's assistant.

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*club venues ...
today's concert alternative ...*



A number of factors, both social and economic, have resulted in fewer bands being able to afford to embark on extensive tours. As an alternative, over the last few years there has been an increasing emphasis on performance in smaller venues — clubs — seating fewer than a thousand fans. In such clubs a custom-designed sound system can provide the quality of sound and "intimate" atmosphere many bands are finding more acceptable than the traditional large-scale halls and outdoor locations. The Country Club represents a good example of a small club capable of attracting big name artists, due in no small part to the excellence of its sound system.

For most musicians, the thought of playing in a club conjures up visions of thick smoke, obnoxious drunks, a poor to adequate sound system, and the provision of little or no lighting.

Los Angeles has long been known for venues such as The Roxy, The Lighthouse, and The Palomino; New York has Max's Kansas City, The Village Gate, and the Lone Star Cafe. Although these historic establishments are, in some cases, exceptions to the previous statement, none of them really differs that much from the traditional beer and wine bar atmosphere.

At the same time, the only other possible options open to contemporary music groups are the sometimes shocking, and often unrealistic, jump to the several thousand-seat arenas and auditoriums, with 120 dB screaming guitars, practically no audience intimacy, and the attendant semi-trailers stuffed with gear; or the equally stereotyped "extravaganzas" of Las Vegas, Miami and Atlantic City.

Aside from the performance problems that artists often encounter when making such transitions, there is the real and disturbing truth that state-of-the-art tours, as we have known them, are, and have been pricing themselves out of existence.

With only a handful of successful tours still making the rounds of the concert circuit, major promoters, as well as sound reinforcement companies, record labels, and groups, are all looking for alternative opportunities that will rejuvenate their once booming business.

Over the past decade the name Wolf and Rissmiller has become synonymous with live concert promotion in Southern California. A large percentage of the major acts and most of the

biggest venues displayed Wolf and Rissmiller's banner at the top of their advertising. Today, however, the Los Angeles Times Calendar Section carries very few ads for any live concerts at all.

Rather than be a victim of such a potentially disastrous turn of events, Jim Rissmiller turned his sights towards establishing a smaller venue with a concert arena feel. A room, in fact, that would emphasize all the reasons why large concerts became so popular in the first place, and yet eliminate the negatives which, over the years, have made that particular art-form less attractive to the 25- to 45-year

Wolf/Rissmiller will continue to book large arenas when they can get good groups, but the Country Club is like a farm system. We can bring acts in here that can't play the Santa Monica Civic Auditorium, for example, or the Palladium, or The Forum, or the L.A. Sports Arena. They can build their audience here. We form an allegiance with them — and vice versa. As the artists grow, we can use them on different shows; we can put them in bigger rooms when they can draw."

Record companies don't usually subsidize their artists' performances in the Country Club either. Groups play to the size of the room. All fees paid to the performers are negotiable, and are dependent on the drawing power and

size of the room. (Room size varies in accordance with the size of the dance floor, or whether or not a dance floor is provided at any given show.) These factors, in turn, determine how long the engagement will be, and the price of admission. Most groups are

booked for one-night stands. Someone like Chuck Mangione, however, who was booked for four nights a week for two consecutive weeks, filled the house for the majority of his eight performances. Osterman notes that, "We had Rockpile here for three nights. If an act can draw we'll keep them here."

Ticket prices generally hover around \$10, but occasionally rise to \$11 or \$12.50; admission for Mangione's concerts was \$11.

A universal truth in the nightclub business is that Monday and Tuesday are the two slowest times of the week. Occasionally the Country Club has designated Monday as "Talent Night." It gives locals a chance to work out their acts (or inhibitions; or fantasies — choose one), and the club charges just a

WOLF & RISSMILLER'S
Country Club

by Robert Carr

old rock and rollers. The result was a 1,000-seat club located in Reseda, California, just north of Los Angeles, called The Country Club.

The Demise of The Larger Music Venue?

"The days of the big outdoor show and concerts at the big coliseums are no longer," predicts the Country Club's general manager Mike Osterman. "The economics aren't there anymore. Record companies are not supporting that type of venue; kids don't have the money to pay the big ticket prices; and there aren't that many groups who can draw large audiences these days.

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club venues...



buck at the door. Tuesday is "Inflation-Fighting Night," and is sponsored in conjunction with local rock station KMET. Admission price starts at \$2 to see two or three bands.

Unlike most concert presentations, every night of the week the Country Club offers a full selection of alcoholic beverages, soft drinks, and fruit juices, and a complete dinner menu, ranging from steaks to chicken, to fruit and cheese plates. But once the gate fee is paid, there is no required minimum, and no one is forced to eat or drink. The solitary, Tiffany-style bar visible to the patrons is against the back wall of the second-floor balcony. The kitchen and main floor service bars are discretely out of the audience's sight and mind, and are accessible only through inconspicuous, solid wood doors.

Because the club serves food, there is no age restriction imposed on who can be admitted.

"When we have New Wave groups," Osterman says, "it's not unusual to have 12-, 13-, and 14-year olds in here, along with people in their thirties. We've had the Glen Miller Orchestra, and everybody was over 50 for that show. We're doing another night like that with Tex Beneke, so there's really no one age group."

The name of the game though, is drawing the crowd that will drink. As Mike explains: "When we had Joe Cocker, the audience was in their late twenties to early forties. It was the same with Canned Heat and Spirit. Every old surfer in the county showed up. They have the bucks, and came to drink their Scotch, or Rum and Cokes. We'd much rather have them. Beverage prices remain fairly consistent from night to night, except when we have a cheap night. There's no point in having an admission of one or two dollars, and charging the guy \$3.00 for a beer."

From Country to Rock...

The Country Club was originally conceived by music promoter Chuck Landis as a vehicle for presenting country music to the residents of the San Fernando Valley — hence the name Country Club. Landis put together the basics of the room, kept it open six nights a week, but was unsuccessful with the limited format. Wolf and Rissmiller approached Landis in the early part of 1980, and took over management of the establishment around the end of that year.

The size and layout of the facility makes it adaptable to a variety of uses. By adding or removing tables, extending the stage, adding a dance floor, or altering the lighting system,

the room can be practically all things to all people.

"We'll use the venue for anything," Osterman points out, "and have booked everybody from Martin Mull, to swap meets, to live radio broadcasts, to the biggest names in rock and country." A typical month could see acts like Emmy Lou Harris, Elvis Costello, REO Speedwagon, Ramsey Lewis, McLaughlin/DiMeola/DeLucia, Santana, Tammy Wynette, Tina Turner, Motels, Dr. Hook, and...well, I'm sure you get the picture.

... to Video

"We did a videodisk shoot for The Ventures, which was strictly for sale in Japan," continues Osterman. "The Japanese want anything now that is American Rock and Roll, and The Ventures are especially popular there. We also did a Home Box Office Country Special with George Jones that is being released this month [July, 1981]."

The room doesn't have its own video gear, but does supply everything else. An artist normally hires a video company's mobile facilities to do the shoot.

"For HBO's special we put an 8-foot extension on the stage so that that would give some depth to the shoot. We hung extra lights, but not much more than that. We had more than enough AC power. We're well equipped for just about anything."

In addition to shooting, the club can also show videos as part of the entertainment. The club has installed a 20- by 14-foot video screen on the front wall at stage left. Suspended from the ceiling about 25 feet in front of the screen is a custom-built three-tube ITC projector. Tapes are replayed from a Sony 3/4-inch video cassette machine located in the lighting booth, which is extended in front of and slightly below the balcony. Although most of the videos have mono soundtracks, audio feeds are dropped down to the house console directly underneath the lighting controls, and run through the sound system.

"Because we have the equipment," explains Osterman, "the live shows are getting more sophisticated." He cites the following example:

"We had Lee Ritenour in last week and, for his encore, he ran a video tape of one of the songs off his new album. We were showing the video of him at the same time he was performing the song live. You can do that in a big hall, but it wouldn't have the same impact; it's much more intimate here. Most performers get off on it. They like the feedback from the audience; they like the closeness. As a result, they put on a better show."

"We did one all-video night in conjunction with another local FM station, KROQ. We showed nothing but New Wave and Punk. It was fun and successful. The only drawback is that we can't charge admission. As soon as

we do that, we have to start worrying about royalties and record companies. Admission has to be free — at least for the time being."

Other than that one experience, the Country Club uses video pieces primarily between sets, or to augment an artist's performance. Many record companies are said to be eager to put their product into such a specialized venue, and make a habit of sending their samples as promotional items. What could be more perfect than running a video clip from an artist's new album for an audience of 1,000 fans who, by their very presence, are proven music freaks, and have the money to buy the albums or videos? Video presentations run the gamut from concerts, to visual songs, to complete storyline vignettes.

As Osterman points out, "We're not like a New York club that plays only video, and people come to dance. You might be able to do that on the Sunset Strip, but the way our room is set up — and the name of Wolf/Rissmiller — is almost a connection to a *live* concert. People who come here treat the place as a live concert hall. People don't hang out much in Reseda; they have to be drawn here. It's not like the Whiskey, where you can have 250 people hanging out, and have a full house."

Audience reaction to the club is unanimously favorable, but mixed. Some people think it would be great to have an informal atmosphere by pulling out all the chairs and tables, and letting everyone dance. Others don't want The Forum or Sports Arena feeling. They want a Las Vegas showroom where they can get served; where they can sit down, be comfortable, enjoy a show, and not be pushed around. The chameleon approach to operating the Country Club seems to be the most successful course of action so far.

For the typical touring group, management has made a concerted effort to provide all of the related amenities. Four dressing rooms are provided (one with a private bath), as well as facilities for showers. Under the supervision of Kimberly Shaw, the in-house kitchen caters meals for the road crews, and handles all the preparations and service for pre- and post-show parties in the VIP lounge.

Sound System and Acoustics

"This isn't really a night club," says Jeff Forbes, resident monitor mixer.

"People think of this as a concert hall. The facilities are almost on a par with what you'd find out on the road on a major tour. Any big shows that you'd see, like Chris Cross, Ted Nugent, or the Tubes, use primarily what we have here — the same consoles, effects, and so on."



Jeff Forbes

continued on page 51

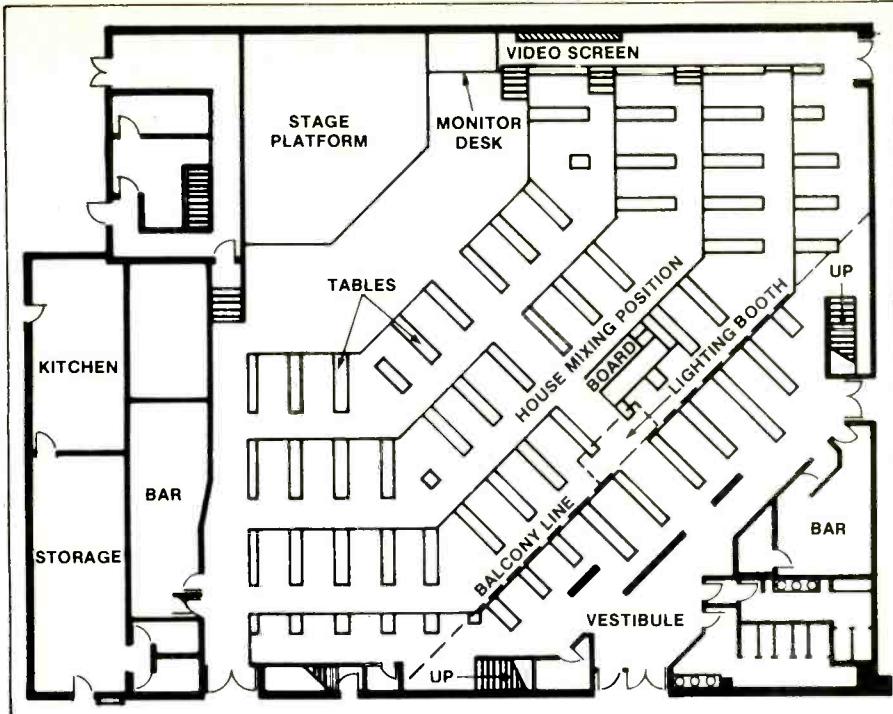


Figure 1: Floor plan of the Country Club, showing positions of the stage area, house mixing position, monitor desk, lighting booth and video screen.

club venues...



What this means to groups who play there is that all they need for a show is their backline amps, and instruments. For the Country Club, it means a big responsibility to ensure quality room sound through dependable personnel and equipment and, most of all, efficient planning. Even in a tiny club, that's a tall order. The Country Club met the challenge, but the quality came at no small price.

The building originally housed a Sav-On Drug Store, and practically all of the interior had to be restructured. As previously mentioned, Wolf/Rissmiller took over management duties after the major reconstruction work was completed. Unfortunately, a large amount of detailed data, such as electrical wiring schematics, was never properly recorded and filed, and the previous acoustical philosophies did not meet with the specifications of the new tenants.

TFA, a North Hollywood, California, sound reinforcement company known for their work at the California Jam series of outdoor concerts, was contracted to do the acoustical testing, as well as to design, install, and maintain the present sound system. This includes a house console, monitor station, outboard gear, power amps, a flown speaker system, monitors, and microphones.

When it was decided to fly the PA, the ceiling was checked and judged to be in

need of reinforcement, so that it would support the almost 1.5 tons of speakers. Steel truss rods were added to the already existing massive wood beams to provide the required strength, but the combination of high ceiling and cross pieces still presents one or two acoustical problems. Metal sheets attached to the underside of the roof also create resonance effects, and may eventually have to be shot with acoustical foam to dampen out vibrations.

The back wall of the main room (stage left, as shown in Figure 1) is red brick. The rest of the walls are also relatively hard surfaces and, to date, possess no visible acoustic treatment of any kind. One-inch thick sheets of compressed fiberglass — most likely Owens-Corning 703 — were mounted behind the stage backdrop, above the lighting system, and under the balcony where the volume is now 10 to 15 dB lower than the rest of the hall.

The area above the balcony was

found to be deficient in high end, so high-frequency horns needed to be flown specifically to rectify that balance.

After the initial set up, the house crew took over many of the maintenance jobs themselves. The fiberglass needed to be painted to blend with the environment, so the crew rented an airless and sprayed the insulation. They did much of the wiring for the patch bays, amp racks, and outboard systems, and even measured the walls of the stage and hung curtains for increased acoustical damping.

"We've all gotten the opportunity to do a lot of the troubleshooting here," says Forbes, "so we're pretty good now. We don't have anything as elaborate as oscilloscopes, but we have VOMs to check continuity, correct phase, and voltage; that's about it. Anything that has to be really tested is done by TFA, because they're responsible if we have any difficulties. Usually we can locate what's wrong, and tell them if it's a bad crossover, driver, or whatever. They'll drop off the part, or put it in for us. The majority of the time we'll do it ourselves, because it saves us time. The club owns the system, but, we [the crew] feel it's our system, too, so we take care of it."

Stage Design and Layout

The 4-foot high stage is 28 feet deep from front to back, 43 feet wide, 17 feet from floor to the beams above, and has easily accommodated up to 30-piece acts. Stage manager Paul "Duff" Lord feels that, "We probably won't ever be able to do symphonies here, because the wall at stage right cuts back too fast, and limits the amount of space available. But we're willing to try anything."

AC power is 300 amp, 3-phase (180 amps stage right; 120 left), accessible from either Hubbell or Edison wall jacks that are hidden by the stage wall curtains. A separate 100 amp, 3-phase line is ready for any audio or video truck that pulls up to the back door.

As can be seen from Figure 1, the stage is located in the corner of the room, and was prone to resonate about 100 to 125 Hz. The crew reinforced the under section with 2x4s and 4x4s. The



Figure 2: TFA/Soundcraft Series III house mixing console, equipped with 32 inputs, eight subgroups and two main plus eight effects outputs.

Country Club

performance area was floated by glueing $\frac{3}{4}$ -inch foam over the entire existing top, covering the foam with $\frac{3}{4}$ -inch plywood, and then sealing that with a durable paint which is replaced every three or four months. There is no more floor resonance.

To achieve a clean look, and all but eliminate the possibility of any musicians getting tangled in wires, the monitor patches and some of the mike patches are built into the floor. Under a flush-mount trap door positioned on each side of the stage, two retractable monitor cables can be pulled out, attached to the appropriate speaker boxes, and allowed to return neatly into the floor pocket. In that way, no excess wire tempts a stray foot. Eight microphone inputs are also available in the same pockets. Although not retractable, cable lengths can be shortened to go directly from mike to floor connection, and thus accomplish the same end.

Four additional 8-input splitter boxes are moveable, and generally assigned specific groupings. A unique junction box mounted on the wall behind the monitor mix station lends flexibility, and reduces set up time between acts. It's actually a 32-channel microphone patch bay that allows access through XLR or multi-pin connectors. Since the 32-input house board is broken down into four groups of eight channels, in effect each eight inputs has its own remote box on stage. For example: one splitter box may be used for the main act's drum kit; one for the backline amps; another for vocal mikes; and the fourth for the opening act's trap set. The other end of the splitter box's multicore is a multi-pin connector that plugs into the junction box feeding the control boards. As a result, a drum set never has to be torn down or set up during a performance. The entire pre-miked kit can be connected to the control board by plugging in one multi-pin to the junction box, once the drum riser holding the trap set and mikes had been moved into place.

Guitars, basses and keyboards are approximately the same settings from one music group to the next, and therefore utilize the same patches.

If the headliner has a vocal blend that demands the exact EQ and volume settings for the main show that were obtained during the sound check, the front line mike splitter box can be routed instantly to another eight channels of the house console for the opening act, simply by plugging the multi-pin into another eight inputs at the junction box. Before the headliner returns to the stage, the connector is

plugged into the original eight channels, and the sound check settings are ready to go. It's certainly a convenience, but it may be interesting to note that it took three weeks to wire the junction box!

House Console

Mark Wilson is the resident house sound engineer, although that doesn't assure him that he'll be mixing sound at every show.

"About two-thirds of the acts coming through here have their own sound man," he says. "Sometimes it's actually harder for me to sit next to the guy all night — and explain the room and board to him — than it is to do the mix myself."

The house position is 45 feet out from the stage, house right of center, and sunk about two-feet into the floor. The mix console is a TFA/Soundcraft Series III with 32 mike/line inputs, and eight subgroups, two main outputs, and eight effect outputs (Figure 2). Each input, subgroups, and output is equipped with LED bargraph meters, and insert points for interfacing any piece of outboard gear. Every input channel has four peak/dip-type equalizer filters, phase-reverse switch, a 20 dB pad, and a continuously variable input trim attenuator.

All the standard house outboard gear is flush mounted in an L-shaped wooden console, about the same height as the mix controls. From top to bottom and to the right of the board is a dbx Model 162 stereo compressor-limiter; a 208-point, normalled patch bay; a digital clock; and an RTS intercom system. The dbx is usually used for compressing the snare, bass, and lead vocals, to protect the power amps from sharp transients when loud groups are performing.

"Motorhead has to be the loudest band in the world," Wilson offers. "When they play here, I have to keep an eye on the dbx all the time, and I have to stay in touch with whoever is up in the

amp room. If the levels get too high, we have to bring the amp levels down to avoid clipping, or blowing one out."

In the foot of the L-shape effects console is a Technics M85 cassette deck, an Eventide Harmonizer, Lexicon Prime Time DDL, Court Acoustics Spectrum Analyzer, and an Orban Parasound Parametric Equalizer. Four additional inputs and outputs are provided for the act's touring effects. Cassette tapes for music during the breaks are kept on the far right in their own case.

TFA graphed the room, and obtained a fairly consistent soundfield.

"There are hot spots," confides Wilson, "but they're predictable. If you were to draw a line parallel with the PA, the sound would be about the same all the way along that line regardless of how close you are to the stage. There's a dip in the high-end under the balcony, which translates to about a 10 to 15 dB drop, but I think it's a good idea to have a quieter area with a good view of the show."

"One thing I'd like to see is a more punchy low-end around 125 Hz and down. I don't think it would be boomy with the room full. The flying cabinets are all front-loaded, and you don't get the feeling of the air physically moving and hitting you. If they were reflex cabinets or folded horns, I think the audience would feel the sound more, although sometimes when I'm mixing I can feel the bass drum shaking the board."

House Speaker System

TFA's design for the Country Club consists of six full-range cabinets arranged in an arc around the top of the stage, with four front-fill boxes just beneath the four middle-full ranges (Figure 3). The tri-amped, full-range cabinets are comprised:

Two JBL E140 15-inch Bass Drivers

Two JBL E120 12-inch Extended Range Drivers

One TAD 2001

One Altec 511B Horn

And the bi-amped front-fills each contain:

... continued overleaf —

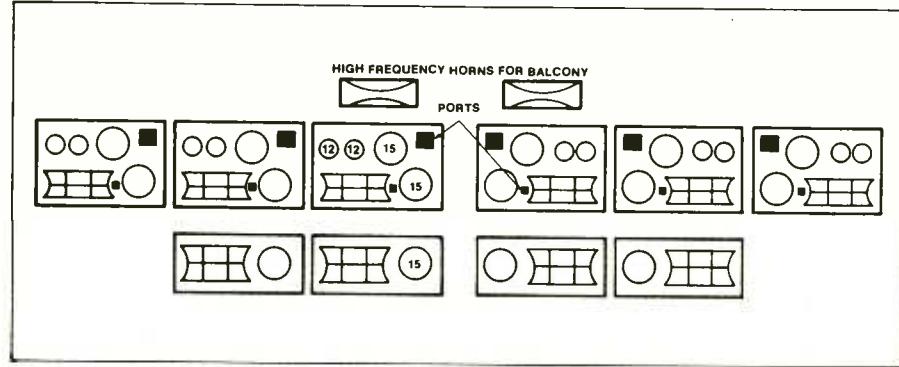


Figure 3: Flown sound system, comprising a pair of high-frequency horn units; six tri-amped full-range cabinets, and four bi-amped front-fill cabinets. The entire system is angled along its mid-axis, to provide coverage throughout the club. In addition, the lower front-fills have been tilted down to cover the front portion of the audience.

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Country Club

Front Fills . . . continued —

One JBL E130 15-inch Extended-Range Driver

One TAD 2001

One JBL 2308 Slant Plate Lens

One JBL 2312 Exponential Throat

The two high-frequency balcony units, which are suspended above the center of the rest of the flown system, consist of:

One JBL 2420 Wide-Range Driver

One JBL 2355 Horn Assembly

There are seven Crest P3501 and two P2501 power amps wired for two channels of 3-way active crossover, using JBL model 5234 units. Total house power is 6,500 watts.

Measurements at the house mix location showed sound pressure levels of 110 dB with no appreciable distortion. TFA claims the frequency response throughout the main seating area is within 2 dB from 63 Hz to 2 kHz. Starting at 2 kHz, a 3 dB per octave roll-off is induced into the response of the system, with a 2 dB fluctuation around the prescribed curve. They made all measurements with random noise in third-octave bands. Room equalization is handled with two White Model 4001 third-octave equalizers.

Monitor System

Stage left is the monitor mix station built around a Soundcraft Series II console, equipped with 24 mike/line inputs, eight outputs, and features similar to the house board (Figure 4). Monitor engineer Jeff Forbes finds that, "A lot of groups say they all work off the same mix. After I tell them I can give them all their own mix, they're in heaven, because now one guy can hear the kick drum without the other four guys having to hear kick, too. A third of the acts are so demanding in terms of what they want to hear in their monitors, that they bring their own mixer who knows the songs. I don't feel there has been a monitor system brought in that has been better than ours. Some groups just have idiosyncrasies; they have to have their own system."

Each of the bi-amped house monitor wedges is comprised:

One JBL E130 15-inch Extended-Range Driver

One JBL 2441 Wide-Range Top-End Driver

One JBL 2311 Exponential Horn

One JBL L94

The two tri-amped, side-fill cabinets used primarily for the drummers mix contain:

Two JBL E140 15-inch Bass Drivers

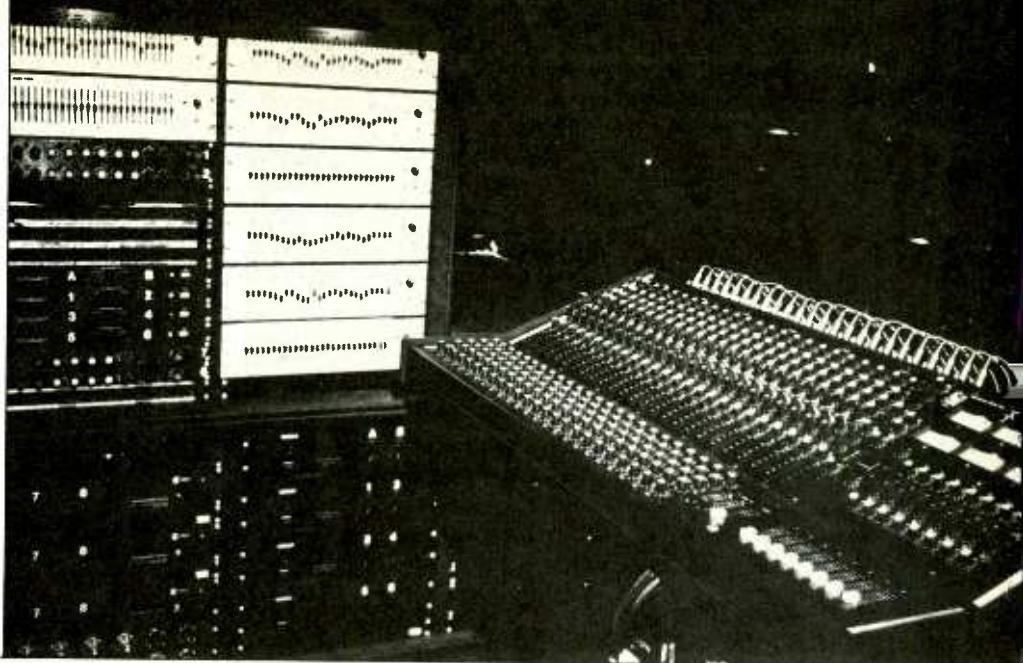


Figure 4: Soundcraft Series II monitor console, alongside the rack-mounted Klark-Teknik graphic equalizers, Audioarts parametric EQ, plus Crest 3501, 2501 and Yamaha P2101 power amplifiers.

Two JBL E120 12-inch Extended-Range Drivers

One TAD 2001

One JBL 2390 Horn Assembly

Power for the eight monitor channels is supplied by six Crest 3501, two Crest 2501, and four Yamaha P2101 amplifiers, providing a total of 4,500 watts. The rack next to the monitor desk houses eight Klark-Teknik third-octave and two AudioArts parametric equalizers.

"I have total flexibility," says Forbes, "in the sense that I can patch anything just about anywhere — EQ to any input or output, inputs to any channel, and outputs to any amp."

TFA lists the frequency response for the wedge design as being within 2 dB from 63 Hz to 16 kHz, and 40 Hz to 16 kHz for the side-fills. SPL measurements are 127 dBA and 130 dBA, respectively, readings being taken with random noise in third-octave bands.

"The only problem we have is that the groups play louder than they normally would," Forbes continued, "because they're used to performing in bigger rooms. We tell them to play only as loud

as they have to to hear themselves. If they play loud enough for the guy on the other side of the stage to hear, then we have too much noise. We have monitors to take care of that. If the guy on the side can't hear, we raise the sound in his monitors; that's what monitors were designed for."

For mixing bass especially, we keep the volume as low as possible on stage [from the stage amp] and crank it up in the monitor in front of the bass player. That way the bass facing forward doesn't interfere with the sound coming from the house PA. Some of the groups demand a lot of power. We haven't blown anything in the house yet, but I've been losing 15's every now and then. Changing a driver takes about 5 minutes."

All AC grounds in the house are lifted, and the equipment "see" their grounds at the monitor board. If an artist brings in his own monitors, the practice has been to un-ground the house monitor console, float the group's monitors (the stage splitters have provisions for lifting grounds), and tie everything to the main house console out front.

Guitar amps, usually the primary hum offenders, are almost always miked, but bass, some keyboards and some horns are direct-injected. Depending on the prevailing conditions of the day, grounds can be lifted at the amp or in the DI.

According to Forbes, "A lot of guitarists are mike-shy as a result of getting severe shocks before. If their equipment is not defective, we reverse the polarity on their amps. The only group we've had problems with was The Vapors. Their gear came over from England, and was impounded by customs. They had to rent and borrow what they could, and some of it was on the flaky side. There were a couple of shock problems in the middle of the

Country Club MICROPHONE INVENTORY

Pre-TFA installation:

Beyer 500	2
Beyer 400	1
Electro-Voice RE-15	1
Shure SM-81	1
Shure SM-62	2
Shure SM-58	4
Shure SM-57	2

Additional mikes, post-TFA installation:

Shure SM-77	6
Shure SM-78	4
Electro-Voice RE-20	4
AKG D12	2
Beyer 201	2
Sennheiser MD421	4

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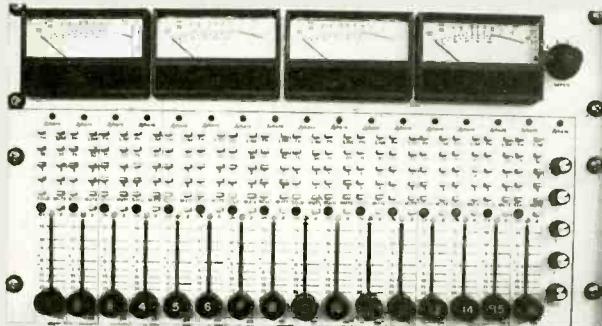
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club venues...



show. We got around it by putting wind screens over the mikes. As long as they don't get the wind screens too wet, they won't be shocked."

Lighting Rig

The lighting system was installed when the club was first opened.

"I don't get many complaints," claims technical director Bob Walker. "Groups are generally set back in shock at the range of equipment available to them. If someone comes in with a plot, with a little bit of advance work we can pretty much duplicate most road designs. If a group comes in with their own lights, they can plug into our dimmers as long as they have regular American stage-pin connectors."

The system is made by Century Strand, and features a Micro Q lighting board with 48 dimmers and 154 preset capability. The instrument list includes an assortment of Fresnels, Lekos, and Pars — about 105 instruments altogether. The two Follow Spots — one on each side of the balcony — are 575 watt HMI Satellite I's. Lighting power capacity is 3-phase, 500 amp service, and all the grounding is independent of the audio ground.

According to Walker, "The main problem so far is that we have to add more lights to do video tapings. I'd like to see another 50 or 60 instruments, a rock and roll control board, and a patch bay similar to an audio patch bay, where we can plug a lamp into a circuit and assign it to a dimmer. Then a video crew could walk in with five cameras, and we could give them whatever they need. There's some positive talk about upgrading in the near future."

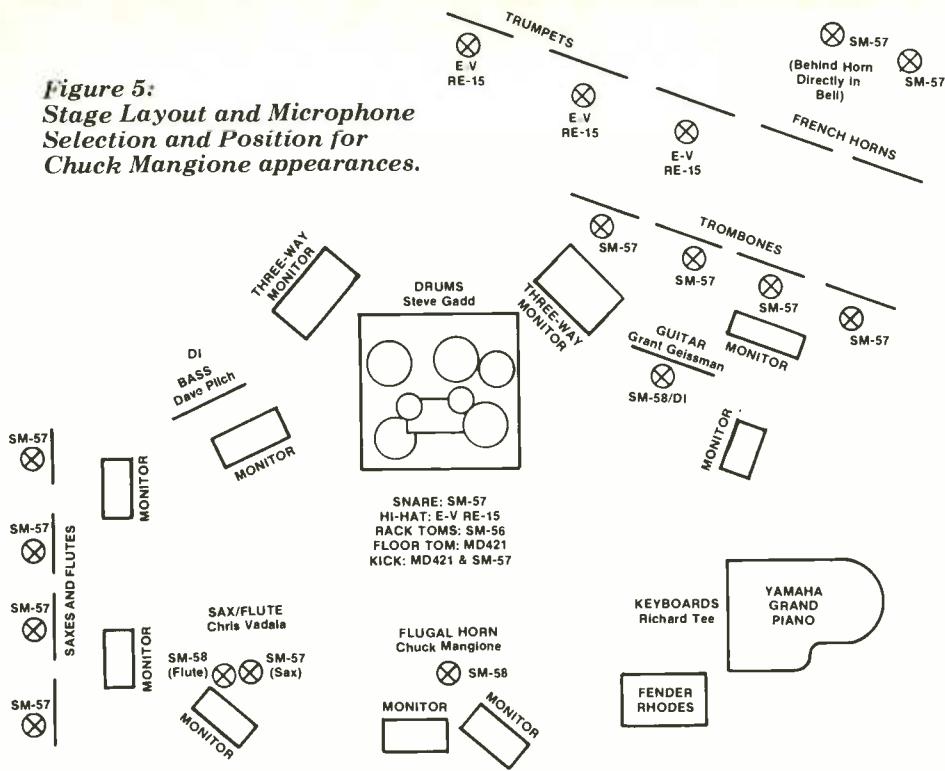
Group Needs and Reactions:

Chuck Mangione, the headliner during the two-week period I visited the Country Club, usually plays larger venues such as the Universal Amphitheater.

"I definitely like bigger rooms," states Larry Swist, Mangione's studio and road engineer, "because there are, for the most part, less low-frequency hassles. The stage level in here just seems too potent for us. There seems to be a problem around 120 Hz down to about 80. I'm dipping it out about 6 dB in the main system. I tried to lift the extreme bottom in here, but the system couldn't support it. It doesn't couple with anything flying up in the air like that. The best I can hope for is to define things a little better as they're coming off the stage (Figure 5)."

Swist joined Chuck Mangione right after the *Children of Sanchez* album, which was released a little more than

Figure 5:
Stage Layout and Microphone Selection and Position for Chuck Mangione appearances.



three years ago. He recorded the later material in the studio, and knows all the nuances of the music.

"It's pretty much of a handstand to keep the level down," he finds. "Chuck's show is unique, because it's a

combination of acoustic [14 horns including Chuck and saxophonist Chris Vadala up front], and miked or electric rhythm section instruments [Steve Gadd on drums; Richard Tee, Rhodes and Yamaha acoustic grand;

Grant Geissman, guitars; and Dave Pilch, electric bass.] A correct balance between live sound and reinforced sound is critical to accurate fidelity and a good show. Plus the audience that comes to see the show ranges from 4-years old to 84. We really can't hit them with 120 dB.

"The overall reading I got from the Court Spectrum Analyzer in the house mixing pit was 90 to 95 dB SPL with the high trumpet parts, and an occasional loud solo reading about 100 dB. In the context of the musical dynamics, this level was, in my opinion, by no means offensive or annoying. I also moved around to every area in the club during the show, and found I was able to discern individual instrumental parts with little effort. The bass was not deep and full, but certainly loud enough, and very clean.

Just before I left the Country Club, stage manager Paul Lord emphasized the versatility of the club once more.

"In addition to these shows, we've done live simulcasts with KMET; we'll do another this Friday. We had the ON subscription TV microwave for the Leonard Fight that we showed here live. The first week in September we plan on broadcasting Roy Orbison live to 11 cities via satellite. That's about the only thing we haven't done yet, and it'll require us putting a dish up on the roof. I'm looking forward to that. I want to operate the crane."

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**AUDIO/VIDEO
RECORDING
the
V. M. A.
VISUAL MUSIC ALLIANCE**

by Tom Seufert

video, photography, analog and computer graphics, and promotion has gathered together to form an organization known as the Visual Music Alliance (V.M.A.).

The Visual Music Alliance was formed to generate the kind of innovation necessary to support a new art form. Visual music promises to become one of the most important types of software; more creative than current music promos; more involving than films — in other words, simply more captivating than the material currently available to the public. It is important, however, to try to describe/define just what visual music is.

Visual Music — Its Historical Origins

In fact, visual music can take many forms; it's almost easier to describe what visual music isn't. But for the purposes of this article let's postulate that visual music is a dynamic art form combining visuals and music, which interact in such

— the author —

Tom Seufert is a singer/songwriter, and owner of Redwing Sound, a 24-track recording studio. He received a B.A. in journalism/public relations from Cal State University at Los Angeles, and was signed as a solo artist to Epic and Ariola America records. He has had a Top Ten single in Holland with his group, La Seine. Having co-founded and organized the Visual Music Alliance, Tom Seufert is currently developing a major feature film that will showcase visual music vignettes, with music performed by his new group, Trance.

a way as to achieve a unique effect that would be impossible with either discipline alone. In its ideal form, visual music is an exciting combination of the two disciplines, wherein they complement each other — each being as strong and effective as the other. This unique combination of form, color, motion and music promises unlimited avenues for creative expression.

In 1734, a French-born Jesuit named Louis Bertrand Castle built the first light show projector, called the Clavessin-Oculaire. Castle also formulated a general theory of color music, which was simply the manipulation of color changes to music. In 1895, an Englishman, Wallace Rimington, patented a color organ that employed 14 arc lamps, and pulled 150 amps of power! This device resembled a church organ with additional switches, relays and wires running to arc lamps.

The real innovator and literal father of visual music light shows, however, was Thomas Wilfred. An American, born in Denmark in 1889, Wilfred was the first person to stress color, form and placement of manipulated imagery with music. He began experimenting with color music in 1905, and gave his first public performance in 1922. The audio-visual device he built was called the Clavilux, and looked rather like a large contemporary audio mixing console, with massive levers and knobs.

In more recent times, during the late Sixties the Fillmore and Avalon Ballroom in San Francisco regularly provided audiences with an encompassing

continued overleaf —

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AUDIO/VIDEO PERSPECTIVES

by Martin Polon-

Over the last year, sagging audio disk sales have impacted all levels of the record industry, from studio production to disk-pressing. To survive financially, record merchandisers have adopted sales of non-traditional items such as video cassettes, posters and even plug-in game cartridges for Mattel and Atari computers. And all of this at a time when recording studios have the best equipped mixing facilities in history: 24- and 32-track recording with computer mixdown is commonplace. Digital recording of studio sessions is becoming an accepted practice. Home audio systems have more amplifier power, with less distortion driving better speakers than ever before. Turntables, cartridges and tuners produce audio signals of studio fidelity. But the question that remains: "Why with all this quality is the record industry still in the disk doldrums?"

The answer involves several separate issues, such as a dearth of powerhouse recording super-groups, but focuses on the confusion of the record-buying public. The four skeletons in the quad closet are trotted out regularly by the consumer press, as is the parallel spectre of "just how bad" regular records are today. Even the record industry and the home Hi-Fi manufacturers have begun to believe the chain-reaction view that "standard" records are dead. This form of professional incest, coupled with the public's confusion, has brought the life of the LP record full circle in approximately 30 years. The result is an apathy towards conventional vinyl records that is now perceived as a reality to be transcended only by the much promised, but seldom seen, digital disk.

The public is being asked, first to consider the ownership of four different disk players for the home. The basic analog LP record player will remain a household necessity for the millions of records already sold, and the millions more that will be bought by those unwilling to pay the premium for digital quality. Then, there will be a state-of-the-art digital disk player for digital disks. Next, the well-equipped home will possess a video disk player of some type for the pre-recorded video entertainment. Lastly, there will be a digital player to put computer software into the home computer; possibly a Winchester hard-disk, or mini-floppy drive. The disk question of the decade is: Will the public accept four separate units that play disks, when one player could do it all? What the audio-video recording industry needs, from studio to store, is sales. A common disk standard, like the Philips audio cassette, could mean sales of hardware and software in the billions. A single digital player that would utilize disks for audio, video and home computer software would pump life back into the business of making and selling records.

A single-disk standard is exactly what the consumer electronics industry does not have at this time. There are three different audio-ready, non-compatible video disk systems. The RCA SelectaVision system, although ostensibly the most affordable in price, lacks the video motion control and still-frame capability of its two more expensive competitors. But, the RCA CED (capacitive-electronic disk) system has the advantage of nearly conventional disk pressing techniques, and would offer high-quality stereo reproduction in an audio-only mode. Currently, the RCA system is without stereo audio accompanying the video. The 10,000 groove record is tracked directly and physically by a capacitive pickup; the diamond pickup requires eventual replacement.

The Philips/MCA/IBM/Pioneer laser-tracked video disk would offer two- or four-channel audio in an audio-only mode with one- to two-hour capacity. There is no direct contact with the optical laser, and the multiple motion and groove identification would lend itself well to identifying audio selections. The platter itself is assembled from two separate sides adhesively sealed, making disk production complex. The disk uses an optical coating, eliminating the need for a cardboard caddy used by the RCA and VHD systems.

IBM's involvement with videodisks is explained by their enormous data storage capacity; some 100 times greater than conventional media. The Pioneer laser disk player has a companion data adapter available for computer usage.

The VHD system, developed by Matsushita subsidiaries JVC and Panasonic, utilizes an electromagnetic tracking system with an invisible "grooveless" groove. It has the widest range of playing time, multiple-sound channels, and control and speed functions. However, it will not be available on the American market until early in 1982, while the RCA and laser disk systems can be purchased today.

A fourth audio-video disk system of sorts is based on the Philips-MCA format, made and marketed by Sony for industrial use. Over 4,000 have been sold to Ford Motor Company for training and communications for Lincoln-Mercury dealers. Sony will handle mastering and pressing of the audio-video disks.

There are several digital audio disk systems being heavily promoted at this time. The Philips/Sony Compact Disk system seems to have the best chance of becoming a standard, but there is strong pressure from other manufacturers to delay reaching a standard decision now. Other proposed units include the AEG-Telefunken Mini-Disk, which has some similarities to the RCA CED video disk. In addition, Victor of Japan (JVC) is showing an audio pulse-code modulation decoder for its VHD video disk system. Pioneer has a mini-optical audio disk player as well. There is a potential for a non-disk optical card, played by an optical

AUDIO/VIDEO RECORDING V.M.A.

VISUAL MUSIC ALLIANCE

environment of music and visuals. In those drug-influenced psychedelic days, many rock groups, including Jefferson Airplane and Grateful Dead, often employed live visuals to augment their concerts. Recently, laser shows have become popular with some larger rock acts.

Animation and Films

Back in the late Twenties, a man named Oskar Fischinger was developing animation techniques that would eventually be used in one of the most successful animated visual music pieces of all time: *Fantasia*. Although initially misunderstood by the critics, Walt Disney's *Fantasia*, with its unique use of moving animated imagery, color and form set to music, ultimately became a classic. Many other film experimenters, including Fritz Lang, Norman McLaren and others working in Europe, were delving into the special world of effects and collages, which were often combined with music.

More recently, the Beatles' films, *Hard Days Night* and *Help*, set a precedent for popular recording groups to visually act out certain songs against some sort of plot. Eventually, artists would employ these and other techniques to produce music promotional pieces. *Woodstock*, the music film, was a socio-musical documentary that proved to be a groundbreaker. Although these aforementioned films could not be accurately termed visual music per se, nevertheless their contribution to expanding the horizons of visual music must be recognized.

Film Special Effect Sequences Employing Music

In some cases, it becomes difficult to draw a hard line between film scoring and visual music. Many popular and unique films have used stunning special-effect sequences coupled with music and/or sound effects. The majority of films, however, use music more as background or "muzak." The slit-scan tunnel and other special effects used in Stanley Kubrick's *2001, A Space Odyssey* represent unique imagery presented with classical music. In the *Demon Seed*, Julie Christie is electronically assaulted by a computer, during which sequences the abstract analog graphics and sound effects are particularly effective. There are numerous examples of films that contain sequences that may be interpreted as a form of visual music.

Potential Outlets for Visual Music

Before discussing how the V.M.A. foresees the market for visual music developing over the next decade it would be worthwhile to document the various media channels which, we predict, will provide viable outlets for our work.

... continued overleaf

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1) Television Networks. Although there are several programs currently being aired on network TV that feature music promotion video, plus specially staged studio presentations, by and large these shows are run late at night on weekends — *Rock Concert* and *Solid Gold* being good examples of the kind of show seen on the West Coast. However, faced with increasing competition from the newer specialist cable stations springing up around the country, the Networks are going to be forced to increase the frequency — as well as improving the quality and content — of such television shows.

2) Cable Networks. Warner-Amex was scheduled to begin delivery of a dedicated 24-hour music-video satellite channel — MTV: Music Television — on August 1 of this year. It plans to provide stereophonic Dolby-encoded sound in conjunction with cable's first all-music channel.

3) Specialist Clubs. Clubs specializing in live music have been running music video for quite a while now — particularly some of the more progressive New York establishments — and are providing an important outlet for music-video composers. Such establishments frequently make use of large-screen projectors, being fed from professional-quality $\frac{3}{4}$ -inch video cassette machines.

4) Videodisk. Of the three currently

proposed videodisk systems — the MCA/Magnavox laser-disk *DiscoVision*, RCA's grooved capacitive format *SelectaVision*, and the Matsushita's *VHD* grooveless capacitive technique — only manufacturers of *VHD* hardware appear to be presently seeking out innovative visual music presentations. Music-video software for the pair of presently available formats — *DiscoVision* and *SelectaVision* — is rather limited, apart from one or two notable exceptions, including Ron Hays' *Odyssey*.

Without doubt, however, the videodisk software market for visual music will grow rapidly over the next decade — once the manufacturers of such players discover the marketing possibilities offered by this new art form.

5) Multi-media. As well as the "traditional" domestic outlets available for video promos, we foresee a growing number of specialized presentations developing over the next few years. Various laser shows around the country have illustrated what can be achieved with the application of visual "embellishments" for well-known pieces of (usually) rock music — albeit with the use of high-technology laser systems operated under computer control. Such environments will proliferate during the next decade, we predict, and would provide an ideal vehicle for the showing of complex multi-media visual-music compositions.

By way of an example, one VMA member, Quantum Leap, Venice, California, plans to construct a new visual "environment," which will feature hemispherical, multi-screen projection. Similar centers can be expected to spring up as an increasing number of people

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by Martin Polon

scanner, from the Soundstream group. Other systems are in development or testing.

Even if the professional recording area is surveyed, the digital standards problem does not appear to be any better. While Sony, Studer, and MCI have linked up for a professional multitrack commonality — as well as Mitsubishi and AEG-Telefunken with a different system — none of these professional systems are compatible. Neither are the 3M or the Soundstream systems compatible with any other professional system or grouping of systems. In a word, no standards or compatibility at the consumer or professional level.

Although it may appear as bitter medicine for the recording and consumer electronics industries, the solution to the sales doldrums and the key to a healthy future in a decade of competitive high-technology entertainment is going to revolve around two standards. There can be a standard for consumer disks, and a standard for professional recording. But, there must be some kind of standards. Consumer audio disk equipment has to be inexpensive and attractive, and the software affordable. The fact that the digital disk or the video disk is good will not be sufficient to guarantee success; success comes only with the mass marketplace.

Looking back, we find that quadraphonic sound was good; so was the recording and playback performance of the $\frac{1}{4}$ -inch Elcaset. The measure of success in the marketplace will rest with consumer acceptance. It is not the Electronic Industries Association of Japan or the Audio Engineering Society that purchases home electronics; it is the world consumer, and the consumer is going to purchase only those entertainment appliances that truly provide a service.

The incredible success of the personal portable audio market, buoyed by Walkman-type tape-players and FM stereo radios with lightweight mini-headphones, has shown that audio is not "dead," contrary to the reports of its skeptics. Like Mark Twain, who objected that the "reports of my death were greatly exaggerated," the audio industry needs only to agree on a direction and move with it. That done, the audio entertainment industry will stand equal with video and home-computing in moving towards the 21st Century.

become turned on to the exhilarating experience of such multi-media shows.

Where Visual Music Is At The Moment

It's very important to keep in mind that not all the following examples will fit squarely into the visual music definition. And, since that is to be expected, these categories should be taken as representing relative visual music types.

Conventional Lip-sync Shoots

These are the standard promotional films currently to be seen on television or cable networks. Such promos are shot on video tape or film transferred to tape. The Knack's first video of their song, *My Sharona*, represents a good example of a group of artists lip-syncing to a pre-recorded performance. The audience gets to see the group from many different angles, coupled with creative staging, lighting effects and editing. The range of conventional lip-sync shoots can run from Old Hat, to New Wave, to Experimental. However, it is not so much visual music as it is a promotional tool used to sell the artist and the song.

Live Concert Footage

A live music concert is either filmed, videotaped or broadcast live, and can be very effective as entertainment when an artist gives a great performance. This is because footage of a live concert can carry an aura of authenticity and interest not usually generated with lip-sync promotional films. *The Last Waltz* and *No Nukes*

are two examples of live-concert footage that was edited and released as a feature film.

Lip-sync or Live With Conceptual Imagery

This is an area of music promotional pieces that comes closer to the concept of a true alliance between visuals and music than any of the preceding forms. Live or lip-synced footage of a group can be combined with a concept or storyboard that helps visualize the song's music and lyrics. When this is accomplished effectively and tastefully, the results can be most interesting. The Buggles' *Video Killed The Radio Star*, David Bowie's *Ashes to Ashes*, and the Boomtown Rats' *I Don't Like Mondays* represent attempts to creatively visualize a piece of music, while still promoting the artist's physical presence. Although the future promises more innovation in this area, the sheer expense shooting such a video can impose serious limitations; many state-of-the-art video promos cost in excess of \$25,000 per song!

Specialized Techniques/ The Surreal and Abstract

There exists an incredible array of special effects and techniques potentially available for visual music. The main problem, however, is that many of them are *very* expensive. High-resolution computer scene simulation of the sort that was used to produce, for example, KCET and Pyramid Films logo, are out of reach

for the average filmmaker or visual-music producer — a 30-second sequence might cost close to \$100,000 or more! But, before we delve into any further detailed examples of these techniques, let's take a look at what's potentially available:

Digital and computer processing
and graphics
Analog Processing and graphics
Lasers Imagery and Spatial Projection
Animation and Pixilation
Special Artwork and Animation Stand work

3-D and Holographic Processes
Specialized Film Techniques

Many of these techniques can be used with either film or video tape, and have specific advantages and disadvantages for each medium. Of course, many new techniques are being developed and old secrets are being constantly refined, so the above is really only a partial list.

1) Digital Processing and Graphics.

Digital processing of video tape is now employed in many video post-production facilities to shape and affect images. Sometimes entirely new textures and images are generated with these techniques. The drawback of such units, however, is their high cost: exclusive of other production gear needed, the price can run from \$75,000 to \$250,000, and possibly beyond. Several companies manufacture computer-assisted sketch pads which allow an artist to "draw" directly in the video domain, using floppy

... continued overleaf

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disk storage as well as video tape.

Computer graphics represent the high-end of visual imagery and effects, since some systems offer incredible resolution. Information International, Inc. presently has such a system available with a 4,000-line resolution, compared to 525 lines on domestic television receivers. Hence, it is feasible to generate graphics with a computer, and project a high-quality image onto a large screen without the graininess usually associated with an enlarged video. Computer generated and enhanced imagery is used frequently in television commercials.

2) Analog processing and graphics achieve their own particular look and feel. Ron Hays, a visual-music designer, employed both analog and digital effects and imagery on his recent videodisk release, *Odyssey*.

3) Lasers Several laser entertainment companies have achieved success presenting live performances of laser visual music. These laser shows use abstract imagery performed in accompaniment to music. Red, green, blue and yellow laser beams, generated by krypton and argon ion lasers, are directed through electro-optical devices that create multi-

colored abstract imagery. Animations are either projected on screens or into the air to create 3-D light "sculptures," and shooting beams of light. Such effects have been used in TV commercials, and motion pictures such as *Outland*, *Cheech And Chong's Next Movie*, *Star Trek — The Motion Picture*, and others. Laser systems cost between \$30,000 and \$100,000.

4) Animation and Pixilation, or the moving of inanimate objects using stop-motion techniques to create the illusion of movement, are effective vehicles for the imagination. Because they can involve original artwork, such techniques are flexible to surreal and abstract application.

5) 3-D and Holographic Processes are software vehicles that hold the promise for whole new dimensions for entertainment and visual music. Current research points to major breakthroughs soon in 3-D television, and projected three-dimensional moving pictures.

6) Specialized Film Techniques is a grab bag heading for any techniques not already mentioned, and encompasses many of the "miracles" you've witnessed in such films as *Star Wars* and *The Empire Strikes Back*. It includes computer-controlled camera work (space ships zipping around the heavens), streaking (used in the film *Resurrection*), Matte work (used to create cities and background landscapes), optical work, and many other techniques too numerous and complicated to mention here. Because such techniques are costly and time consuming, they are

usually reserved for feature films or high-budget commercials.

But What Does The Audience Want?

"They don't know what they want, but they know what they like," is a phrase often heard in Hollywood agents' offices. But there are different audiences for specifically produced promotional music pieces. The visual and/or music artist wants to visualize themselves and their music in such a way that an image and statement is created. The record/distribution complex (which usually finances the promo) wants a product that can gain exposure for their artist, look like a million and cost less than \$10,000 per song. Even so, record companies are keenly aware that because of skyrocketing touring costs, a less expensive way to glean exposure for their acts in many diverse markets is to distribute promotional video tapes of selected artists.

On the whole, the American public is somewhat apathetic about rock music shows and "promo" clips in general. With one or two notable exceptions, few of these promos warrant viewing more than once. Feature films that showcase live performances of top music groups have sometimes fared a little better with the public: for example, *Woodstock*, *The Last Waltz*, and *No Nukes*.

An ironic quote from the late Twenties states: "...it's not that people waited for the radio, but that the radio waited for the people..." (taken from Brecht, *Theory of Radio*, 1927). People are waiting for visual music; they just haven't experienced it yet. The fact remains, however, that the technology exists today to create amazingly diverse and entertaining visual music.

Visual Music Alliance Membership

Currently, the VMA has an active membership of some 50 individuals and organizations, the majority of whom are somehow involved in the production of visual music. A brief rundown of the various categories into which these people fall will illustrate the talents being harnessed by the VMA.

Multi-media Production

As mentioned previously, Quantum Leap, with members Jerome Armstrong and Alan Kozlowski, represents a good example of a company actively engaged in helping visual music move beyond the traditional small-screen format, and into larger, more ambitious presentations. Quantum Leap is also one of the leading multi-media production centers on the West Coast, and has been involved in the production of many promotional campaigns for large corporations, such as MCA and Paramount.

Film Special Effects Director

Artist and musician/composer John Allison was the supervising artist for Carl Sagan's PBS series *Cosmos*. (He also contributed sound effects for the programs.) He's currently developing an original videodisk concept of his own music and visual designs. Allison's expertise in special effects has helped other VMA members to come to grips with

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Artist

Adolf Schaller is an extraordinary artist who was responsible for much of the artwork used on *Cosmos*, for which he also functioned as a supervising artist. Schaller composes music and, with a planetary geologist from the Jet Propulsion Laboratory, is currently working on a book about the solar system as seen anew by the most recent planetary probes.

Video Synthesis

Stephen Beck is a pioneer of visual music and inventor of the Beck Direct Videosynthesizer, which creates images from circuit cards that control the color, shape, textures and movement of the images. He is also the president of a computer company, Beck Tech.

Denise Gallant, of Synopsis, is a video synthesis composer, director and technician, who has worked on a video promotion for the band Suburban Lawns, entitled *Janitor*. She has also worked on video pieces with Brian Eno, provided visual accompaniments to live music presentations in San Francisco and Los Angeles, and prepared animation sequences for Theta Cable Television.

Musicians

Garth Hudson, ex-organist with The Band, recently completed the music for a special environmental exhibit designed by Tony Duquette, which took the form of a bicentennial gift to the City of Los Angeles. The piece, entitled *Our Lady*

Queen of the Angels, comprised a poem written by science-fiction author Ray Bradbury and narrated by Charlton Heston, with musical accompaniment by Hudson.

Laser Company

Barney Kaelin of Laser Magic Productions specializes in laser visual music. He has created laser special effects for major studios, including Universal, Walt Disney and Paramount, with laser work for *Buck Rogers*, *Black Hole* and *Star Trek - The Motion Picture*. CBS Records recently used his "laser tunnel" effect in a video promo tape and commercial for Michael Jackson.

Hardware Developers/Software Producers

Peter and Coco Conn, of Homer and Associates, have spent the last two years developing a 24-channel visual mixing console with digital frame storage. This device functions as a preview optical printer that enables visual mixes of up to 24 channels of film and slide material. The company is currently involved in a videodisk project for EMI Videograms, as well as having done numerous promotional films for most of the major record companies.

Digital Scene Simulation

Richard Taylor and Mark Jaffe of Information International Inc., Culver City, California, work with a high-resolution digital scene simulator, which has been used to produce, among other things, logos for Los Angeles PBS station KCET and Pyramid Films. Taylor and



... video music producer/artist Gary McKinnon (now with Image West) setting up a specially drawn piece of artwork, in which various scales of gray will later be used to trigger up to eight levels of color to produce different special effects.

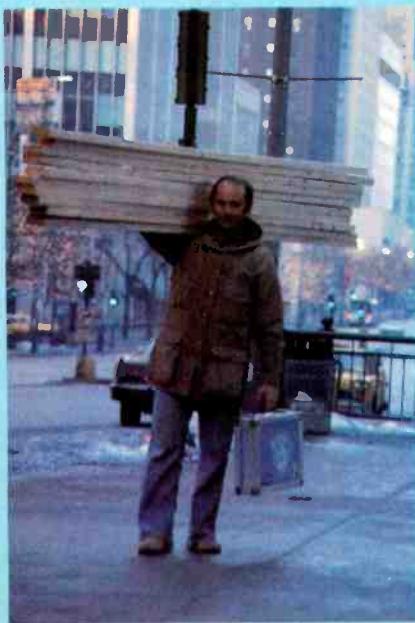
Jaffe have also handled special effects scenes for such films as *Looker* and *Tron*. The system, which has a horizontal resolution of more than 6,000 lines, and vertical resolution of 4,000 lines, is ideal for eventual projection via film.

Visual Music Composers

John Whitney, one of the acknowledged pioneers in the field of visual music, has developed an art form he calls "motion graphics." His recently published book, *Digital Harmony*, is concerned with the complementary nature of music and visual art. He has produced many well-known experimental visual-music films, including *Permutations*, and *Arabesque*, using a mechanical analog computer as well as working with current state-of-the-art equipment.

... continued on page 68 —

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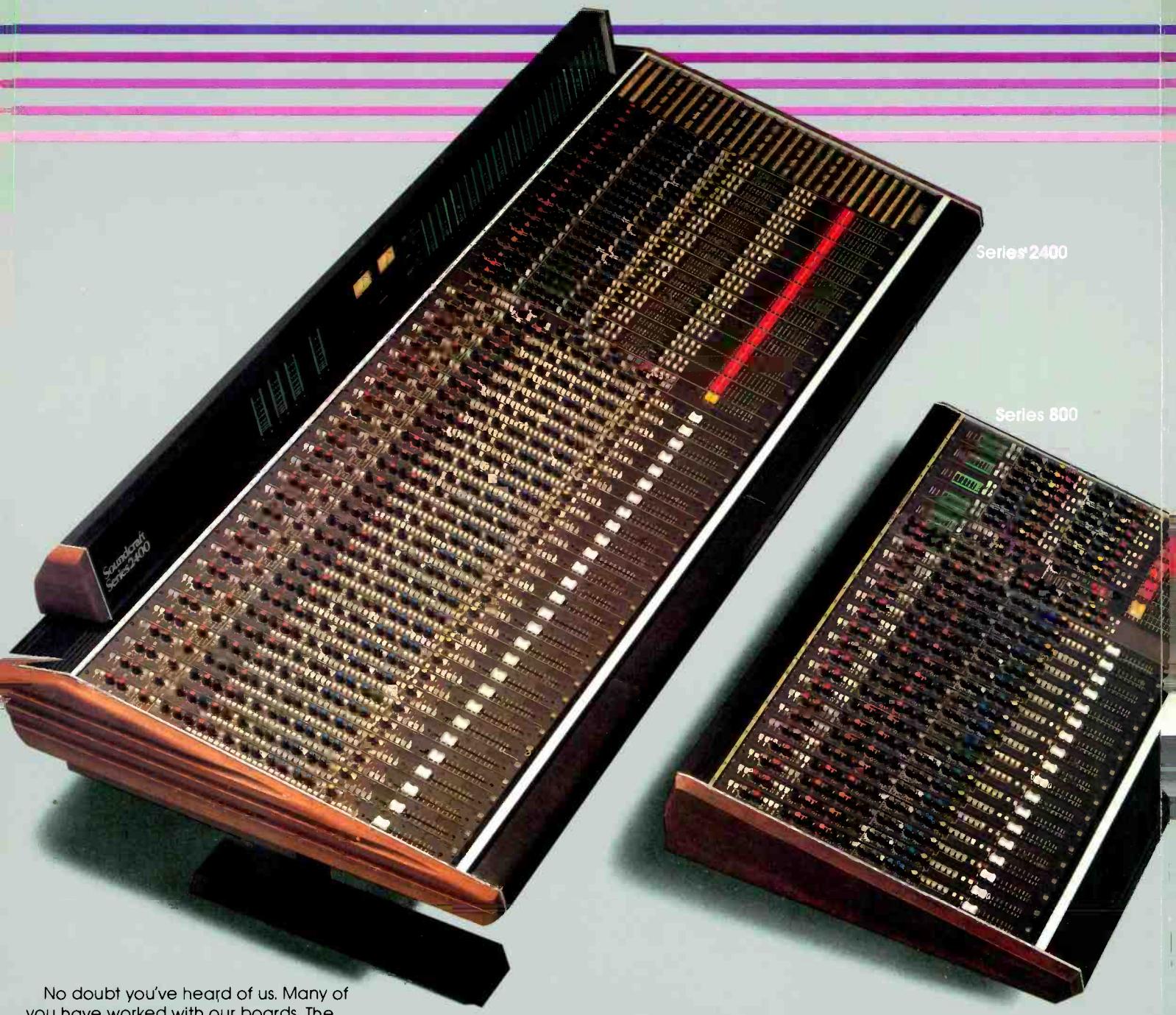
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The Series 2400 is ready for optional Soundcraft automation and bargraph metering which includes a 27 band 1/3 octave spectrum analyzer. (Standard with VU's.)

Get your hands on a Series 2400 and you will know why it's called "The Challenger."

Series 800

The Series 800 is a compact 8 buss console available in 18, 26 or 32 input mainframes and can be configured for 16

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Series 400

The Series 400 is a fully modular 4-buss console for up to 8-track recording and for sophisticated sound reinforcement, available in two mainframes, up to 18 inputs or up to 26. Series 400 has more facilities than any other console in its class. All controls are laid out logically and are easy to use. Outputs and playback are nominal +4 dBv, but the console may be ordered with -10 dB. Another example of how Soundcraft offers more for less.

Series 1S

The ultimate traveling SR console. Available in 12, 16 or 20 input formats with stereo outputs, plus three effects outputs. XLR type inputs with a 20 dB mic pad followed by a variable gain amplifier, combined with a hi-pass filter. 4-band EQ standard, 2-band on outputs. Peak clipping LED's and channel switching. Optional conductive plastic faders available. Balanced output available with optional transformers. Available in walnut case as shown or durable aluminum flight case. More...for the asking.

Comprehensive brochures with engineering details and full specifications and features on each Soundcraft console are available for the asking. We want you to compare our consoles to anyone's with the confidence that when you do, you will readily see why we claim that with a Soundcraft console you receive MORE FOR LESS. Much more.

Specifications

Series 2400

Distortion	Mic pre-amp, -60dBv in, +4dBv out Channel line in to mix out, +4dBv in, +4dBv out	40Hz: 0.008, 1kHz: 0.008, 18kHz: 0.01, IMD: 0.015
Crosstalk	Line in through pan control to stereo mix buss Adjacent channel	40Hz: -64dB, 1kHz: -63dB, 18kHz: -55dB 40Hz: -100dB, 1kHz: -95dB, 18kHz: -85dB
Noise	Equivalent input ref 200Ω Mix noise: 28 inputs and 24 monitors routed to mix at unity gain	-128.5dBv -74dBv (DIN Audio)
Input impedance	Mic input Line input	2kΩ (5kΩ with pad) 10kΩ
Output impedance	Any output	<40Ω
Output capability	Any group or mix into 600Ω	+21dBv
Gain	Max/mic Max line	75dB 40dB
Frequency response	Mic input at 50dB gain to mix Line input at unity gain to mix	20Hz: -1.6dB, 1kHz: 0dB, 20kHz: -0.2dB 20Hz: -0.8dB, 1kHz: 0dB, 20kHz: -0.2dB
Phase response	Line input to mix output	20Hz +20°, 1kHz: 0°, 20kHz: -20°
Dimensions	24/16 input 28/24 input	73.75x37.23x36.75 ins (1873x964.65x933mm) 87.5x37.23x36.75 ins (2222x984.65x933 mm)
	NB: 0dBv = 0.775vrms	

Series 800

Distortion	Mic pre-amp, -30dBv in, +4dBv out Channel line in to mix out, +4dBv in, +4dBv out	40Hz: 0.01, 1kHz: 0.01, 18kHz: 0.05, IMD: 0.02
Crosstalk	Line in through pan control to stereo mix buss Adjacent channel	40Hz: -64dB, 1kHz: -63dB, 18kHz: -55dB 40Hz: -100dB, 1kHz: -95dB, 18kHz: -85dB
Noise	Equivalent input ref 200Ω Mix noise: 32 inputs and 16 monitors routed to mix at unity gain	-127.5dBv -74dBv (DIN Audio)
Input impedance	Mic input Line input	2kΩ (5kΩ with pad) 10kΩ
Output impedance	Any output	<75Ω
Output capability	Any group or mix into 600Ω	+21dBv
Gain	Max/mic Max line	90dB 40dB
Frequency response	Mic input at 50dB gain to mix Line input at unity gain to mix	25Hz: -2dB, 1kHz: 0dB, 20kHz: -0.5dB 25Hz: -1.6dB, 1kHz: 0dB, 20kHz: -0.5dB
Phase response	Line input to mix output	25Hz: ±30°, 1kHz: 0°, 20kHz: -20°
Dimensions	18 inputs 32 inputs	42.52x29.25x7.64 ins (1080x743x194mm) 53.5x29.25x7.64 ins (1373x743x194mm)
	NB: 0dBv = 0.775vrms	

Series 400

Distortion	From mic input at 50dB gain to +4dBv at Group Output From line input at unity gain to +4dBv at Group Output	40Hz: 0.02, 1kHz: 0.015, 18kHz: 0.015, IMD: 0.025
Crosstalk	Stereo mix buss measured at mix outputs Adjacent channel at insert, send, line input selected	40Hz: 0.015, 1kHz: 0.005, 18kHz: 0.025, IMD: 0.005
Noise	Equivalent input noise ref 150Ω Mix noise: 16 channels routed to mix at unity gain	40Hz & 1kHz below noise, 18kHz: -102dB -127.8dBv -73dBv (DIN Audio)
Input impedance	Mic input Line input	>2.5kΩ, 10kΩ
	Tape return	7.5kΩ
Output impedance	Any output	<40Ω
Output capability	Any group or mix into 600Ω	+21dBv
Gain	Max/mic Max line	75dB +40dB
Frequency response	Mic input at 50dB gain Line input at unity gain	0Hz: -1.6dB, 1kHz: 0dB, 20kHz: -0.1dB 20Hz: -0.8dB, 1kHz: 0dB, 20kHz: -0.1dB
Phase response	Line input to mix output	20Hz +20°, 1kHz: 0°, 20kHz: -20°
Dimensions	16/4 26/4	42.2x29.3x7.1 ins (1073x74.5x18.8cm) 54.3x29.3x7.4 ins (137.8x74.5x18.8cm)
	NB: 0dBv = 0.775vrms	

Series 1S

Distortion	From mic input to +4dBv at output at any frequency at 20Hz to 20kHz	<0.03% THD
Frequency response	at 50dB mic gain	20Hz: -1.5dB, 20kHz: -1dB
Noise	Equivalent input ref 200Ω	-126dBv, 20kHz bandwidth
Input impedance	Mic input	4kΩ (1.6kΩ with pad)
	Insert return (line)	3kΩ
	Echo return	10kΩ
Gain	Max/mic Max line Max echo return	90dB 32dB 65dB
Output capability	Any output into 600Ω	+21dBv
Input capability	Mic (+20dB with pad)	0dBv @ 30Hz [1% THD] +3dBv @ 1kHz [0.1% THD]
	Insert return	+23dBv
Metering	Dynamically set at +4dBv but may be altered internally down to -10dBv Peak LEDs come on 8dB above 0vU	any level
Dimensions	12 input 16 input 20 input	33x22x40 ins (84x56x26cm) 39x22x10 ins (99x56x26cm) 45x22x10 ins (115x56x26cm)
	NB: 0dBv = 0.775vrms	

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THE CHALLENGER

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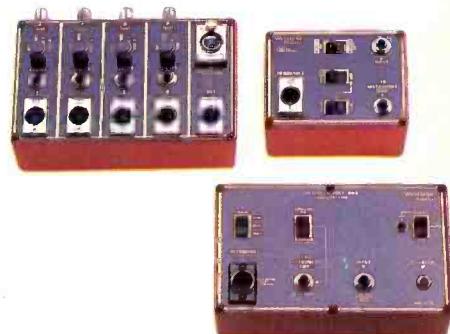


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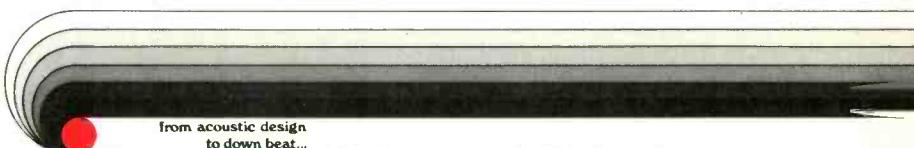
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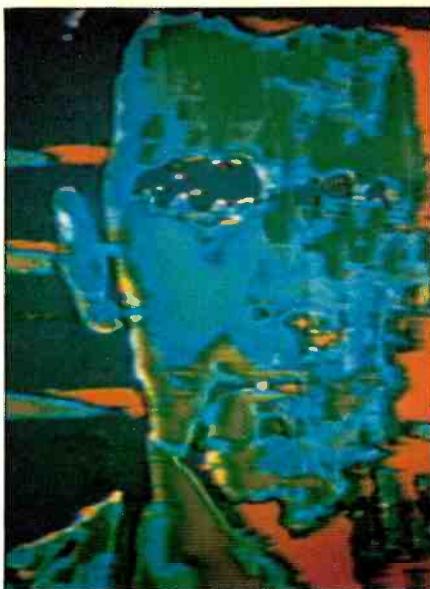
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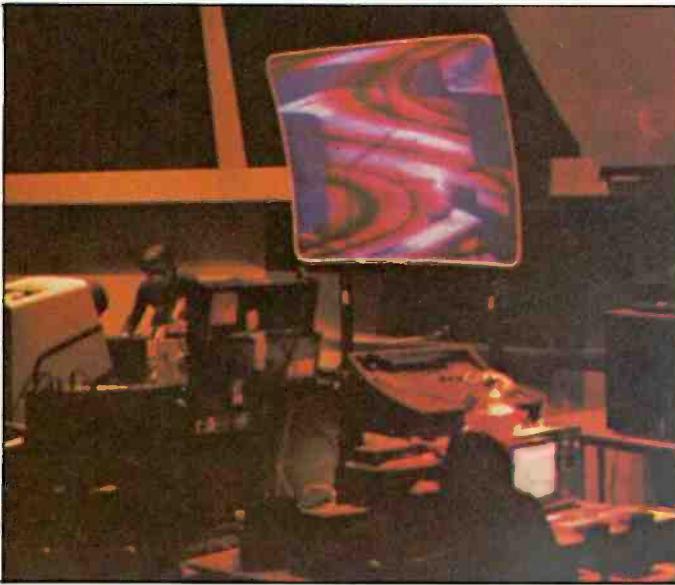


— from the portfolio of video music composer DENISE GALLANT.

(upper left) Part of a sequence produced for a San Francisco-based cable operator. Having colorized the guitar fingerboard and hand, the background was added, and caused to fluctuate according to the pitch of the music.

(upper right) The output of a black and white TV camera pointing at a photograph which has been processed through her home-built eight-level keyer/colorizer to produce varying color hues. Each of the eight layers can be controlled independently — for example, a particular color can be arranged to change in time to the accompanying music. The various units have taken some six years to develop and perfect.

(adjacent) . . . showing a live demonstration performance of her visual music compositions.



AUDIO/VIDEO RECORDING V.M.A. VISUAL MUSIC ALLIANCE

Daniel Sofer is a visual-music designer and electronic music performer/composer, whose pieces were shown at the recent AFI Video Festival in Washington, D.C. He has co-directed three laserium shows, and his piece *Silk Aurora* is part of the *Laserium Starship* presentation.

Michael Scroggins, who teaches video synthesizer at California Institute of the Arts, Valencia, is a visual-music composer whose most recent piece, *Recent Li*, was awarded an Honorable Mention last June in the 23rd Annual American Film Festival held in New York City.

Sound Engineers/Producers

Robert Margouleff and Howard Seigel have worked with Devo and on several of Stevie Wonder's album projects. They are actively pursuing ways in which visuals can be utilized to enhance a musical performance, and are currently develop-

ing six one-hour music shows for worldwide distribution.

Publishing and Record Companies

Peter Burke, ex-assistant regional director of A.S.C.A.P. and formerly on the A&R staff at United Artists, is looking into the problems of copyrighting visual music performances, and liaising with record companies regarding the creative marketing possibilities offered by visual music.

* * *

The Visual Music Alliance represents what we consider to be a unique organization, in that its membership includes professionals working in various fields of music, video, film, and computer graphics. Members have been involved in numerous projects, ranging from feature films, music promos and album projects, to avant-garde experimental video-music, commercials and laser shows.

One of the primary goals of the VMA is to promote an interaction between the individuals who have command of various technologies, so that new processes and techniques can evolve. These new "alliances" will ultimately create the kind of diversity and quality necessary to

support the hardware systems — videodisk, cassette and related industries.

Although visual music as a contemporary art form is still only in its infancy, there are many creative people who desire to connect with other talented artists. Through an organization such as the VMA — and similar groups springing up around the country — such individuals are given an opportunity to interact and learn about what is possible with this new, and relatively unexplored medium. They are able to tap each other's energy and enthusiasm. The VMA represents, we feel, the ultimate *Interface* for professionals with diverse visual and musical backgrounds.

Activities of The Visual Music Alliance

VMA activities include monthly general membership meetings, where members discuss techniques and applications of visual music. There are also screenings of VMA member projects in progress, some of which showcase original music and visuals. Smaller get-togethers, committee meetings and workshops occur on a spontaneous basis. There are also many

VMA members involved in trading services and combining talents to make individual projects and goals a reality. It is in these small gatherings that the musician, visual designer and technical coordinator are able to focus their energies on creating visual music. In addition, the VMA plans to provide a resource center, telephone information line and job referral service (with a directory computerized by function), as well as a monthly newsletter.

Works by several VMA members were shown last June at the AFI Video Festival, held at the Kennedy Center, Washington D.C. The pieces included: Stephen Beck's *Union*; Homer and Associates' *Blame It On The Boogie*; Daniel Sofer's *Silk Aurora* and *Third World of Dreams*; Denise Gallant's *Suburban Lawns 'Janitor'*; Michael Scroggins' *Recent Li*; and Barney Kaelin's *Laser Viewsic*. The pieces were shown by Videodisk jockey, VMA member John Hunt.

Many collaborative projects are currently being developed among VMA members, including a feature film showcasing visual music; a live multimedia experience environment in a huge dome theatre; and new combinations of real and synthesized imagery with music. As an organization, the VMA has enormous collaborative potential for generating new forms of visual music entertainment.

The Future Of Visual Music

The major corporations that have spent millions of dollars researching and developing the videodisk, cassette and related industries will soon be taking a hard look at the lack of effective software necessary to support their products. How many times can somebody watch a film or a music promotional piece? The average consumer will be reluctant to spend between \$500 and \$900 for a videodisk system that can only playback, when he already has so many options open to him through cable, television and video cassette (including rentals). The hardware problems with videodisk, et al, will eventually be worked out. Nonetheless, innovative visual music programming is, we feel, crucial to the future of the various videodisk formats, especially since the audio quality of a videodisk is superior to any other form of consumer playback — no scratches or clicks from a needle, and more headroom for better dynamics.

Because, at present, there is a definite lack of interesting software, there will have to be a revolution — a loosening of the corporate purse strings — to help stimulate the kind of experimentation necessary to create new techniques and product. One way to come up with effective and unique visual music programming is to finance creative and experimental projects.

There has been a tremendous growth in the video and film industry, with many post-production facilities being built and used by a seemingly ever increasing amount of producers. Record companies are acutely aware of the importance of

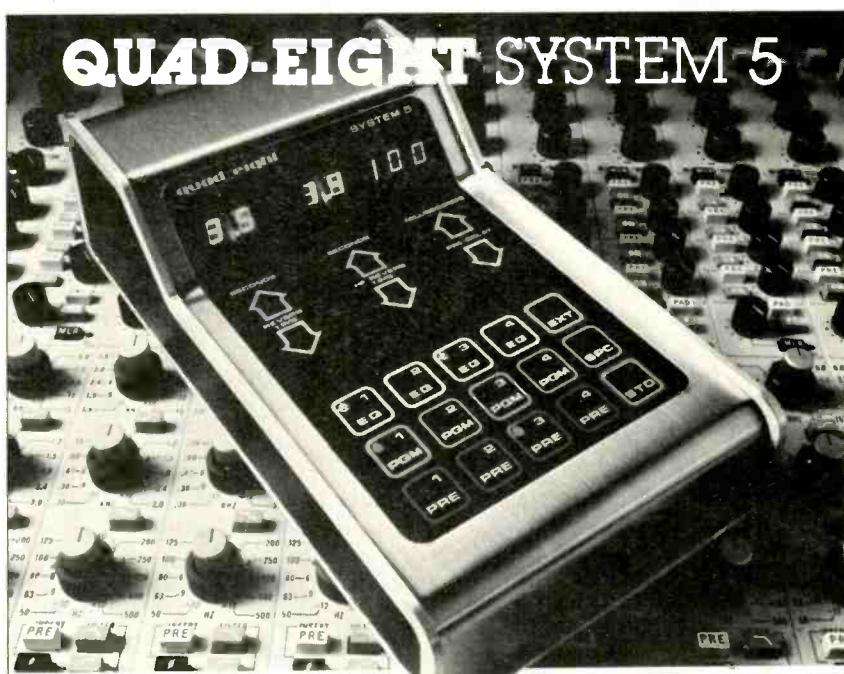
having an effective promotional piece for their artists, and have been increasing the breadth of their video/film promotion departments. The de-regulation of television will open up many new channels for low-power stations specializing in "narrowcasting," and which may provide some further outlets for visual music.

There will be an emergence of a new kind of artist. It will involve an individual or, more likely, a team of diversely talented people working together to coordinate many different mediums. The future will truly be open to those who are willing to educate themselves, and interface with others who are "on the path." Today, many recording studios and

personnel are wisely aligning themselves with video and film production companies. It's important to initiate the kind of dialogue that brings technical and artistic people together. These people and their creative ideas are far more important than all the hardware systems combined.

The Visual Music Alliance is a concept and an organization that has developed out of a need. It is a germinating ground for new ideas and techniques. The diversity of its membership is the foundation that will generate the kind of innovation necessary to develop and support a new art form. The challenge inherent in the VMA is to continue to expand the possibilities.

□□□



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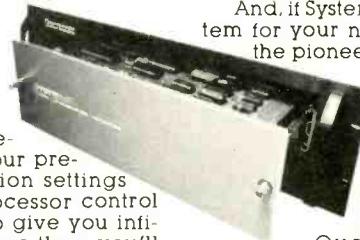
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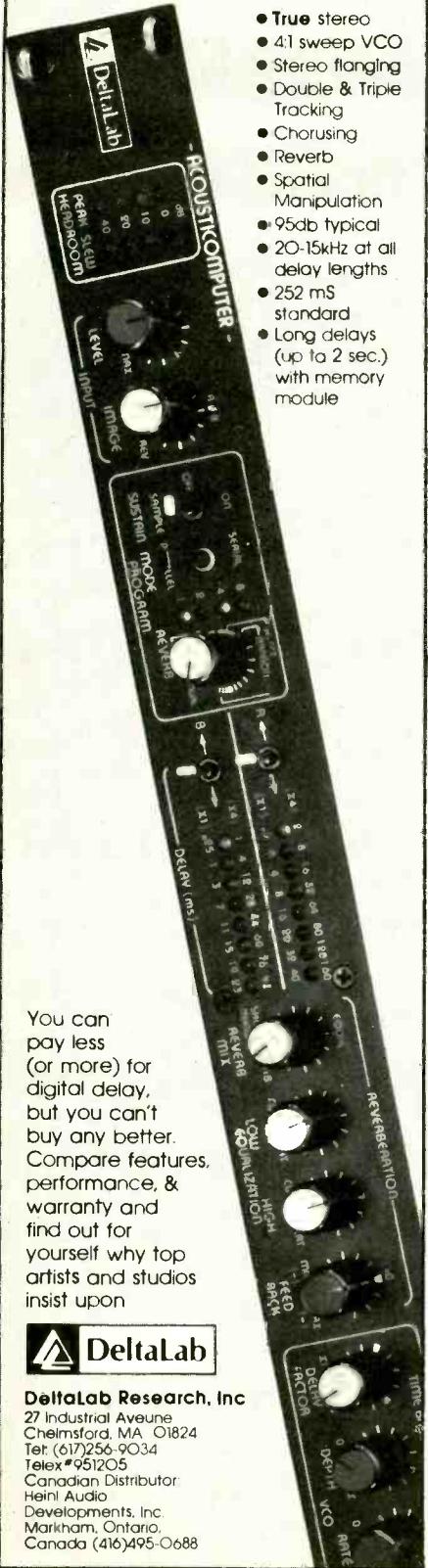


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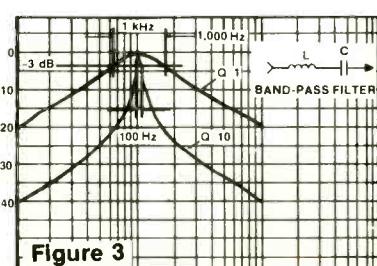
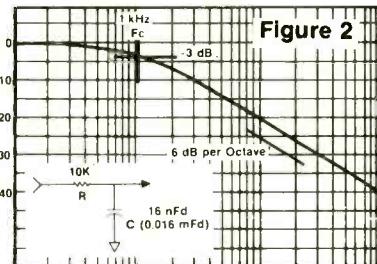
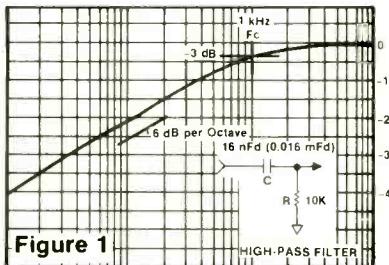
Electronics Troubleshooting Maintenance

Filters-

— theory and practice . . .
— two filter construction projects
 . . . a de-popper,
 . . . a hum-filter.

by Ethan Winer

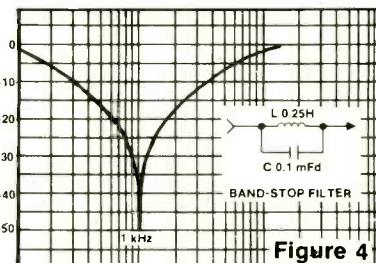
In the June issue of *R-e/p*, capacitors were considered as being frequency-dependant resistors. This capacitive reactance is at the heart of all active filters being used for audio today, including the ones shown in Figures 5 and 6. Rather than get into a nuts-and-bolts type description at this time though, let's instead review some filter basics using terms a recording engineer



can readily understand.

One type is the high-pass filter shown schematically in Figure 1, along with the resultant frequency response. At some specified frequency, the capacitor's impedance will be equal to that of the resistor, and it is here that the response will be 3 dB down. If this frequency is 1 kHz, then the filter will be referred to as a "1 kHz high-pass." Really, what could be easier? As the applied frequency is lowered, the output level continues to drop at a rate of 6 dB per octave, or 20 dB per decade. Obviously, filters can be built with sharper cutoffs, but to do this you would need to cascade several stages.

In the "Popping P" filter, two stages are used, creating a 12 dB per octave rolloff. The op-amp buffers are needed to provide isolation between stages; otherwise the impedances would combine, and the expected response would not be achieved. The low-pass filter, shown in Figure 2, is constructed

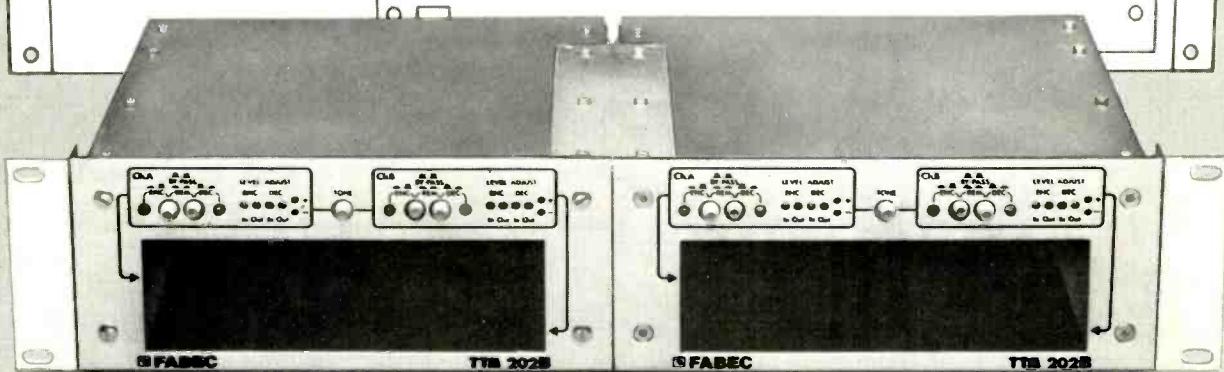


by transposing the resistor and capacitor. Everything previously stated still applies, only now the output level goes down as the input frequency is raised.

A third kind of filter is the band-pass filter shown in Figure 3. The classic

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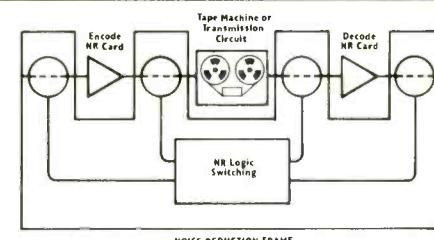
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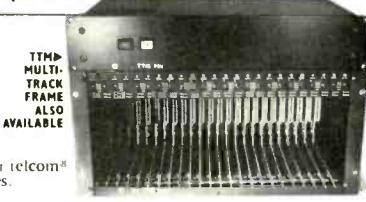
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can switch or upgrade your noise reduction system anytime you wish—perhaps to Telefunken's fabulous telcom® system.

Other advantages? See the box on this page. And also check the diagram—a good reminder that your signal is actually processed four different times within the frame.

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Filters-

- theory and practice . . .
- two filter construction projects
 - ... a de-popper,
 - ... a hum-filter.

implementation is with a capacitor and an inductor, but all we care about at this point is what the circuit actually does. In this case, a range of frequencies is allowed to pass through the filter, and these are centered around — you guessed it — the center frequency. This point of minimum attenuation occurs at a frequency for which the inductor's impedance equals that of the capacitor, and can be achieved with a variety of values. That is, if you halve the capacitance but then double the inductance, the frequency will remain the same, even though the ratio has been altered.

On a parametric equalizer, there is a control for varying bandwidth, or how far from the center the boost and cut action extends. When boosting highs on a "broad" setting, the effect is smooth and uncolored. When using the narrow settings, however, the sound is very resonant, like a wah-wah or synthesizer filter. Although the bandwidth in this

simple circuit can be altered by varying the ratio of the inductor to the capacitor, a much better approach involves the use of an op-amp that can provide *positive* feedback. Where negative feedback is used in circuits to lower distortion and flatten response, positive feedback will reinforce the band-pass action, giving the capability for extremely narrow bandwidths. In the active filters used here, of course, only capacitors are employed — in a combination high-pass/low-pass configuration. Studio talk would refer to bandwidth in terms of octaves or parts of an octave. Design engineers, on the other hand, call this filter quality "Q."

A typical octave graphic equalizer would have a Q of 1 or so, on each of the control bands. Notch filters used for controlling hum (you know, the old way) might need a Q as high as 100, if adjacent frequencies are to be left untouched. The filters described in this article to isolate different hum frequencies have a Q of 10 or, more specifically, the center frequency is 10 times the number of Hz attenuated by an amount less than 3 dB. Which means that for a 1 kHz filter, there will be 100 cycles encompassed between the -3 dB points, as shown in the illustration. For a Q of 50, only 20 Hz would be contained within these bounds.

It is important to point out that in a

simple active band-pass filter, even though the bandwidth may be very narrow at the tuning point, eventually the response falls off at the usual 6 dB per octave rate as the feedback contributes less and less. A Q of 10 is sufficient for our purposes to effectively isolate each frequency, and yet not so severe as to require the use of 1% tolerance components.

Similar to the band-pass is the band-stop, which is probably best known as a notch filter. Again, although a coil and capacitor can be used — as shown in Figure 4 — most modern versions use an active design with capacitors and resistors only. Naturally, the terms used for the band-pass filter will still apply in this case, and feedback continues to take the credit for high Q.

At some point in the future, we will look at active filters in greater depth, and provide "cookbook" style formulas so you can design these circuits to suit your own needs.

In the meanwhile, the following pair of books may be of interest for the reader wanting to find out more about filter design:

1. *Audio IC Op-Amp applications*, by W.G. Jung. Howard W. Sams & Co., 1978.

2. *IC Op-Amp Cookbook*, by W.G. Jung. Howard W. Sams & Co., 1977.

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— The Construction Projects —

It was strictly amateur night as I rewound the tape for the twentieth time, and the lead singer tried "just one more take." Well, he finally did get a good one — that is, on tune at least most of the time — but the only problem was this big, fat popping "P," right in the middle of a verse. Out of time and out of money (not to mention out of talent), the group had little choice but to proceed to the mix, popping "P" and all.

I have always had it in the back of my mind to someday make the removal of popping "P's" a pet project. (Sorry.) After all, there are de-essers for controlling excess sibilance; why not a gadget that could detect and filter these problem P's? A limiter is unacceptable — you just get an enormous drop-out — and while a low-cut filter can help in some cases, you'd have to make it pretty darn thin sounding to eliminate a really bad pop. Popping P's have been with us for as long as there have been microphones, and I've heard from nobody that has come up with a satisfactory solution to the problem: removing them from a track *after* the fact.

The Solution

So I'm thinking about all of this while I'm starting the mixdown, when an idea suddenly came to me from out of the blue. Why not try shelving the lows, *but only for the duration of the "pop."* So, when I got to the offending place in the verse, I slammed the EQ knob to -15, then quickly brought it back to flat. The popping disappeared completely, and all of those present at the remix session agreed that the EQ was inaudible; just so long as I brought the knob back fast enough. At last, I had found an effective method; now it simply remained to be automated.

Another difficult problem exists when trying to filter out power-line hum, especially in the presence of music. Often there will be more than one offending frequency present, requiring several notch filters to be cascaded, and if a musical note happens to be near one of those frequencies, then the note will be removed as well. Let's face it, it's impossible to filter out 60 Hz hum without affecting a bass note at exactly the same frequency — isn't it? Well, the answer is *no*, it's not. And, what's more, the "filter" we're about to look at is so slick, you don't even have to pass the signal through it, thereby eliminating any chance of degrading the audio quality.

But before you start thinking I'm crazy, take a moment to consider how a conventional notch filter works. The audio signal is sent through a phase-shift circuit that provides 180° of shift at some specified frequency, relative to the

input. When the input and output of this circuit are combined, a null in the response will be created at that frequency. The phase-shifted signal is used to oppose the original input, and if the two are of equal magnitude, complete cancellation will result.

Now, we've all seen those brain teasers where because of preconditioned thinking, we will overlook an otherwise obvious solution to a problem. In the case of cancelling hum, who says the opposing frequency must be derived from the original signal? If, instead, we use a sample of the actual power line as the hum-bucking medium, we can exactly balance any hum in the

program while allowing the music to remain untouched. The only possible drawback to this approach is that it must be done in real time, so that the hum *source* and the hum *cure* will be synchronized. This means, of course, that it won't work on tracks already recorded, but then, who cares? I mean, why save for later what could be fixed now — especially when it's so easy to do. Also, I suspect that the biggest need for this device would be in live sound reinforcement anyway.

Anti-Popping Filter

Before we get to the specifics, however, let's return to the Popping P

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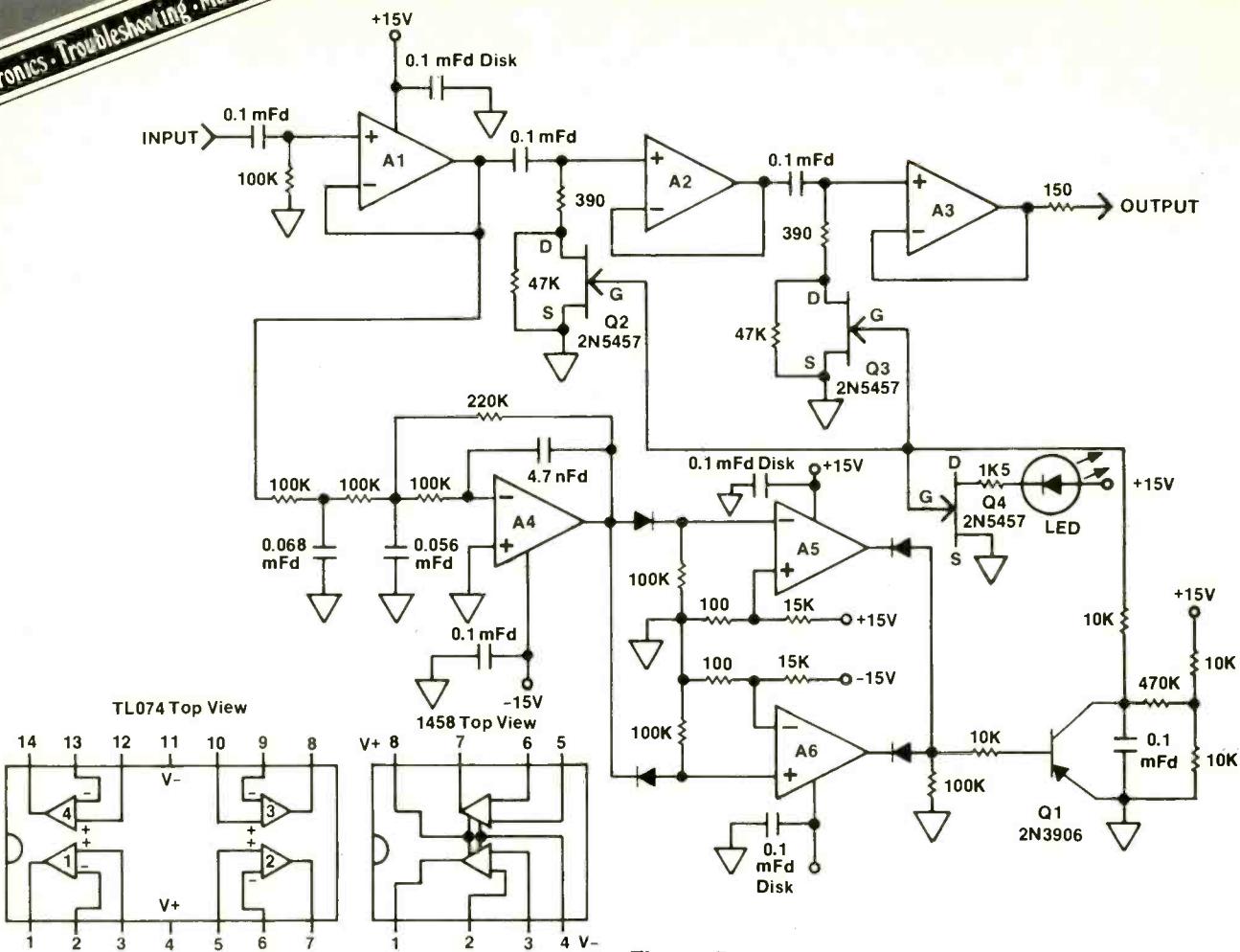


Figure 5

Project, whose schematic is shown in Figure 5. As stated earlier, the heart of this device is a low-cut filter, only this one can be activated automatically, on command from the pop detector. Identifying the plosive is not too difficult; all we need to look for is significant low-frequency energy. When

a "pop" is detected, the filter is instantly engaged. Then the low-end response fades back up to normal over a period of a few tenths of a second or so. This single-timed release approach eliminates the distortion that is usually associated with a combination of fast release times and low-frequency

signals. Needless to say, it is essential that the response return to normal immediately following the offending "P," if the filtering is to remain unobtrusive.

Referring to the schematic shown in Figure 5, amplifier A1 is used at unity gain solely to isolate the filter and

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detector inputs from the outside world. This is important since most active filters like to be fed from a very low source impedance. Were the input buffer not to be included, performance of the filters could vary, depending on the preceding equipment. The actual low-cut filtering is accomplished by the 0.1 mFd capacitors in conjunction with the 390 ohm resistors. Amplifiers A2 and A3 are also used for isolation but, in this case, when coming out of the filters.

Automatic operation is realized by the 2N5457 FET's voltage-controlled resistance. When a negative voltage is applied to the gate, the resistance between source and drain is high. But, when this voltage is removed, the FET's internal resistance drops dramatically. This then causes the 390 ohm resistors to become essentially grounded,

creating a severe reduction in low-end response. A third FET, Q4, is optional, and drives an LED to indicate activation of the de-pop process.

IC op-amp A4 and its associated components comprise a 50 Hz low-pass filter with an 18 dB per octave cutoff slope. This steep filtering action is required to ensure that only the popping "P's" will trigger the unit. The filter output is then sent to a pair of level detectors — A5 and A6 — one to sense each polarity. If the signal below 50 Hz ever reaches 0.7 V in either direction, one of these comparators will switch, energizing Q1.

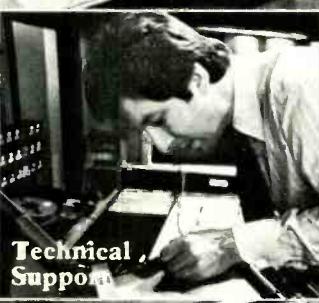
It might be worth mentioning that although A5 and A6 are conventional op-amps, they are operated without any negative feedback, yielding an extremely high gain. Therefore the

output doesn't vary, as in the case of a normal linear amp: it is either full positive or full negative. Hence, an input voltage can be compared to a reference, with even the tiniest difference in level being amplified essentially to infinity. As a general rule of thumb when dealing with comparators, if the plus input is more positive than the negative, the output will be full positive. And when the negative input is more positive, the output will be negative.

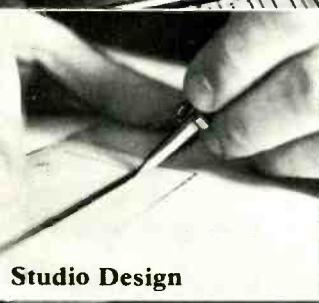
The FET gates and the 0.1 mFd release capacitor are normally held at 7.5 V by the 10 kohm voltage-divider network. When either comparator switches, Q1 is activated, thereby instantly discharging the capacitor, and the low-cut filtering begins. The moment the "pop" goes away, Q1 is



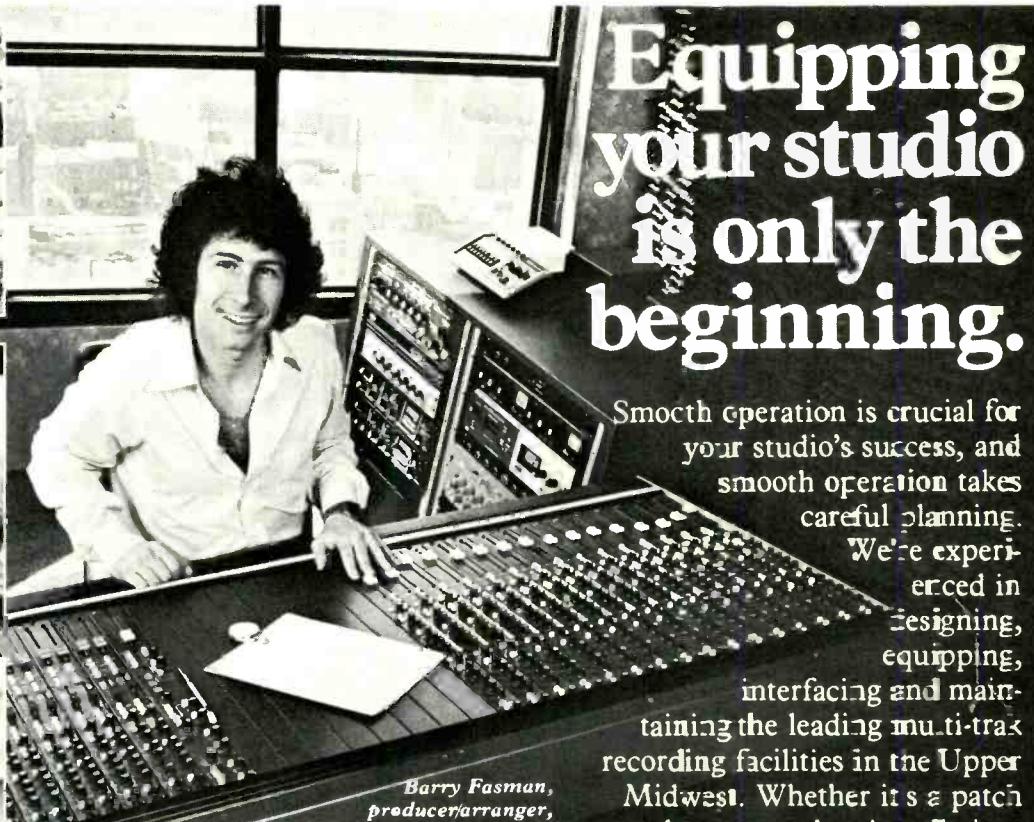
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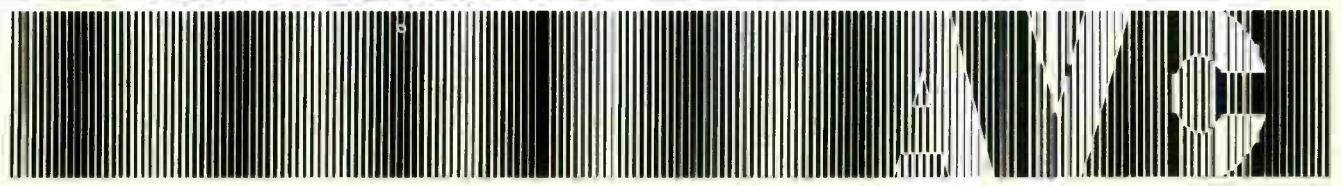
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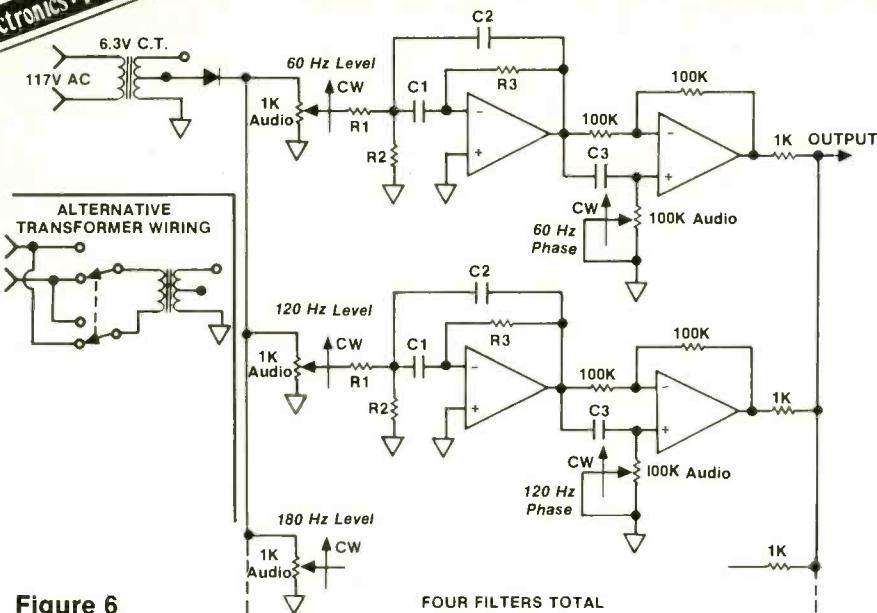


Figure 6

turned off, which allows the capacitor to recharge, thus restoring normal response. It may be necessary to experiment with the value of the 470 kohm release resistor if you plan to use a different type of FET. Also, a P-channel device will require connecting the 10 kohm network to V+ instead of V-.

Op-amps A1 through A4 should be

high performance types, such as the TL074 quad. A 1458 dual package will be sufficient for the comparators, and nearly any PNP transistor will work as Q1. You might as well use good quality Mylar capacitors throughout, since the slight increase in price is more than offset by the improved stability they offer. All diodes are small signal types,

such as the 1N914 or 1N4148, except of course for the LED. And while it may not always be shown, every IC should have a 0.1 mFd disk capacitor connected between ground and each of its power supply pins. These caps must be located as close to the op-amps as possible.

Hum Filter

Now let's return to the hum filter circuit, the schematic of which is shown in Figure 6. When I first set out to do this project, I analyzed the residual hum that was present in various pieces of outboard equipment. By sweeping the frequency on a parametric equalizer, it was easy to audibly determine the major hum components. Since most devices use full-wave rectification in their power supplies, it is not surprising that 120 Hz was the most predominant. Also present, of course, were 60 Hz, 180 Hz and 300 Hz — the fundamental, third and fifth harmonics. The higher I swept the equalizer, the more the harmonics diminished, indicating that four stages would probably be sufficient.

Since the audio signal does not pass through this filter, some other method must be employed to create the hum-cancelling frequencies. In this case, a 6.3 V center-tapped transformer is used to furnish the 60 Hz signal, though we

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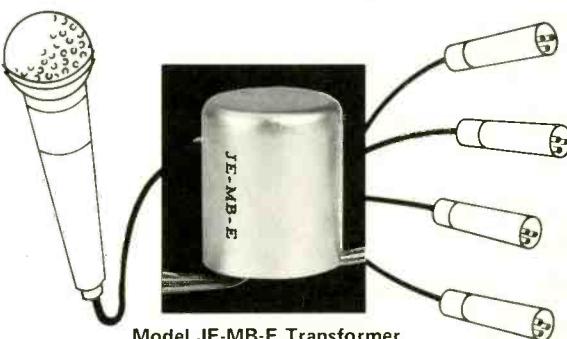
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TABLE 1: Component Values for 60 Hz Hum Filter

FILTER Hz	R1	R2	R3	C1&C2	C3
60	270K	1K2	560K	0.1μF	0.27μF
120	150K	680Ω	270K	0.1μF	0.15μF
180	82K	430Ω	180K	0.1μF	0.1μF
300	56K	270Ω	100K	0.1μF	0.068μF

All filter components should be 5% tolerance, although the value of phase shift capacitor C3 is less critical. In this case, it would be satisfactory to use the next larger size.

still need some way to generate all of those harmonics. The necessary distortion is provided here by the 1N4001 diode. Four separate high-Q band-pass filters are then used to isolate each of the desired frequencies, component values for which are listed in Table 1. A variable phase shift circuit is also provided to ensure maximum rejection capability of the hum. (This is particularly important when equalizers or other phase affecting devices are in the audio path.)

To save circuitry, only one stage, or 0-180 degrees, is used. Sometimes it may be necessary, therefore, to reverse the plug in the wall outlet. Or, better yet, you could use a DPDT power switch with a center-off position, wired as shown in the diagram inset. This scheme is commonly used for switching the polarity on guitar amps and bass amps. I have also included the component values required for use on

systems with 50 Hz power, which are shown in Table 2. The filtered and phase shifted hum frequencies are finally combined, and the composite signal sent to the console to be mixed with the program material.

Once the unit is built and working, adjustment of the controls for hum elimination will be relatively straightforward, although it probably wouldn't hurt to go over the procedure here. First, turn all four level controls and four phase controls to full counter-clockwise, or minimum setting. Then, just to familiarize yourself with the sound of each hum element that you will be nulling out, advance the level controls one by one noting the difference, and then return them all to off. Since 120 Hz will probably be the worst offender, start by increasing the level for that frequency very slowly, until the 120 Hz hum component goes down in level, leaving the knob at the optimum point.

The 120 Hz phase control should also be adjusted for minimum hum at that frequency, then go back to the level pot and finish the job. It should be possible to completely eliminate all hum at this frequency in only two or three steps. If the hum only goes up in level no matter how you set the controls, reverse the polarity switch or the wall plug, and repeat the above steps. Next, adjust the 60 Hz frequency, followed by 180 and 300 Hz until you are satisfied that these frequencies have been completely eliminated from the program.

Once you have used this device a few times, it should be easy to complete the entire process in under a minute or so. Also, the unit does put out a healthy signal, so it should be mixed in with the program at a very low volume. Otherwise, you'll find yourself working the level pots near their minimum range, making adjustment more difficult than it should be. □□□

TABLE 2: Component Values for 50 Hz Hum Filter

FILTER Hz	R1	R2	R3	C1&C2	C3
50	330K	1K6	620K	0.1μF	0.33μF
100	160K	820Ω	300K	0.1μF	0.18μF
150	91K	560Ω	200K	0.1μF	0.12μF
250	68K	330Ω	120K	0.1μF	0.1μF

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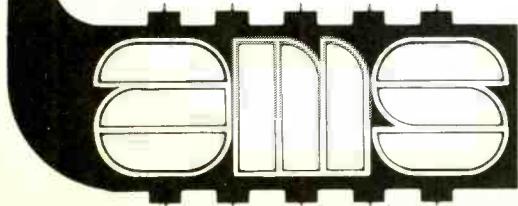
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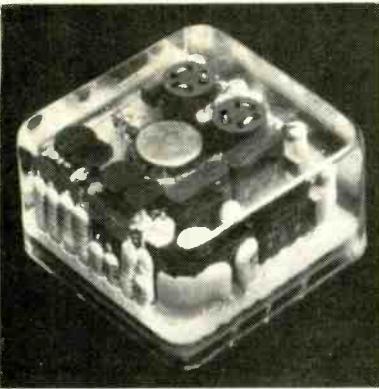
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Film Sound Editing Techniques

by
Steve Barnett

however, after the film has been shot and roughly edited.

"Once the picture is filmed," explains Richard Portman, who mixed *The Deerhunter*, *Nashville*, and *Coal Miner's Daughter*, "it's turned over to the picture editor, who then cuts the picture and dialogue track for story and dramatic content. The production dialogue track was recorded on the set during filming, probably on $\frac{1}{4}$ -inch tape, and then transferred to 35 mm mag-stripe [magnetic sound stock] for editing purposes."



Portman

During the editing process, the picture is divided into units or "reels," of approximately 10 minutes in length, for both ease of handling and identification of sections of the film during cutting. A two-hour movie will have 12 reels of picture and 12 corresponding reels of dialogue track. Reels are numbered in story order.

"Generally," Portman continues, "after the picture has been rough cut, the company will hire a sound editor, and he will be called in to screen the film with the editor and the director."

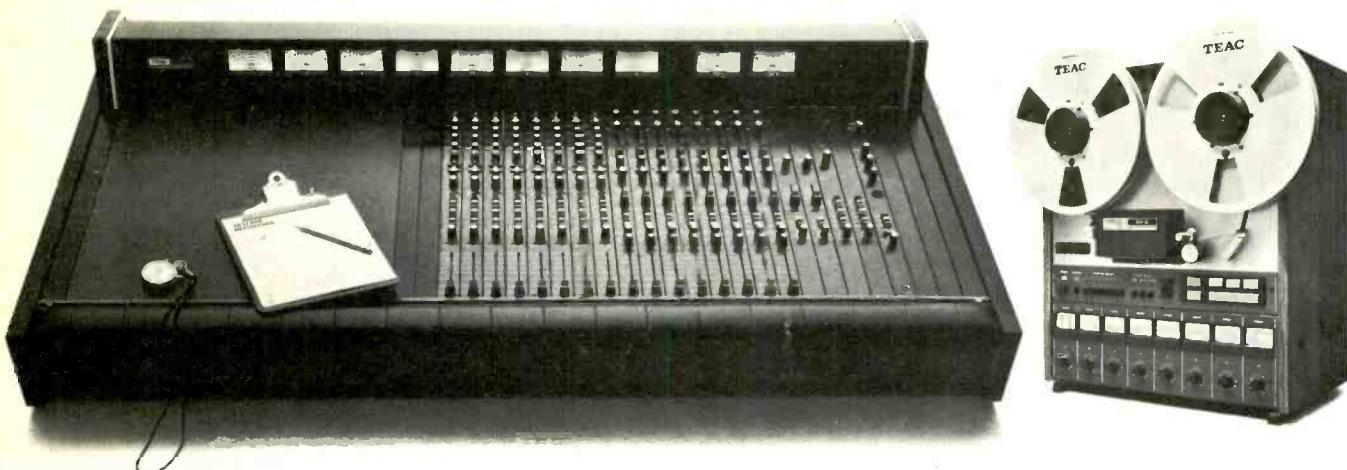
"We'll screen the film with the powers that be," adds Richard Anderson, "and make notes, discuss with them any problems there may be, and what they want in the way of sound."

"We'll also set our budget and schedule," Flick says.

The editing team of Anderson and Flick, both graduates of University of

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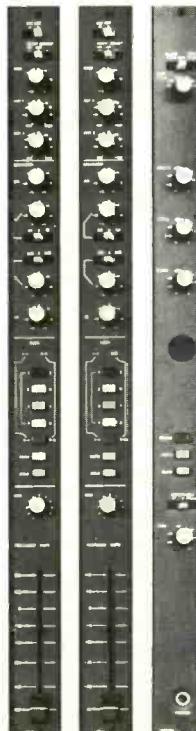
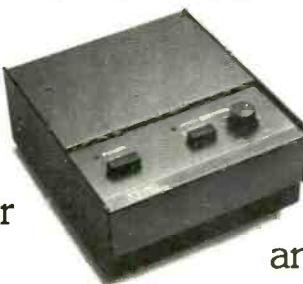
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Southern California, have cut the audio portions of such films as *Star Trek — The Motion Picture*, *The Final Countdown*, *The Hand*, and *Raiders of the Lost Ark*.

"They'll tell us things like: 'At this point the actor hears an off-screen car crash,'" Anderson continues. "Where all we see on the screen is the actor looking nervous and agitated and leaving the room. We'll Flick jot that down, along with other specific things they want to emphasize; as well

as more general things, like the mood they want to create with the sound in different scenes, and the picture as a whole.' "Also," says Portman, "the editor will tell you what has to be fixed on the dialogue track: lines to be extended, and what have you."

With regard to the dialogue, Anderson says, "we'll also discuss which lines have to be looped[replaced]. Some are done for technical reasons, like airplane noises in the background, or they might say: 'We really hate this guy's voice, or performance, and we want to completely re-do it.'

"Often after the initial screening we'll go over the film on a Movieola or a flatbed editing machine with the director, or whoever, and discuss inch by inch what the picture needs."

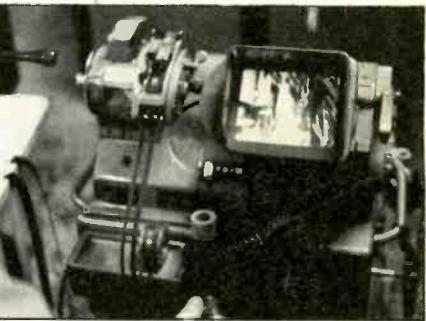


Figure 1: The ubiquitous Movieola . . .

The Movieola (Figure 1) is an upright editing machine that allows the film to be viewed in sync with the separate soundtrack. It provides easy access to both the picture and sound materials, and permits the editor to manipulate their relationship by hand or with the motors. The actual physical cutting of the 35 mm material is done on a splicer fitted on an adjoining bench or extension of the Movieola. The flatbed editing machine is the modern counterpart of the upright. It features a table-like surface on which the reels of picture and sound film are held on plates, rather than unwound from the bench or out of a cloth bin, as in the case of the upright machine.

"Then they all go their separate ways, so to speak," continues Portman. "The

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sound editor opens up his shop, and when the picture editor has 'locked' a reel — when he says 'This is our picture' — that particular film is duped into black and white with no splices." The dupe is then turned over to the sound editors, along with the originally-edited production soundtrack or, in some cases, a one-to-one dupe of that sound track.

"He or she then breaks down that reel; that is, they go through and make a list of what needs to be done to the dialogue, and then what sound effects are needed." In addition the track is usually cued for Foley, which is the replacement or addition of actor's movement sounds, such as footsteps or clothes rustling.

At this stage, Flick and Anderson, whose independent company Thundertracks Ltd. is hired on a picture by picture basis, will commence their work. Sound for many motion pictures, however, is handled by staff cutters in a studio shop, or post-production house. In these instances, a sound supervisor will act as liaison between the film makers and the editors. He or she will also coordinate the effort, assigning individual reels and tasks to different members of the staff, and keeping the approach uniform throughout.

Elodie Keene is currently a free-lance editor, but recently served as a sound editor at the post-production house of

Neiman-Tillar Associates, where the sound was handled for *Roots*, *Centennial*, *Days of Heaven*, and *The National Geographic Specials*, among others. Keene is a UCLA graduate, and was post-production supervisor for the syndicated TV series *This is the Life*, before joining Neiman-Tillar.

She explains that the methods of assignment vary from shop to shop. Some have several editors working concurrently on the different areas of a film's sound, with one handling all the picture's dialogue, while another cuts the sound effects, and still another doing all the Foley editing. At Neiman-Tillar, each editor usually cuts all the sound for an assigned reel. N-T Associates has been using computer-digital technology for sound effects, but dialogue is handled in the usual fashion. It is the dialogue that's the sound editor's first concern.



Keene

The first step in this process is splitting off the one dialogue track received from the picture editor, into two or more different tracks to facilitate the sound editing and mixing processes. One of the reasons for splitting off the tracks is to extend lines of dialogue cut short in the course of editing the picture. A case in point would be a scene of an argument where two close-ups are intercut with the master shot of the scene. Putting the dialogue of the three separate shots on to three separate soundtracks would allow for overlapping the voices slightly for dramatic effect, and — should one be distinctly louder or softer than the other — to provide the mixer with the ability to blend the voices into one level. Another reason would be if the editor wished to carry an actor's lines from one scene over the picture and sound of the next, perhaps to act as a voice-over narration of sorts, or possibly to ease a transition of locale in the story.

This splitting may require re-transferring or "re-printing" the dialogue from certain scenes from their original 1/4-inch format, to the 35 mm magnetic stripe used in the editing process.

When the re-prints arrive, they are put in sync with the original 35 millimeter track by matching modulation on a sync block or synchronizer

Dialogue Processing

"The dialogue track," says Keene, "has to be worked on and smoothed out, with the basic objective being to create a dialogue track in which nobody notices anything: changes in background, or clunks, or whistles, or anything that might distract the audience."

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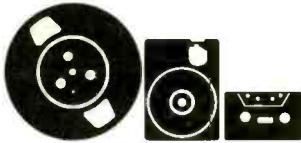
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(Figure 2). The two tracks are adjusted in relationship to one another until, upon playback, the two tracks sound as one. The re-print then replaces the original in the dialogue reels. When the budget allows, some sound editors will call for reprints of all the sound turned over by the picture editor on his dialogue track.

"On large films," explains Stephen Flick, "where the picture is cut and recut again, the 35 mm dialogue master suffers degradation from, among other things, losing oxides from the physical scraping of being played over and over again."

"There's a terrific high-end loss," adds Richard Anderson, "and magnetization is something that people don't take into account. A non-demagnetized head on a dubbing machine will put

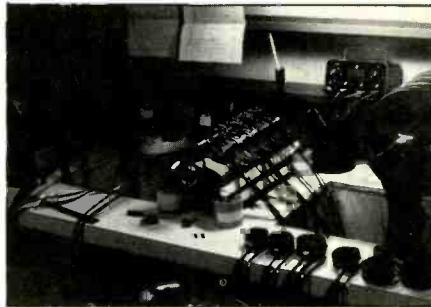


Figure 2: A five-gang sync block and "squawk box" or sound monitoring unit on an English style bench, being used by a sound editor during post-production stages of "Raiders of the Lost Ark." down a rumbling noise onto the soundtrack."

"They run these tracks on pieces of equipment that you wouldn't believe," agrees Richard Portman. "They haven't been checked or degaussed or maintained in years, and picture editors will cut in their homes, or on boats, or in houses on top of hills using splicers that haven't been demagnetized."

"We cut one picture in a high-rise building," continues Anderson, "and due to the structure, and the type of carpet, and whatever else, we had to demagnetize our splicers everyday. Otherwise they would build up a 'pop' that would be audible on the soundtrack at every cut. Well, the picture editor didn't think about this, and every time he made a splice, it would pop on the track, so we had to re-order all the dialogue."

"High-rise buildings don't have the anti-static matting under their carpet," Flick explains, "but generally film editing is done in very old Hollywood buildings on the first or second floor, and this is not as much of a problem."

"We feel, however," adds Anderson, "that it's really worth the effort on a Class 'A' film to take the time and cost to re-print the soundtrack from the original 1/4-inch tape."

"It really reflects the producer's attitude towards the soundtrack," Flick

Picture

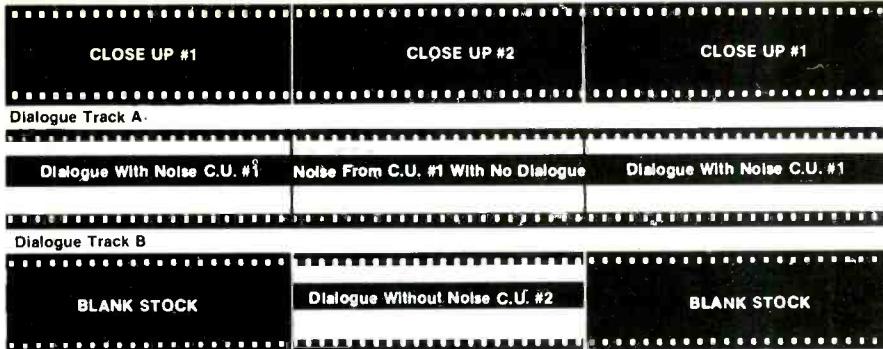


Figure 3: The Backfill Technique on two dialogue tracks.

The two areas of magnetic material on the pair of dialogue tracks comprise a lower recording track, and an upper "balance stripe" to ensure that the 35 mm mag stock packs properly on to the film reels.

offers. "It's an expensive proposition, which is why a blanket re-ordering is not usually done on TV programs."

Re-prints, as well as one-to-one dupes of the edited 35 millimeter production track, can also provide matching ambience from the scenes themselves, for use in filling gaps and plugging holes in the process of cleaning up the dialogue tracks. It is critical that these re-prints be made at the same transfer level as the originals, so that the background levels match.

As the work continues, Keene explains, "you're also looking for extraneous noises, bumps of chairs or the creaking of dolly tracks — anything that's not supposed to be there. The

director's voice giving cues is a very common problem that has to be dealt with in this regard."

"Those have to be taken out," Portman continues, "so I'll make a little note that at 47 feet, remove this cue. Now I'll look back in the code book for the scene number, and I'll get a re-print of the same shot. Then I'll run it through my machine until I find a piece of track from that shot in which no one is speaking, cut the director's cue from the original dialogue track, and then cut in this new piece of mag. If it's been duped properly, this will have the same background, the same ambience, and the same tonal structure as the original. So now I've got the track without the

director's cue and it's all filled through."

Unwanted sounds are eliminated throughout the entire picture by the sound editors in pretty much this fashion. In some cases, the picture editor may have drawn out a piece of dialogue by cutting leader in between lines, or even words. These spacers are filled in using the same technique, making the manipulation invisible.

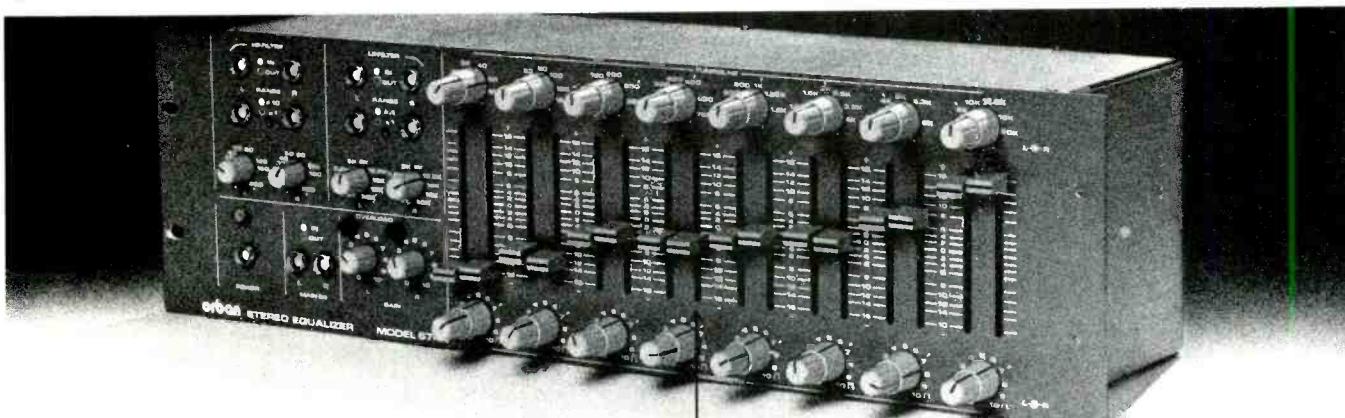
Separation of the dialogue tracks continues as required by the situation, and depending upon the time, budget, and special sound needs. The latter are determined by carefully listening to the production tracks.

"You'd think that what you want to listen to is the quality of the voice," says Keene, "but that doesn't really matter. Oddly enough, what it amounts to is listening to the backgrounds that draw your ear."

"As a rule," offers Anderson, "you split a track when there is a change, or you want to create a change. If you hear a change because of the background — when the track is supposed to be smooth — you split it."

"In that case," says Flick, "you want the track to sound like one continuous take even though the shots were filmed and recorded at different times, and from different camera and microphone angles."

"Or if you want to impose a change that's not there," Anderson adds, "such



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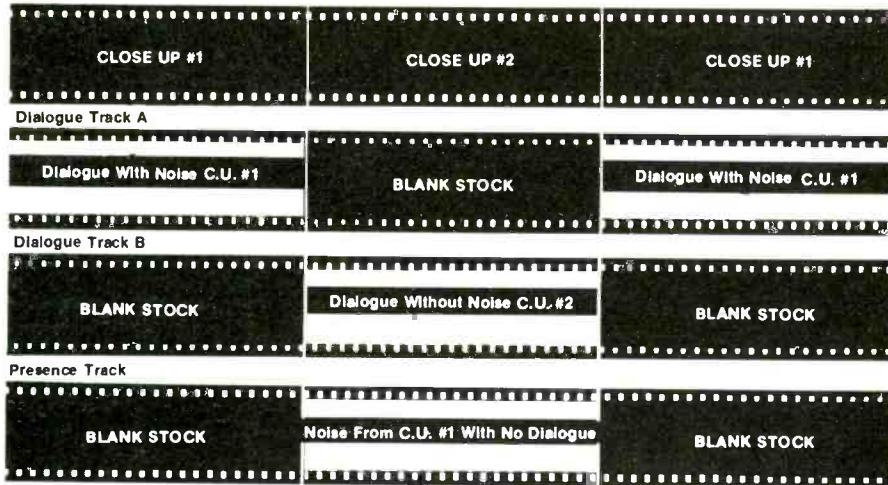


Figure 4: Backfill Technique using a third track.

as a scene in which an actor is speaking into a phone, and we cut to the other end on the line. To allow the mixer to alter the quality of the voice, you split the track again."

Background Noise Problems

Making the soundtrack unobtrusive, however, does not necessarily mean making the sound better from a technical audio point of view. For a background noise to detract from a scene, it must call attention to itself.

"If you have a straight cut from scene to scene [with different locales]," says Keene, "obviously you expect the

background to jump. But if you have a straight dialogue scene, and in one shot, because of a bad mike angle, you have generator or freeway noise, and in the other shot it's quiet, you'll end up with an in-and-out effect everytime a cut is made."

This in-and-out effect can call attention to the noise and distract the audience from the story, pulling them out of the suspension of disbelief necessary for the dramatic success of the picture.

"What you have to do in this case," says Portman, "is continue through the high side. You have to go back to the

daily tracks (or re-prints) and find that sound without anybody talking in it, and continue that through the entire scene to give it a continuous flow."

The dialogue track without the background noise is cut, for instance, on to Track A, and the dialogue track with the obtrusive background noise is cut on to Track B (Figure 3). To continue the sound all the way through the scene, the noise is placed or backfilled in between the dialogue on Track B, so that it doesn't just disappear when Track A is playing.

The background fill might also be placed on a third track for convenience (Figure 4). In this case, the sound on Track C is put directly opposite the dialogue on Track A, taking care not to double it up on top of the dialogue and noise on Track B. In many cases, in order to get enough of the noise, a loop of the sound must be made, from which is run off the amount of mag-stripe necessary to make the fill.

"In *The Hand*," Anderson recalls, "there was a scene in a mountain cabin, most of which was shot on an interior set on a sound stage. At one point, the guy opens the door, and in the middle of all these scenes shot on the stage, we cut to an exterior shot of him looking out the door as a girl pulls up. So right on the cut, all these birds and background noises come in. Then, she walks into the cabin, and we cut back to the quiet, interior set again."

"We had to back-fill the entire cabin scene," explains Flick, "with real production sound culled from the exterior scene's soundtrack."

If the background sounds have a noticeable pattern, and the dialogue cannot be replaced, a different approach must be taken, since a loop would only repeat the pattern over and over again — much to the distraction of the audience. Beach scenes are a good example of this type of problem. A cut made by the picture editor at the end of a line may bring to a sudden halt a building wave about to crash on the beach. This can become annoying if repeated often enough, or even once.

"Now you don't want to have to run a companion track with the scene from start to finish," explains Portman, "because of the wearing effect caused by having to hold the surf at a level loud enough to mask the irregularities in the dialogue tracks. Plus, the surf mixed in with the dialogue, coupled with the companion track, can make it so noisy as to drive you crazy."

"On this one picture, free-lance sound editor Kay Rose listened to the track to where the surf built up, and then cut off on the picture editor's cut. She then took a backward recording of the surf, recorded at the same level, and cut a descending wave sound to continue the swell so it didn't just disappear. Then that backward track would be faded out, but the transition was smoothed."

The problem of changing background sound levels on a cut may not even be

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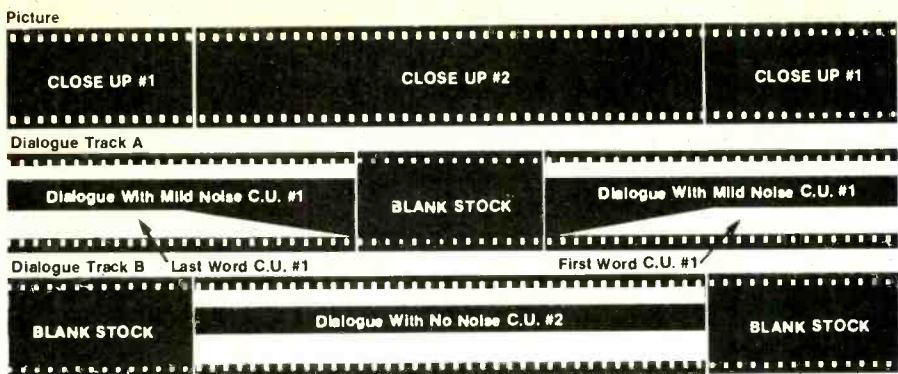


Figure 5: Extension with a physical wipe.

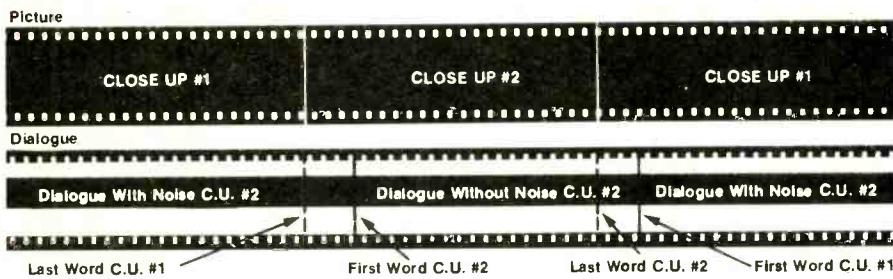


Figure 6: Backfill with all sound recorded on a single track.

that of a specific noise, but rather a subtle change of ambience. The noticeable change is all that has to be eliminated so, in these cases, extensions are used, rather than back-fill for the entire scene. Quite often the dialogue

track will be cut into master shots, two-shots, and close-ups, and then the presence extended on either side of the dialogue on each track to smooth it for blending in the mix. This process will allow the mixer to sneak in and out of

the varying ambiances from shot to shot, minimizing the shifts in presence.

To facilitate the technique, the sound editor will often make a physical wipe on the mag-stripe to fade out the outgoing presence, while the other is brought in in a similar fashion. Using a razor blade, the editor will reduce the width of the magnetic emulsion from about a quarter of an inch to nothing (Figure 5). This would be in an angle covering about two feet of film. In some cases, such as a television show under tight schedules and with limited budgets, splitting tracks may become impractical.

In these instances, as Keene puts it, "you have to try and make an imperfect soundtrack perfect on one track, which is very difficult. You extend the louder backgrounds from one actor's dialogue over the picture editors cut to the next shot, and right up to the very beginning of the first word of the next actor's lines. Hopefully, as soon as the audience hears the word, they will cease to hear the background, and the change won't be noticeable."

This procedure is shown in Figure 6.

Automatic Dialogue Replacement

Another way around the problem of distracting backgrounds is by means of replacing the dialogue through looping, or Automatic Dialogue Replacement (A.D.R.).

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production dialogue on 35 mm mag-stock is spliced into an actual loop, with an equal amount of bland fill stock. When this is played back, the actor listens to his original words, and during the gap attempts to duplicate them in both feeling and pace. The new dialogue is laid down on a separate 35 mm recorder, and the loop run over and over again until the director and sound editor are satisfied with the replacement dialogue.

A disadvantage to this system is that all the lines to be replaced must be spliced into individual loops, which need to be threaded one at a time on the looping stage. In addition, the new dialogue must be cut in sync into the looped dialogue reels.

With Automatic Dialogue Replacement, the full reels of picture and production dialogue are programmed to repeatedly play a set footage. While listening to the original recording through one side of his headphones, the actor watches the picture and repeats the lines in sync. The new dialogue is recorded on a three-track 35 mm recorder run in interlock with the picture and original dialogue. This allows for several alternate takes of replacement dialogue, all of which will be in sync with the picture when one line finishes, the next one is programmed to be repeated.

The film's director is usually present during the dialogue replacement process, as is the looping editor, whose job it is to make any subtle adjustments necessary to ensure that the newly recorded dialogue track fits the picture in sync. How much looping is done on a film depends on the budget, and the artistic concerns of the director. The story itself also plays a part.

"If you can see the source of the noise," says Richard Portman, "it's much easier to back-fill, since it's justified. But what do you do to alibi a freeway noise when you can't see it, and the story point of the scene makes it obvious that there's not supposed to be a freeway there?"

"Interference is a very important concern," Anderson adds. "If you're doing a western, and you keep having jets and car noise, it's obviously going to artistically affect the film."

A.D.R. and looping do present their own inherent problems, however.

"Because of the fact that you've replaced all the dialogue," explains Keene, "you've also lost all the production sound, so now you only have dead words coming at you. Everything else that makes up the sound for that scene has got to be replaced: all the footsteps, all the clothes noise, all the specific sound effects, and all the presence and ambience."

A similar situation occurs when radio mikes are used to record a scene: although the actor's voices are picked up, the track will be dry and flat because

of the lack of presence and production sound.

Foley Process

These missing sounds are replaced in what is known as the Foley process. Actors on a sound stage watch the projected film and perform in sync to the action on the screen, recreating the movement sounds lacking in the production dialogue or A.D.R. tracks. The most common of these recreated sounds are footsteps and clothing rustle, but anything from rattling rifle slings, to clanging pots and pans, to scrubbing a person's back in a bath tub, to roller skates hitting the pavement, can all be recorded in sync on the Foley stage.

"The sound effects editors look at the picture," explains Keene, "and they make up a set of cue sheets that indicate all the sounds they want the Foley person to create. That person will then return the reels to the sound effects editor and, hopefully, they're in sync. If they aren't then we make some adjustments and corrections to make them fit. Sometimes there will be as many as five or six tracks of Foley, depending on how many people are involved in the scene; how many Foley people we have working; and how many different things are going on in the scene."

"Also, a picture may be going to go into foreign distribution, so they'll have to pull out all the dialogue and, consequently, all the production sounds as well. So they pretty much cue the track for a complete Foley of everything that happens in the picture."

Any scenes shot M.O.S. (a quaint Hollywood term of Germanic derivation meaning "mit out sound") must also be cued for Foley, as well as the addition of ambience and backgrounds.

The Foley Stage is equipped with a variety of walking surfaces to simulate those found in the film. Sections of concrete, linoleum, carpet, and metal are provided, as are pits of sand, dirt, gravel, and grass and leaves. Tanks of water and mud are also used. In addition, all manner of props are brought in by the Foley actors and the sound editors, in order to recreate other sounds in the picture. These props can be — but do not necessarily have to be — the same objects seen in the picture as long as they sound the same, or so long as they "work."

The Foley actors will wear clothing that makes little or no noise of its own, and will then either put on or carry articles of clothing that will sound like those worn by their counterparts on screen. Care is also taken to match the type of shoes worn by the film's performers. During walking sequences, the Foley actors may have to rub or stroke their clothing in order to get the right sound. It is a craft that requires a great deal of skill since, by their very

nature, Foley tracks are designed to be cut into a reel of sound with little or no editorial adjustments. Such Foley tracks are as important as the ambience tracks in reels with replaced dialogue. The absence of these sounds would be immediately apparent, distracting the audience from the story.

The challenge to the editor and the re-recording mixer, then, is to blend these A.D.R. tracks and their Foley and ambience reels with the production dialogue recordings without anyone noticing. The change must be invisible, and this can often border on the impossible.

"The worst thing," says Anderson, "is when they want to loop Character A because they don't like his voice, but they don't want to loop Character B, because his voice is fine, or the actor is unavailable for dialogue replacement."

"You'll have a sequence," offers Portman, "where a portion of it will be replaced dialogue recorded on a soundstage, more often than not with a different microphone from the production recording. Then you'll have the live outside track with all this noise and presence. Now it's up to the sound editor to somehow continue the background so you'll have something to lay the looped lines against. Then it's up to the re-recording mixer to try and make the one sound match the other. Well, it's the same as taking an orchestra out and recording half of a piece in a field, bringing them into a stage and recording the rest of the music, and then trying to match them.

Another concern, according to Portman, "is that often you'll get on the A.D.R. stage and give the actor a list of lines to replace. Then he'll say, 'I don't hear anything wrong with that,' and he'll refuse to redo it. Now you come

UNDERSTANDING THE FOLEY TECHNIQUE

In Studio F, the Foley Stage at Goldwyn Sound in Hollywood, Foley person John Roesch is recreating the body movements of actor Burt Young as he removes his trousers in a scene with Ann-Margret. Rather, Roesch is recreating the sound of the body movements by rubbing and twisting a pair of pants clutched to his chest before the microphone. Sound editor Jim Bullock waves to the booth, and the picture projected before Roesch stops.

"I think," he says, "we need a little belt buckle rattle in that."

The scene is projected again, and the two examine it closely, trying to make out in the dim black and white print just what Young is doing. They decide to add the buckle. With Roesch at his original position before the mike, and Bullock standing a few feet back and off to the side, they rehearse the rattle and clothing rustle so that mixer Bob Litt can set a level. Litt asks Bullock to move away from the mike a few more feet, and they are ready.

Litt rolls the film back to the footage called by Roesch, and the picture and 35 mm mag stock are run forward in sync. Roesch begins his action to get into sync with Young on the screen, and Litt punches in to record the new sound, now with Bullock on the belt buckle. A wave from Roesch says that it's a take, and a replay shows that it works, so they go on to the next sound to be recreated: Young picking up a champagne bottle from a coffee table, and setting it down on the bar.

Roesch is one of the dozen or so first class Foley persons in Hollywood, and has worked on such films as *Black Stallion*, *Thief*, *Raiders of the Lost Ark*, and the forthcoming *Body Heat*.

"We're not called Foley 'walkers,'" says Roesch, "because the term implies that all we do is footsteps. In fact, we do much more."

"It's much easier and faster," says Bullock, "to Foley effects such as this bottle, rather than to cut them individually."

In fact, the process was originally designed for both walking and sound effects.

"In the early Thirties," says Bullock, "Jack Foley was doing sound effects for live theater performances, and he moved into motion pictures with the coming of sound. The film would be projected and he and his crew would recreate the sounds absent from the reproduction recording, laying them down on an acetate disk run in sync with the picture. The system was called Sync Sound Effects. Many sound editors had worked with Jack Foley at Universal at one time or another, so when the studio system died out and the sound editors went independent, they started calling the process 'Foley'. The name stuck."

"John's job," continues Bullock, "came into existence only in the last three or four years. Before that the sound editors did it. But with increasingly tighter deadlines, the amount of time in post-production has been decreased on most pictures. Now, rather than take two or three editors away from the bench, it's easier to hire a Foley person to work under the supervision of the sound editor. A lot of features these days will even split up the responsibilities, and have a specific Foley editor."

Roesch usually works with another Foley person, Joan Rowe, but on this picture, Hal Asby's *Lookin to Get Out*, he's working with Bullock alone.

"I was an assistant sound editor on a low-budget feature," he says, "and since I was the only one wearing sneakers, they figured I had some agility, so I did the Foley movement. I had no intention of getting into it, but after that they just kept calling. I feel that, like acting, it takes a basic innate talent to do this well. You need excellent coordination, timing and reflexes, as well as a good sense of sound and the creativity to find ways to make the sound."

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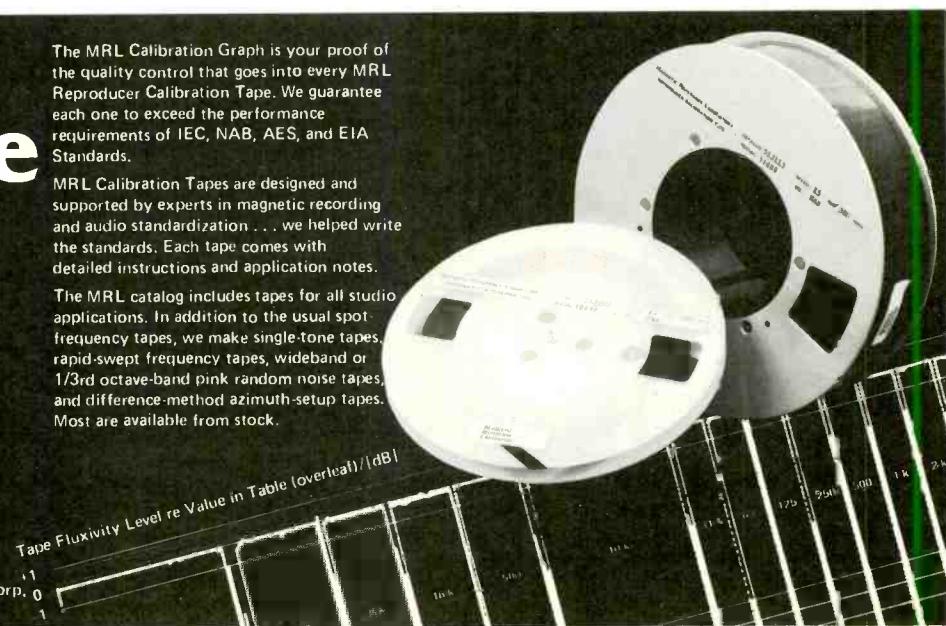
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along, and there's no way that you can make it consistent except by piling on more noise so that you can make it consistent from shot to shot."

"It's an inherent tragedy about dialogue editing," says Anderson, "that you have to pull all the good stuff down to the level of the bad stuff to make it match."

"We're faced with this unfortunate reality," agrees Keene. "The audience will pick up that noise eventually, but they will forget it or ignore it if they aren't constantly reminded of the sound by it jumping in and out."

Complicating Anderson's job, he says, is that "we find a lot of actors and directors are scared to death that if you loop, you're going to hurt the performance."

"What they don't realize," says Flick, "is that if you can't understand the dialogue, the audience won't understand the characterizations."

Further than that, continues Anderson: "If you get one line that you

can't understand, it effectively ruins more lines, because when line 'A' goes by, and the audience doesn't hear it, they'll turn to their friends and ask, 'What'd he say?,' and then they miss line 'B'."

"As soon as they say that, they're out," argues Portman. "And it takes a while for them to pick it up again. You see, the play's the thing, and in everything that we do, we want people to hear the words, and not be disturbed or distracted by outside influences."

Along these same lines, Portman points out another situation that can present problems: "The editor might say, 'This is the dialogue I want you to use,' because he likes the reading, or what have you. Well, you may find that this track has a very bad sound problem. Now you don't want to take out what you were told to leave in, so you lay out alternate readings of the line culled from other takes and, during the mix, you demonstrate to the people that the show isn't hurt by using

The Foley Technique . . . continued

"Anything that can be recreated on the Foley stage will be recreated," says Bullock. Jingling keys, held close to a mike became marching troops, or a certain mike handled in a certain way can recreate a horse fall. Creativity is again only limited by the imagination of the Foley, person and the post-production budget.

"Most features are now Foleyed wall to wall," says Bullock, "so that the sounds will be there in the Music and Effects following dubbing into foreign languages."

"Another reason," adds Litt, "is the increasingly popular use of radio mikes. Those tracks need an element of movement, or they just sound dead."

"With a good recording, you can blend the dialogue and Foley with a little EQ, and maybe some reverb. But, if the production sound of the dialogue is a bad recording, you can only clean it up so much with EQ. Consequently, you have to rip the high-end out of the Foley to get it to match."

The supervising sound editor will usually consult with the Foley editor about the sounds to be recreated, and to what tracks they will be assigned.

Roesch likes to view the picture and go over these cue sheets before the actual Foley session begins, so that he can begin thinking in advance about the sounds to be done, and the props needed to make them.

"Before we record each sound," he explains, "I watch the picture and get a feeling about what might work. On the stage, I try it out before we roll, and I can usually tell if it will fit. If I'm given time, I try to get all the little sound elements of a movement. Not, say, just the thump of a hand on a wall, but the light touches that follow as well."

"Foley works best, and sounds the most realistic," says Litt, "when you see a guy walking, and maybe you don't hear every step. That's the way it is in real life. Directors complain that Foley always sounds like Foley; the effects all sound alike and too clean."

Roesch tries to adjust for this criticism by attention to detail.

"A lot of Foley people will do their sidewalk footsteps on a clean concrete slab, but sidewalks aren't like that. I add some coffee grounds to get that gritty sound of concrete in a city."

This sort of attention is important to getting a realistic feel.

"Also," says Bullock, "Foley can be quite stylized. You usually don't 'hear' footsteps in real life, as clearly as you do in the movies."

In this case, the team is working with four tracks of 35 mm mag stock: one three-track, full coat, and one single stripe. In one scene, Jon Voight's footsteps and body movement are married on one track, as are those of Ann-Margaret. Burt Young's footsteps, however, are placed on a separate track from his clothing and body movement, so that his walk can be adjusted in the mix to fit his weight. Young outweighs Roesch by at least 60 pounds.

For safety, a quarter-inch protection track is run as well.

The sound effects are noted and recorded separately in most cases. In this instance, the champagne bottle movements are recorded on the single-stripe 35 mm mag, and will be cut in fairly easily later on.

A discovery has been made, however, following the first pass. Young is taking the bottle from an ice bucket on the coffee table that can just barely be made out in this print. A quick search turns up no ice in the building.

Roesch scoops up a handful of gravel from one of the walking pits on the Foley stage, and drops them into a large glass mug from his collection of props. They roll the film and mag again, and with a rattle of the mug, he recreates the sound of the bottle being pulled from the ice bucket. A moment later, he sets a bottle down on the wooden floor surface serving as his bar. It works.

"The ultimate compliment you can get," says Roesch, "is when a scene is so good you don't know it's Foleyed. They say: 'You mean that wasn't production?'"



walking in sync with

Ann-Margaret's footsteps

another line. You note that for the mixer, along with the accompanying backgrounds that make the alternative dialogue fit properly."

Other ways of saving dialogue can be found in the physical manipulation of the magnetic film. According to Elodie Keene: "You can scrape the thickness of the emulsion, so that you're actually dealing with less sound. You're not totally obliterating something, but simply reducing the level."

"Level is determined by the width of the oxide stripe," Anderson adds. "The track is about $\frac{1}{4}$ -inch wide, so if you scrape it to $\frac{1}{8}$ -inch, you've reduced your level by about half. That's also the principle of the scraped fade outs. So now, if there's an impact you want to lessen, you can take a razor blade and make a little dip in the track. It won't get rid of the noise, but it will lower the level of the sound relative to the rest of the track."

"These are the ways of minimizing unwanted sounds on tracks that you can't get out of using," Keene continues. "Many times something will happen in the middle of a sentence so that you can't cut it out. But if it's in between words, or even syllables, you can scrape the track to lessen the level and save the word."

35 mm Versus 16 mm Soundtracks

"This is one of the advantages of 35 millimeter," says Anderson. "In 16 millimeter, the minimum you can cut is one frame. But in 35 mm, which goes faster per second and has four sprocket holes per frame, you can cut in quarter frames."

"You have a whole lot more track in which to handle things," agrees Keene. "Also, because it goes so much faster than 16 millimeter, the pauses in between the words are longer physically and easier to identify and isolate." The larger format film also allows for easier and more accurate matching of tracks via modulation, as the mag-stock can be moved or adjusted in quarter-frame increments. This brings the two different soundtracks — say the original and a re-print — into closer alignment. Greater fidelity is also offered by 35 mm.

"It runs at 90 feet per minute, which is 18 inches per second," explains Flick, "and, because of its size, the material is physically easier to handle."

Another area of dialogue repair is the adjustment of the words themselves; occasionally a very sibilant track may be encountered, in which the sound really breaks up.

"What you can do," says Flick, "is take the tip of a razor blade or an X-acto knife and make a single razor slice, removing maybe a strip of mag $1/32$ of an inch wide from the center of the tape strip, for the length of the 'S' sound. This will reduce the volume of the sibilance without reducing the intelligibility of the word."

"Or an actor will suddenly shout for

whatever reason," Anderson adds. "One thing the editor can do to help out the mixer is to scrape the edge of the track to lower the impact."

"Also," Keene says, "you can lay the mag film emulsion side up on a piece of opaque glass that has a raised pebble surface. When you scrape with a razor blade over the magnetic track, it pulls off the oxide layer where the pebbles are, but leaves the rest." Lightly sandpapering the track will achieve similar results, and is useful in a situation where perhaps the actor's heavy breathing is breaking up the track, and needs to be softened.

"You do a little bit of scraping or scratching," Anderson continues "and then you run it through the Movieola and listen. Because the trick is that you can take more off, but you can't put more back." These techniques can also be applied to sound effects and to ease the cuts from shot to shot if a splice is making a noise, or one piece of mag film is louder than the previous one.

"For instance," says Keene, "if you change from one scene to another with an extreme difference in the background, and you don't mind it being somewhat different, just less noticeable. You can scrape part of the width of the emulsion of the louder incoming shot, in order to reduce the effect of it jumping out at you. Scraping is one of those things that looks like all the editor is doing is screwing around. In fact, he's

taking advantage of many years of training and experience that provides him with the knowledge of what he'll get if he does this or that to the track."

Adjustments for a number of these problems could conceivably be handled in the mix, although not nearly as effectively, let alone the additional cost of renting more time on a re-recording stage for the additional time when all the fixes add up.

"The object is to let the dialogue mixer just set those pots and let it play," says Keene. "If you can do these things for him so that he doesn't have to worry about them, you're way ahead of the game."

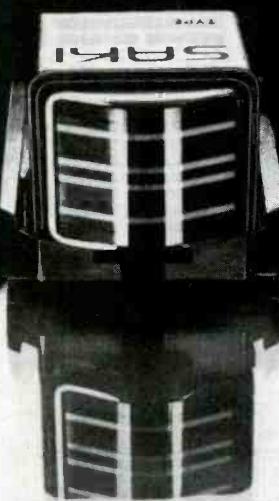
"And it's a weird sort of job, because after you've made this incredible thing work — after hours and hours of scraping tracks and eliminating things with all the little tricks that make backgrounds smooth all the way through — if after all that you bring in a layman in to listen to it, he'd say, 'So what's the big deal? There's nothing there.' And that's the object of the entire process."

In the next installment of *Film Sound Editing*, Steve Barnett will discuss the areas in which sound editors make their greatest creative contribution to the motion picture: sound effects and backgrounds used to establish character and mood.

At Last!!!

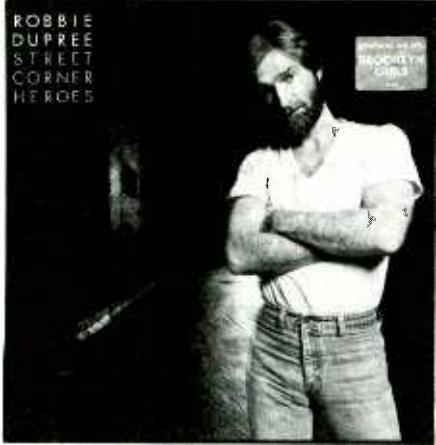
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... leading up to, and recording the
Robbie Dupree hits . . .

by Jimmy Stewart



ROBBIE DUPREE

"Making the most of what you have," might well be the watchword for engineers and producers working in smaller recording studios. Certainly, for today's multitrack sessions, ensuring adequate separation is vital. But how do you achieve acoustical isolation while recording in a small studio area? Despite having a studio floor measuring just 12 by 15 feet — plus an even smaller 8 by 12 vocal and keyboard booth — Alpha Studios in North Hollywood was the recording venue for Robbie Dupree's successful debut album *Robbie Dupree*, which included the single hits "Stealaway" and "Hot Rod Hearts," and latest LP, *Street Corner Heros*. So how does Alpha Studios' owner and resident engineer Gary Brandt make the most of the space that he has at his disposal?

Having grown up in the San Gabriel Valley, Gary Brandt started engineering on a three-track Ampex in a small independent production studio owned by a friend. His first assignment was to engineer a young new artist by the name of Bobbie Gentry, which was to prove an immediate success: "Ode to Billy Joe" and "Mississippi Delta" went to the top of the charts. Eventually Gary moved on to Sunwest Recording studios, engineering Gordon Lightfoot's "If You Could Read My Mind" album, and also working with Doctor John, Ike and Tina Turner, Neil Diamond, to name but a few. He then moved on to Sound City Studios, Van Nuys, until 1975, at which point he decided to stop working for somebody else, and open up his own studio.

Studio Construction

Alpha Studios was constructed from the shell of an 850 square foot building in North Hollywood. Originally, the outside of the building had a 2-by 4-inch

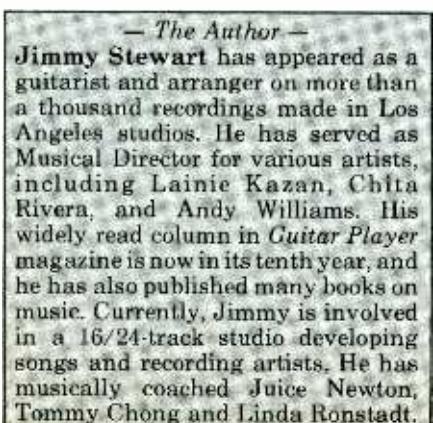
stud wall with no special foundations, and an inner wall made of a very light layer of drywall. Everything else was on a floating foundation, which is the standard for this type of building, with 18 inches of crawl space underneath. The studio's control room section was expanded in the front by putting in a bay window, and adding about 300 square feet as a hallway for the entrance, which acted like a sound trap. The control room was also layered with particle board to add mass and weight to the floor, thereby eliminating some of the resonance present in the original floor.

The recording area itself was constructed from two rooms of the original structure. Floor joists were cut out of one 15- by 12-foot section of the combined rooms. A new foundation was poured through the window around the inside of the remaining structure, remounting and re-establishing the piers that held up the new floor. A new wall was added to the outside wall, with three layers of drywall between, plus a one-inch air gap. Installation of a sunken floor increased the ceiling height by some 18 inches, thereby giving Alpha Studios a 10-foot ceiling from a room that originally had been only eight feet high. In addition, the new concrete foundation prevented sound from leaking from the control room into the recording area.

Walking into the 12 by 15 studio, to my surprise the room still retained a touch of liveness. A lot of rooms that I've used in the past have been too dead — every bit of ambience had been sucked out of my ears. So, my first question: How had Gary acoustically treated the recording area?

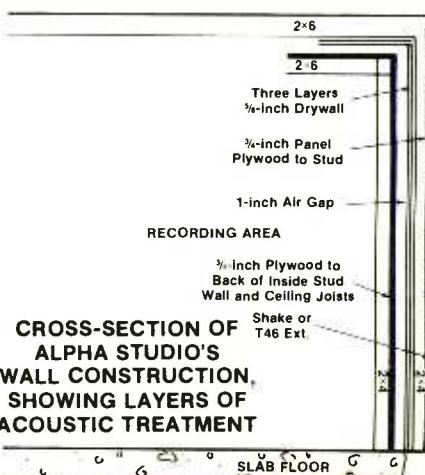
"I put Helmholtz resonators in the ceiling," he replied, "which were spaced 16 inches apart on 2- by 8-inch ceiling joists. Above that there is some fiberglass for absorption. The studio's ceiling appears to be a standard 8-feet from floor level but, acoustically, it actually goes up another 10 to 15 inches. The resonators attenuate low-frequency waves by virtue of their volume and size. We made up different size boxes to cover different areas, and left them completely open, with just fiberglass acoustic treatment above them to prevent floor-to-ceiling reflection. The end result is that you walk into this room and you do not feel the pull on your ears that happens with very dead rooms. For a space measuring only 15 by 12 that was quite an accomplishment."

"The 2- by 4-inch studs on the secondary wall we left completely open into the room, layed fiberglass in



— The Author —

Jimmy Stewart has appeared as a guitarist and arranger on more than a thousand recordings made in Los Angeles studios. He has served as Musical Director for various artists, including Lainie Kazan, Chita Rivera, and Andy Williams. His widely read column in *Guitar Player* magazine is now in its tenth year, and he has also published many books on music. Currently, Jimmy is involved in a 16/24-track studio developing songs and recording artists. He has musically coached Juice Newton, Tommy Chong and Linda Ronstadt.



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HITS from a 12' by 15' STUDIO

between them, and then simply put material over the top. That allowed us to have a little bit more actual volume of low-frequency absorbent material in the room. So we kept the room as big as we could to deal with what we had to deal with, and between that and the ceiling treatment we were able to retain a certain degree of liveness."

The Control Room

Alpha's control room measures 22 feet wide by 20 deep, with a bay window on one side. The sound in the room is crisp and tight, with excellent transients. I queried Gary on how he controlled the low-frequency room resonances.

"Well, I haven't done a lot," he confessed. "To be honest with you, I treated the walls in here as anechoically as I could — a lot of absorbent material, and very few reflective surfaces. It may not be the greatest control room in the world, but I haven't had one complaint from a musician that: 'The room doesn't sound good.'

"We worked on the monitoring to eliminate problems with the original Westlake TM-1 horn. We also did some work with traps for the ceiling, but it's still an 8-foot ceiling room — nothing more than that."

The ceiling appears to drop down visually to about 7½ feet right at the control room. But, acoustically, it went all the way up to the 8-foot ceiling mark. Sound definition while moving from a sitting to a standing position was excellent.

"I would call it an anechoic control room with very light reflection," Gary continued. "It's very quick and non-dispersed — not because I wanted it, but because it was the way it had to be for this facility. It is a very defined sounding control room."

The Mixing Console

Alpha's customized API console features balanced, transformerless mike pre-amps, B&B F-2 parametric equalizers on every input, 32-channel metering, and a 32-channel monitor matrix that can also be used during remix. This gives a total of 64 inputs plus eight subgroups for mixdown. Gary outlined his philosophy for selecting a console to suit his particular requirements of working in a modest-size studio.

"Basically, the API board — along with all the more basic meat and potato consoles — has been constructed to a basic concept: it needs gain points at particular points in its signal flow. Some mixers have more amplifiers and some have less; in this board we went for less — less is *more*, sonically. We

took one blockline amplifier, and evaluated its sonic quality, bandwidth, slew rate, and distortion. Basically, we listened to the amplifier, decided what we wanted to hear, and then custom-built our console around that concept.

"Producers that work here find a split console — with separate input and output/monitor sections — to be 100% more desirable than an in-line board — where the monitor package is built into every line input — because they don't have to walk around the engineer to turn up an instrument. Here they just walk over to the monitor section, which is all in a separate area.

"I can be mixing and doing whatever to the inputs, and the producer is free to reach over and at least get a little more of one instrument that they need to hear. If I had a monitor section built into the same channel, producers would be working around me, which would be more of a nuisance than them actually working a separate monitor control.

"Also, by having the cue controls in a separate panel, I find that in a lot of cases a producer can actually help with setting up the cue mix. You often have a lot less problem with a musician blaming an engineer for a problem with the cue sends, if the producer is sitting there working the system, Gary offered."

Speaking from the viewpoint of a studio musician for over 20 years, a studio's cue system is one of my most important considerations. It is the element in a studio that helps me understand the feel of a tune. Musicians

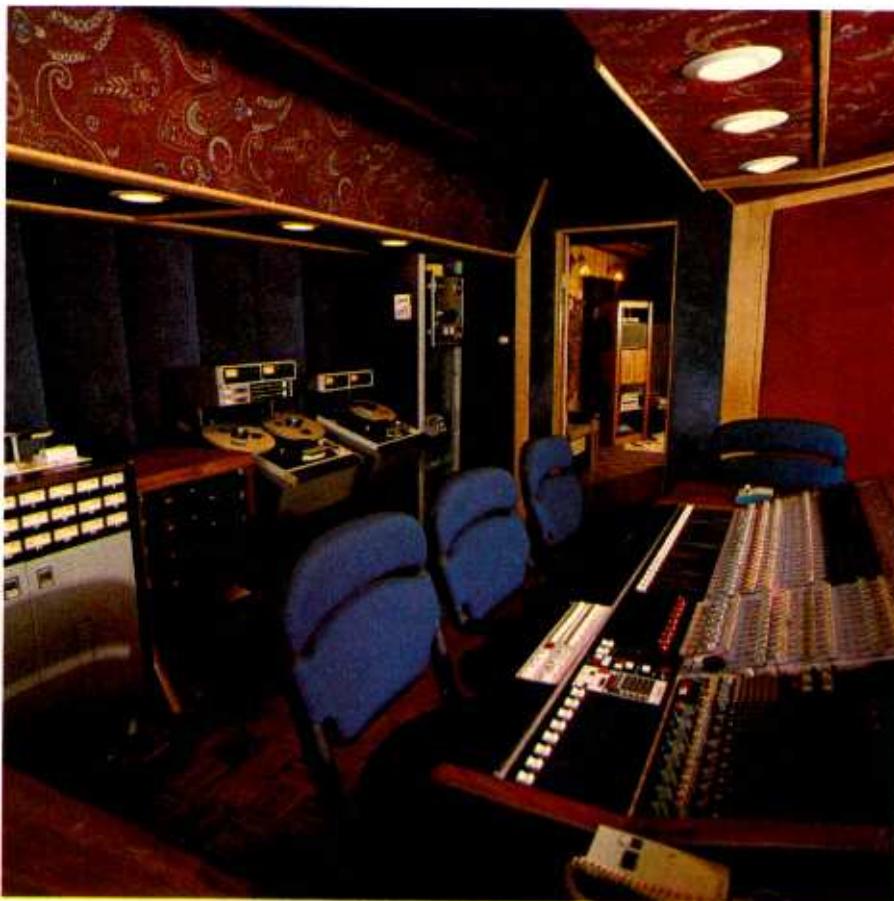
need to hear a good rough, if not finished, mix in their headphones. Many studios don't set up the cue system to enable a player to get the feeling of a performance. A musician has to achieve that sonic "high" to get into his licks. Broken headphones with shorted wires and a cue system with no echo sends can easily turn a player off.

Alpha Studios' cue system uses a Crown D150 power amp, sending out a quiet, high-quality sound into the headphones. The only drawback for me was the provision of a single stereo cue. This could be worked out by splitting it into two mono sends, giving players two tracking options. Masking of frequencies can often pose problems when working with a mono cue send. One way of preventing that problem is by running a stereo cue mix with panpots: drums and bass center; guitar far right, etc.

The Outboard Hardware

In the past few years, many producers have become more aware of a studio's outboard gear. However, they should be warned to stay away from *Electric Larry*: the guy who gimmicks the sound, heavy echo, phase this, flange that. If it adds to the musical product, a more subtle way should be tried. A good-sounding studio should offer you a sufficient choice. Gary ran down a list of pros and cons, starting with compressor-limiters and expanders.

"LA-4s are still my favorite overall limiter; they seem to have a real nice bandwidth, even more than the 1176.



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below .05%

TOTAL HARMONIC DISTORTION:

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RATED POWER:

200 watts RMS per channel into 4 ohms
(Both channels driven)
400 watts RMS into 8 ohms

(In Bridge Mode)

INTERMODULATION DISTORTION:

Less than 0.1% from 20 mW to 200
watts RMS into 4 ohms. Typically
below .05%

TOTAL HARMONIC DISTORTION:

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ohms. Typically below .04%



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Those are the ones I'm familiar with, and I plan to do a lot more research in looking into other limiters in the future."

What about reverb, I asked?

"I have a stereo EMT140 plate with a remote control unit. I spent a lot of time tuning it myself. We first tried the Spectrum Analyser approach. It sounded a little funny, so we went back and tuned it sonically. I use the EMT just for ambience; to add color to program material. For vocals I have an AKG BX-20. For the Robbie Dupree sessions I usually bring in an EMT 251 reverb, which I find to be just real usable because of its digital format. It's real flexible; you can obtain short delays with it, as well as long decay patterns. I use it mostly in the short ranges for tom-tom echo, and just a little bit of that roundness of the mid-range the system seems to have. I didn't want to buy one though. They cost over \$20,000 now, so I just rent it for mixes.

One effect unit that Gary uses most frequently is the Lexicon Prime Time digital delay.

"If you run two mono sources through a pair of Prime Times, you can actually cross phase the outputs and get almost total cancellation of the program, which can result in a real nice phase/flange effect. Although the built-in VCO affects both sides equally — and so provides a fixed, non-random sound as the flange moves up and down — by using two of them going up and down at different rates you have effectively created a random effect. So you can do a lot more with two Prime Times than you

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TITLE	ARTIST	PRODUCER		RECORD CO.		DATE ID-2-79 W.O. # ENG Gary Brandt	
1 "STEAL AWAY"	Robbie Dupree	Producer	Buck Chudzoff + Peter Burnett	Record Co.	Elektra		
1 Kick SM-7	1 Snare C452	2 Head L C414	3 Head R C414	4 Boss DI	5 Electric Guitar U87	6 L. Process KMB4 + Prime time	7 L. Claps U87
13 Acoustic KMB4	14 Piano R KMB4	15 Rhodes D.I.	16 Rhodes H. End Prime time	17 Rhodes D.I.	18 Vibes + Double Piano U87	19 Vocal U87	20 Conga SM-57
2 Basic Tracks							
13	14	15	16	17	18	19 Ref Vocal	20
						21	22
3 Overdubs							
1	2	3	4	5	6	7 Second	8 Second
13	14	15	16	17	18	19 Seventy	20
		Fifth	Second	Fifth	Second	Second	Second
						Fourth	Fourth
						10 Fourth	11 Sixth
						12 Third	13
						24	25

TABLE 1: Robbie Dupree session log, . track layout and microphones

can with one."

According to Gary, one of the hardest instruments to get a decent flanging sound from is the Fender Rhodes electric piano.

"If you use a Boss Chorus — like many guys do — the flanging effect is so wide that it actually shifts the tone. In a lot of cases the Rhodes can sound tremendous. It just depends on where the envelope happens to be sleeping at any particular time. So I have to use the Prime Times and, by mixing in, say, a Harmonizer into these two inputs, I can create random effects and delays. You end up with this real envelope-type of sound that sounds more harmonized than it does effected."

The Importance of Flexible Equalization

Earlier this year, while working on my new album, I had two separate outtakes that I didn't turn in to the company. In my demo studio I had experimented with guitar sounds, and had them on tape with a hot L.A. rhythm section used on the project. There were many equalization prob-

lems on this tape, ranging from a noisy Fender Rhodes electric piano, to a popping bass track — the kinds of problem that cancel out a good performance on tape. Plus, I had added my electric guitar and one classical guitar part at my demo studio, which features a board equipped with a fairly modest EQ capability. If Gary could make this tape sound better by re-equalizing and mixing it at his studio, I knew he had the hit sound covered in more ways than one. The next day, I brought in the renegade tape, and quizzed Gary on the creative use of equalization.

"Every engineer has his own ideas about EQ," he explained, "and mine is to stay away from equalizing the fundamental frequency as much as possible. I equalize the subsonic regions where necessary to break up ambient sounds, and, in a nutshell, fill in the voids that might better be served acoustically by, say, a guitar. A guitar is one of the most variable sources for equalization, because you have a range that can literally encompass the entire spectrum of a track.

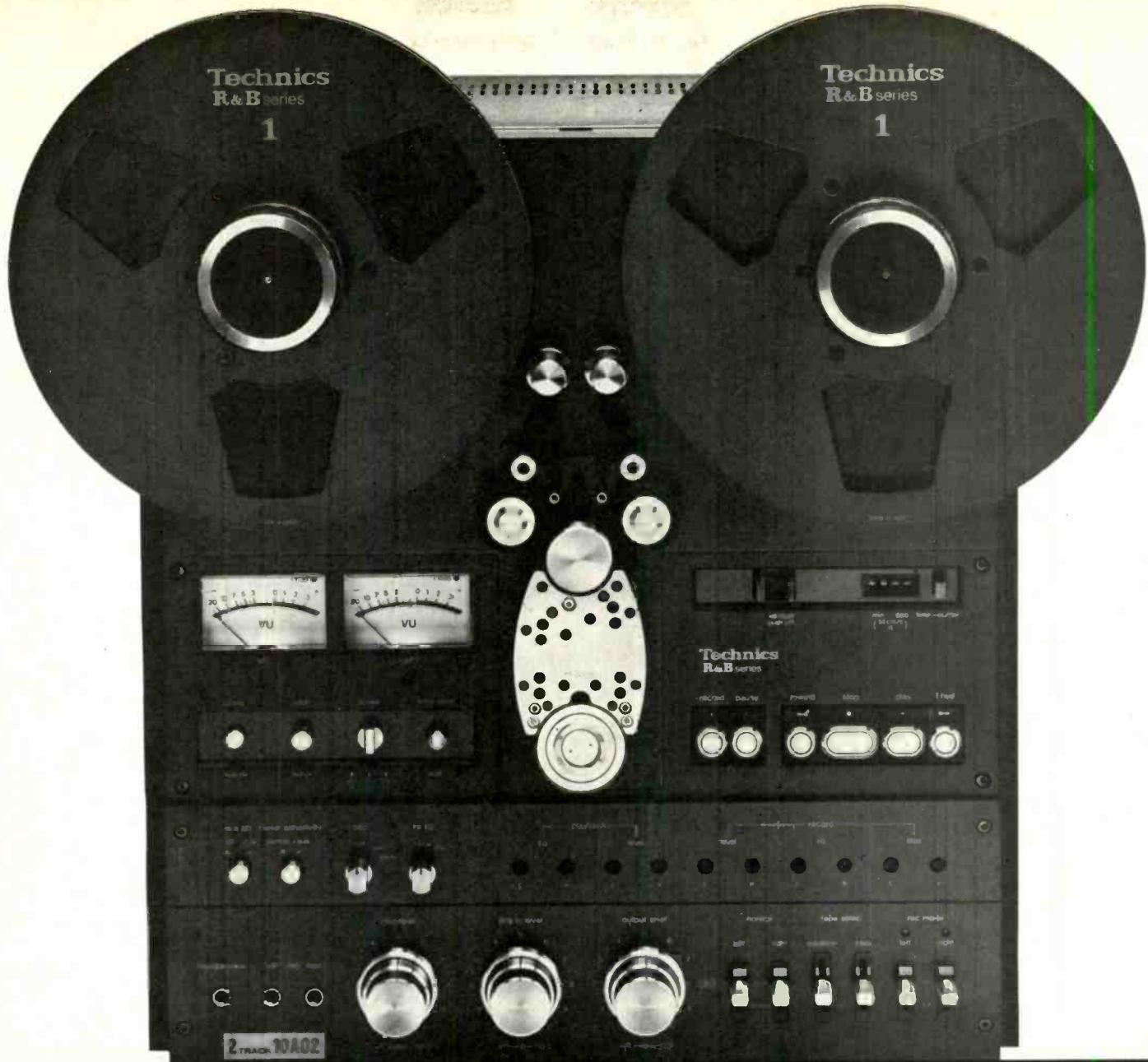
"The key to getting a good sound on tape is to try and pull from the instruments being recorded as much bandwidth as possible. For instance, when I mike snare drum, I try and mike it from underneath as well. Because, when you are on top, you've got this drum head between the mike and the snare wires, and it doesn't necessarily mean that you're going to get enough of the sound to make it sound like a proper snare drum. So, I will mike underneath as well as on top, with the mikes out of phase. You flop the phase around, and you attenuate all the low-frequency and mid-range out of this low snare mike. By mounting the bottom mike as far away from the drum as possible, but still facing up towards it, this creates a little bit of time delay and doesn't cause complete phase cancellation. If a little of this is mixed back into the source, you can fill out the sound."

Examples of microphone selection and EQ setting for the Robbie Dupree album sessions at Alpha Studios are detailed in Table 1.

... continued overleaf —



... partial view of outboards rack —



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HINTS from a 12' by 15' STUDIO

Basic Tracking

Upon arrival for a tracking session at Alpha Studios, the first thing I wanted to do was talk with the musicians, beginning with the drummer. Drummers, I have found, can tell you a lot about the sound of a particular studio. Their job is surely one of the toughest on a session, since they act as the backbone of any recording date. If there are any problems concerning sound or the working atmosphere, this guy will know it.

Peter Bunetta was the drummer on the day of my visit, and has co-produced and played drums on both of Robbie Dupree's albums. We got to talking, and he told me how much he loves the sound at Alpha, and the way that Gary Brandt engineers. In fact, Peter explained, the band affectionately refer to Gary as "Eagle ears," since he can catch any mistake they make — a wrong chord or a wrong note — and will even suggest changing a part if it doesn't fit the musical concept.

"The studio itself," continued Peter, "gives us a feeling of playing in a small

Checklist for Setting Up a Small Studio

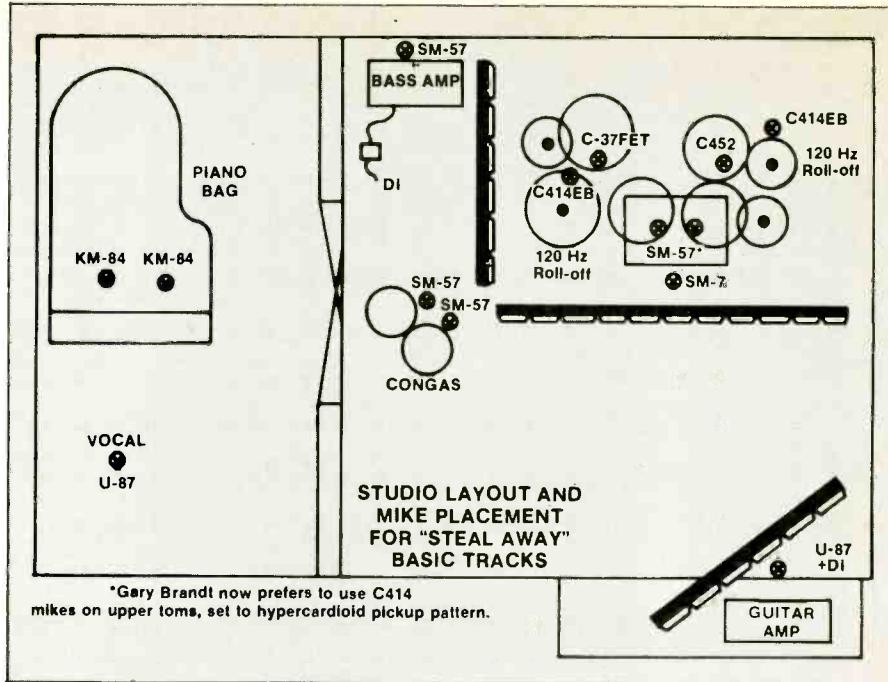
- 1) Why this location?
- 2) Is it better to buy, build or lease?
- 3) What about taxes and zoning?
- 4) How do you control impact and airborne noises? (Exterior walls, inside partitions, ceilings, roof.)
- 5) How do you stop the sounds generated inside the studio from disturbing the neighbors?
- 6) What is the acoustical treatment of the studio itself, and its effect on the sounds recorded in it? (Example: air-conditioning sounds; door panels; windows; solid doors; door seals; sound-lock sealing doors; observation windows; noise from ground vibrations; noise from lamps.)
- 7) Who will supervise the construction?

Business Checklist

1. Get an attorney!
2. Get a CPA.
3. Get a maintenance man.
4. Never sign a leasing agreement without thinking it through, and asking professional advice from your attorney and CPA.
5. Get cash from your clients until you trust them.

Partnerships?

1. Only if you have to!
2. You must be of like minds musically.
3. Hands on the table attitude (honest common-sense).
4. Both of you make decisions and sign checks.
5. Get in writing your specific duties (no handshakes).



club; very tight with good eye contact, which keeps the energy contained. I know what to expect from the sounds here, which cuts down on the time it takes me to warm up to a track. When making hits, my job is the mood and feel. No problems at Alpha; I can get into it all the way."

For the tracking date the studio floor had been set up with 4-foot hard baffles around the drums. The piano was covered with an Alpha Acoustic Control piano bag, designed by Gary. Comprising a large quilted vinyl cover lined with absorbent material that completely encompasses the chamber area of the piano, the bag has zipper openings for mike stands. The enclosure provides up to 15 dB of sound isolation at 15 kHz. The bass was run through a direct box.

I asked Gary about his techniques for achieving a good guitar sound.

"I will baffle and sometimes put a cover blanket over the guitar amplifier if he is essentially loud," he says, "and mike it with an SM-57 or U-87. If I want a nice rich but elastic electric guitar sound that a lot of the players like to hear, I use an 87. But if I want a real gritty, present mid-range I go to a SM-57, which is a dynamic mike. I'll go back and forth between a dynamic and condenser for that."

And the guide/scratch vocal?

"In a small facility like this," Gary continued, "you are only dealing with a distance of 15 feet from, say, the drum kit, which is your primary problem in terms of separation, particularly the cymbals. I have to keep a vocalist pretty close in this facility to get a scratch vocal that is useable. I may even take advantage of another room by running a snake out into the lounge, for example, and sticking the vocalist in there. I've even put vocalists in the bathroom before, and that can give a good sound."

Small Room=Close Miking

In a room of this size, close miking must surely be the key to getting a sufficient isolation, I queried.

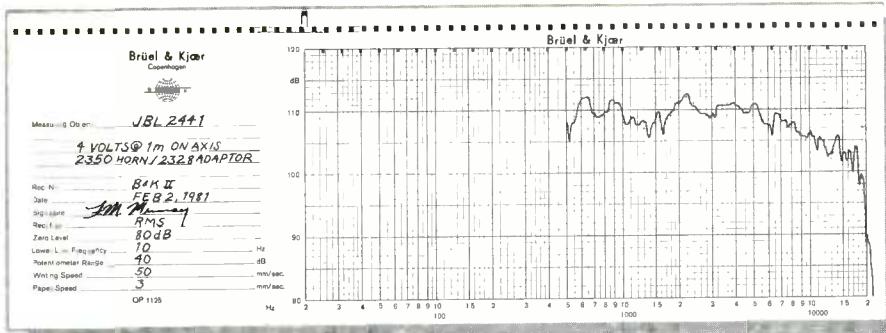
"Without a doubt," Gary agreed. "In a small room like this you really only have a couple of ways you can set up. I put the drums in the most open sounding part of the room which, in my case, is back in the corner of the room that has two dead surfaces. I play around with a couple of baffles faced with live and absorbent surfaces. Basically, it is a very anechoic sound. I have a floating wooden floor, on top of which I lay a carpet. Putting a layer of carpet between the live-sounding floor and the drum kit gives it a liveness that the room would not have added to the sound."

"My basic miking set-up for drums comprises an AKG C452 with a 20 dB pad and a swivel on the capsule for the top of the snare drum, and one underneath with a 10 dB pad. As mentioned earlier, I filter the wire underneath, flop the phase, add a little of that into the top mike, and generally EQ the high end of the top mike. I try and mike reasonably close to where the snare head is going to be hit, without getting in the drummer's way. That gives me reasonable cymbal or hi-hat separation."

"Then I'll take a pair of AKG C414s for overheads, and try to mike the hi-hat and the left crash cymbal — if, indeed, I have a left crash cymbal on the kit. If I have another set of mini-toms to the left, which some drummers use occasionally I will put an SM-57 on those. On toms I use SM-57s, with the exception of the floor tom, where I use a Sony C-37FET. A C-37 has a nice round low end; it really shakes the room up when he hits the drums, and is an exciting sounding floor tom mike."

... continued overleaf

This is not the only reason to buy JBL's new 2441 compression driver.



Unequalized frequency response of a typical 2441 on a JBL 2350 horn.

As you can see from this frequency response curve, the new JBL 2441 delivers impressive levels of performance. From extended bandwidth to high sensitivity and smooth, peak-free response.

But as important as these performance parameters are, they're only part of the story. Using the latest laser holography and computer analysis techniques, JBL engineers have developed a unique diaphragm design that allows the 2441 to match its outstanding response with unprecedented reliability and power capacity. That means you get exceptionally high performance without the trade-offs found in previous driver designs.

The secret behind this increased performance lies in the diaphragm's three-dimensional, diamond-pattern surround! As outlined in a paper

published in the Journal of the Audio Engineering Society,* this surround is both stronger and more flexible than conventional designs. This permits the diaphragm to combine all the traditional reliability and power capacity benefits of its aluminum construction with the extended frequency response of more exotic metals. It also maintains consistent diaphragm control throughout the drivers' usable frequency range to eliminate uncontrolled response peaks.

Additionally, each 2441 is built to JBL's exacting standards. The magnetic assembly is machined from rugged cast iron and steel. Extremely tight machining tolerances and hand tolerance matching maintain unit to unit consistency. And finally, each 2441 is individually tested to ensure that it meets published specifications.

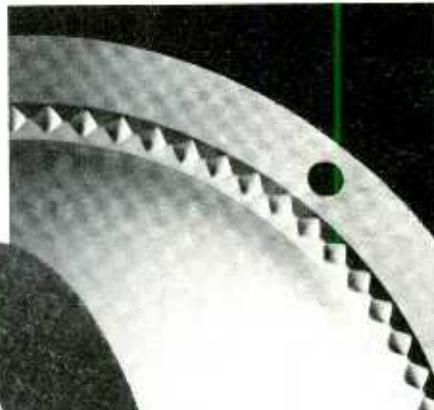
So before you buy any compression

driver, ask your JBL professional products dealer about the 2441. It'll deliver a lot more than just an impressive frequency response.

1. Patent Applied For

*Journal of the Audio Engineering Society, 1980 October, Volume 28 Number 10. Reprints available upon request.

James B. Lansing Sound, Inc.
8500 Balboa Boulevard,
Northridge, California 91329 U.S.A.



JBL's diamond suspension diaphragm combines performance with reliability.

Specifications		
Horn Throat Diameter	50 mm	2 in
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Power Capacity	70 W continuous program	
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Frequency Range	500 Hz to 18 kHz	
Voice Coil Diameter	100 mm	4 in
Voice Coil Material	Edgewound aluminum ribbon	
Flux Density	1.8 T (18,000 gauss)	



Professional
Products
Division

Available in Canada through Gould Marketing, Montréal, Québec

August 1981 ■ R-e/p 97

For additional information circle # 63

Reading this ad may solve your next audio problem

Solving audio problems is a daily requirement for the professional. Often, the solution requires the use of accurate test instruments, with a high degree of reliability.

The Spectra Sonics Model 510 Bandpass Filter and the Model 802 Signal Generator are the answer to your service requirements, permanent or portable. The battery powered units are accurate, reliable, compact, affordable, and easy to use.

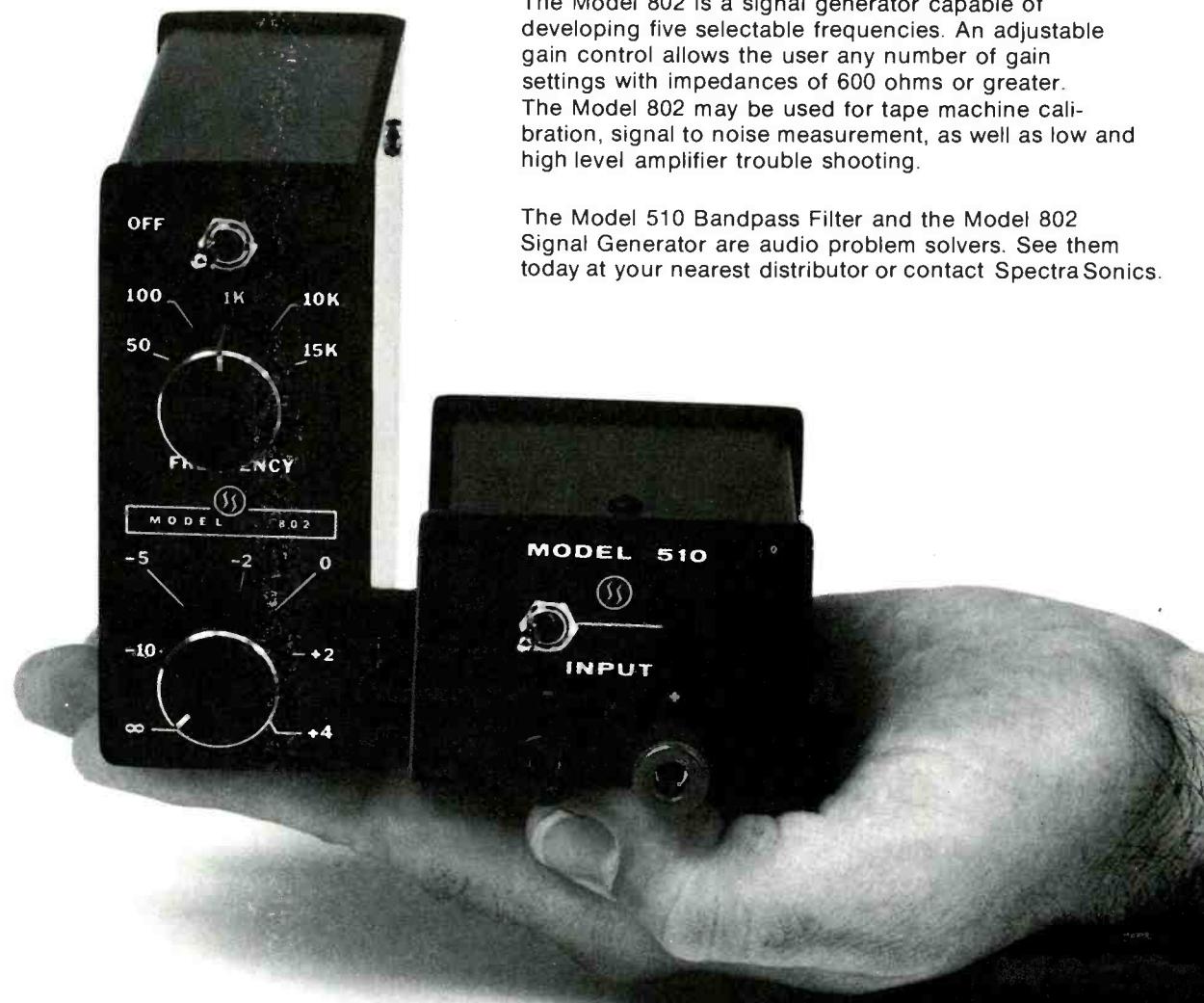
THE MODEL 510 BANDPASS FILTER

The Model 510 is a 20Hz to 20kHz, (-3dB), bandpass filter with a gain of 60dB. The 510 may be utilized with a standard voltmeter to make unweighted noise measurements on individual pieces of electronics, or complete systems. The 510 may also be used with existing noise analyzers for unweighted noise measurement. Battery operation eliminates ground current flow between instruments, resulting in consistent and accurate measurements not previously available.

THE MODEL 802 SIGNAL GENERATOR

The Model 802 is a signal generator capable of developing five selectable frequencies. An adjustable gain control allows the user any number of gain settings with impedances of 600 ohms or greater. The Model 802 may be used for tape machine calibration, signal to noise measurement, as well as low and high level amplifier trouble shooting.

The Model 510 Bandpass Filter and the Model 802 Signal Generator are audio problem solvers. See them today at your nearest distributor or contact Spectra Sonics.



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HITS from a 12' by 15' STUDIO

"My choice for the kick drum can vary. Most of the time I use an SM-7, which has a nice low-frequency response, and a lot of punch. Sometimes I will go to a U47FET, or even a Sony C-500. It depends mainly on the way the drummer plays, what kind of sound you are trying to achieve, and the way you want it to mix into the bass sound. You want the bass and the kit to be a real harmony of sound, so that they are both up front and have a lot of definition."

"I try not to use a separate hi-hat mike if at all possible. The sound of, say, a C414 set to cardioid, and positioned below aiming up at the ride or crash cymbal, provides sufficient pickup for the crash, and you still have some of that stick sound. When you spread the overheads in the stereo mix there is an ambience about the sound you pick up, but without getting too much of the snare drum."

Gary finds that filtering out a little bit on the low end from the overheads also helps get rid of some of the mid-range from the snare. He can achieve a nice "crystalline" cymbal sound that is very realistic, even though it has been recorded in a dead room.

Much to my surprise, Gary makes little use of expansion or gating to help achieve adequate separation between instruments while working in such a confined area. As he explained: "I don't ever gate critical instruments. Tom-toms are about the only thing that I might conceivably gate, mainly because I look for a degree of separation in my drum sounds that most people don't. A good snare drum sound is the most important sound you want to achieve. When you have four tom-tom or other microphones sitting there open, the snare sound is going to suffer considerably. So you have to strive for an almost ultimate separation on that drum in order to get a good sound."

"No matter what the mike sounds like by itself, when you add in the overheads it will not sound good. So I Kepex the toms. If I need to use a Kepex later, I do it in mix because you are also going to eliminate noise at that stage. If you gate the sound while going to tape, and you have to do it again to cut down noise, the transient response will be cut back twice in a row."

Toms are miked within about three or four inches, slightly at an angle, with the mike axis pointed away from the snare drum. When working with two overhead toms, the mikes would be aimed in an approximately 30 degree off-axis direction across the tom-tom from the snare drum. Gary also baffles off the kick drum not only at the front, but also by pulling a cover around the back beater side of the drum, where the

snare drum sits. In this way, he tries to eliminate some of the high-frequency mid-range sounds from getting into the bass drum mike, which can upset separation.

Overdubbing

During a subsequent overdub session a guitar was the first instrument to be added. The studio had been cleared, and the amplifier miked in the middle of the room with a couple of live baffles placed adjacent to one another to achieve a "coning" effect. Brian Ray, guitarist for the session, brought his guitar into the control room and went to work.

Acoustic piano was the next instrument to be overdubbed, for which the lid of the piano cover had been lifted, allowing the piano to breath through the chamber created by the bag. Then keyboard player Michael Bodiker set up his three stacks of synthesizers and effects devices in the control room.

In the afternoon, it was the turn of the horn section, with the following line-up: trumpet playing three parts; tenor playing two parts; and a baritone sax. For the trumpet overdubs a U87 was placed about 10 to 12 feet from the bell. Although a trombone wasn't used on this date, Gary would normally have used a C-24 or any tube mike. Sony C-37 FETS covered the saxes. Saxplayer Jerry Peterson likes the "good vibe" he gets working at Alpha. "Gary gets a crisp sound similar to the Stax Record horn sound," Jerry offered. "And when

Gary's dog, Platinum, barks, you've got a hit!"

Jerry then went into the studio to lay in a sax solo, and Platinum promptly started barking; he obviously knew what he was talking about!

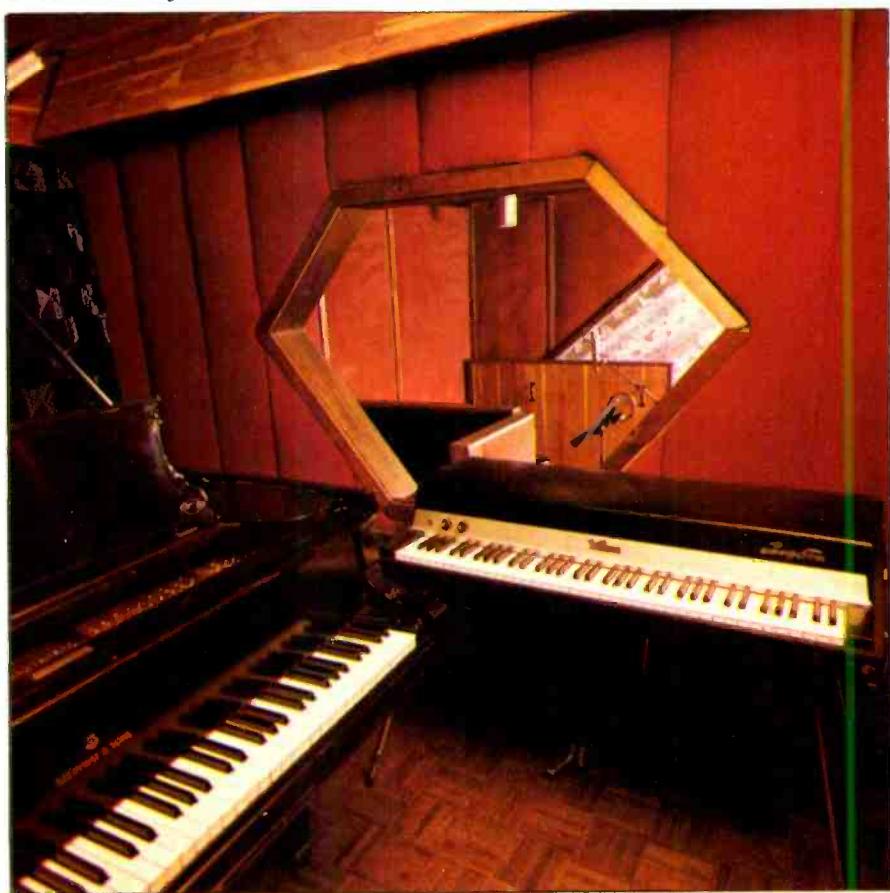
For percussion miking, Gary tends to use a C-37FET or a Neumann tube U67.

"I will use two C-37s in stereo for such things as congas and light overdubbing; they are real crisp sounding. I have actually miked a tambourine with a 67 mounted between a pair of C-37s, and the harmonization of those three microphones — two of them being solid-state and one tubed — produces cancellations that actually create a tremendous high-frequency sound. You get the mid-range from the 67, the top-end from the Sony's, and they blend in real nice."

The Future

Gary Brandt is currently working towards albums for two new artists: Leslie Smith and David Anderson. Working once again with Rick Chudacoff and Peter Bunetta (producers of the two Robbie Dupree albums recorded at Alpha Studios), but now in the capacity of co-producer/engineer, Gary looks set to repeat his achievement of getting a good sound from his 12 by 15 studio. Which, as mentioned in the introduction to this article, is the key to success for any small studio where recording space is at a premium.

... vocal/keyboard room (8' x 12') looking into main (12' x 15') studio —



New Products

MICMIX MASTER-ROOM XL-121 REVERBERATION SYSTEM

According to the manufacturer, the new monaural XL-121 System produces none of the unwanted sounds such as boing, twang, and flutter common to most spring-type reverbs. This outstanding performance is said to be achieved without utilizing internal limiting or any other signal processing



intended to compensate for reverb deficiencies. It is claimed that the XL-121 sounds as good on drums as it does

on any other musical instrument.

XL-121 is designed to interface with virtually any audio equipment. The Preamp Gain control allows the unit to accept a low-level musical instrument output, such as a guitar, or higher level signals associated with recording and sound reinforcement consoles.

An Output Level control permits further flexibility in interfacing with other signal processing equipment. A front-panel Output Mix control allows blending of the direct and reverberated signals. The unit's three-band Equalization section enables sound of the reverb to be tailored to suit the application.

The XL-121 incorporates 1/4-inch signal connections located on both the front and rear panels. Also included on the rear panel is a patch point designed to allow an external equalizer or other high-level effects device to interface directly with the XL-121. Suggested users price: \$450.00.

**MICMIX AUDIO
PRODUCTS, INC.
2995 LADYBIRD LANE
DALLAS, TX 75220
(214) 352-3811**

For additional information circle # 66



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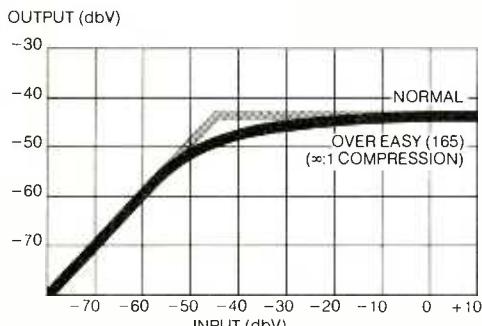
Professional Recording & Sound, 1616 Soldiers Field Road, Boston, Mass. 02135 Telephone (617) 254-2110

For additional information circle # 65



Designed as a compact table-top unit, the system has most of its controls conveniently arranged on a slanted console panel. The cassette is held vertically, permitting easy verification

OUR COMPRESSORS GO OVER SO WELL BECAUSE THEY GO OVER SO EASY.



Hard knee compression vs. Over Easy compression. You can see the difference. But more important, you can hear it.

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sors incorporates true RMS level detection, which closely simulates the response of the human ear for the smoothest, most natural sound you'll find. And feedforward gain reduction means absolute stability and distortion-free sound at any compression ratio. Even infinite compression.

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This is the only slider on our 163 compressor/limiter — as you move it from left to right, the 163 automatically provides the proper balance of threshold level, compression ratio and output gain for each setting — which is why it's the simplest compressor you'll find. The 163 is available in two models — the single 163, and the RM 163, which incorporates a pair of 163's in an integrated rack mount unit.



The dbx 165 is our top of the line, and it's as flexible as you want it to be. Attack and release rates can be adjusted manually or automatically. Both threshold and output levels are adjustable. And the 165 can be strapped for stereo, with a front panel master/slave switch for easy operation.

For more information, write Professional Products Division, dbx, Inc. 71 Chapel St., Newton, Mass. 02195 U.S.A. Tel. (617) 964-3210. Telex: 92-2522. Distributed in Canada by BSR (Canada), Ltd., Rexdale, Ontario.

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of the amount of tape remaining.

The Technics SV-P100 allows PCM recording and playback with the same operational convenience as a conventional cassette deck. A microcomputer provides full logic control with precise, comfortable-to-use controls grouped together in a central location.

Other features include an automatic open/close cassette holder; large fader for easy adjust recording and playback level adjust; preset playback switching and convenient cueing; large, easy-to-read LED tape counter and level indicators (with peak hold function); digital in and out terminals for digital dubbing; and front-panel headphone and microphone jacks.

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(201) 348-7000**

For additional information circle # 68

**NEW MILAB LINE-LEVEL
CONDENSER MICROPHONE
FROM CARA INTERNATIONAL**

Developed particularly for use in direct-to-disk and digital or analog recording, the Milab LC-25 transformerless cardioid microphone provides line-level output (0.775 V) into a standard 1 kohm input, and operates on standard 48 V power supplies.

The microphone capsule contains a



large diameter circular element which is isolated from shock and vibration. Frequency range is a quoted 20 Hz to 20 kHz, with extremely smooth response through the range 30 to 15 Hz. Front-to-back ratio is said to be better than 25 dB at 1 kHz, and dynamic range exceeds 130 dB SPL.

Measuring only 7 1/4-inches long, the LC-25 body is made of solid brass finished in chrome black. The protective grill is styled in black stainless steel mesh, providing protection from damage. \$845.00.

**CARA INTERNATIONAL LTD
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(213) 821-7898**

For additional information circle # 70

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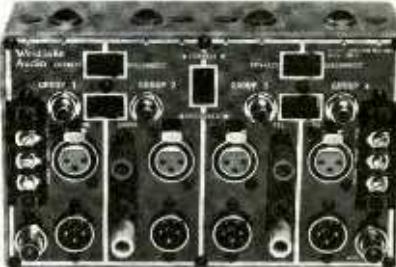
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For additional information circle # 69

**WESTLAKE UNVEILS
MODEL CMB-2
CONNECTOR AND
INTERFACE BOX**

The new unit functions as an interface adaptor box, signal multing box, signal switching box, as well as a trouble shooting aid.

Completely passive in design, the CMB-2 accomodates male and female XLR, phone (TRS), TT (tiny telephone patchcord), phone, BNC, banana and



terminal-strip connections. Through use of switch selection, the connectors can be isolated into a maximum of four sections, or they can function as one continuous 26-connector, 3-conductor mult.

This compact box measures 4.5x2.5x7.5 inches, and weighs less than 2 pounds.

**WESTLAKE AUDIO, INC.
7265 SANTA MONICA BLVD
LOS ANGELES, CA 90046
(213) 851-9800**

For additional information circle # 71

**LEXICON ANNOUNCES
WIDEBAND AUDIO
TIME COMPRESSOR**

The new Model 1200B broadcast-quality audio time compressor provides 5 kHz greater bandwidth — now to 15 kHz — than the existing Model 1200, and is designed to meet the future needs of audio and video producers and broadcasters as the anticipated upgrading of audio broadcast standards for network television and AM radio occur.



The unit plays back recorded audio, video and/or film material at faster or slower speeds without changing the original pitch. It allows the playing time of commercials, films and other program material to be reduced or expanded to meet time requirements. It is also said to provide significant benefits to primary and post-production operations by eliminating expensive retakes and time consuming editing to fit material to specific time slots.

Model 1200B will allow reduction of play time by up to 25%, or lengthening

Introducing the TASCAM STUDIO SERIES Model 16 Mixer with the 85-16 1" Recorder



85-16 1" 16-Track
with dbx



Tascam Model 16 Mixing Console

16 or 24 input positions 8 main program mixing busses with submaster faders 8 main board outputs Stereo Solo Inplace, Input, monitor and effects returns Remix Solo Enable Input PFL/Solo Select 2 independent stereo mixing busses 16 meters switchable to read buss or external source 100 mm conductive plastic faders for smooth, positive control 4-band 8-knob parametric (sweep type) equalizers that may be switch bypassed 4 auxiliary mixing busses 16 x 2 channel or dual 8 x 2 channel monitor selection



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AVC SYSTEMS INC 1517 E. Lake Street Minneapolis, MN 55407 (612) 729-8305
AVC SYSTEMS INC 7116 W. Higgins Avenue Chicago, IL 60656 (312) 763-6010

For additional information circle # 72

by up to 33%. All other specifications including automatic computer control of external audio, video and film transports remain identical to those in the current Model 1200. The new unit is engineered for convenient interface to virtually any variable-speed audio or video tape machine, or film to tape converter.

Professional price of the Model 1200B is \$8,500.

LEXICON, INC.
60 TURNER STREET
WALTHAM, MA 02154
(617) 891-6790

For additional information circle # 73

dbx REDUCES PRICE ON FRAME FOR 900 SERIES MODULES

According to David Roudebush, National Sales Manager of the Professional Products Division of dbx, Inc., the company is reducing the suggested retail price of its F-900 Powered Frame, from \$800 to \$695.



The F-900 provides power, input and output connections, and serves as a mounting device for up to eight 900 Series signal processing modules. The rack mount unit measures just 5 1/4 inches high, and is designed to allow fast and easy installation.

Standard connectors are said to make it simple to wire the rack into any system. The interchangeable signal processing modules slip in and out in seconds, offering the user flexibility in sound production.

The frame provides sufficient power for four additional external modules via a back panel connector, and contains a spare bay for module storage.

Modules available for use in the F-900 Frame include the 902 De-esser, 903 Over-Easy[®] Compressor/Limiter, 904 Noise Gate, 905 Parametric Equalizer, 906 Flanger+, 411 Type I Noise Reduction module, and the new dbx 941 and .942 Type II Broadcast Noise Reduction modules.

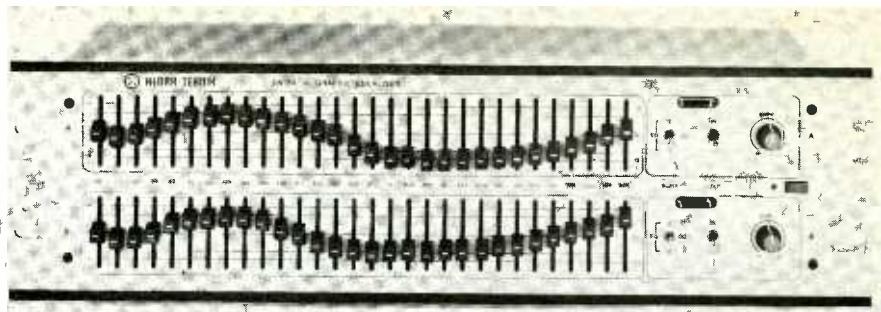
dbx, INC.
71 CHAPEL STREET
NEWTON, MA 02195
(617) 964-3210

For additional information circle # 74

KLARK-TEKNIK INTRODUCES DN 30/30 GRAPHIC EQUALIZER

The new third-octave equalizer has two completely discrete channels, with 30 bands of control each, centered on standard I.S.O. frequencies. The range control is switchable for each channel between 6 dB and 12 dB of cut or boost.

In addition, each channel contains a



30 Hz, 18 dB per octave subsonic filter, switchable in or out. The DN30/30 incorporates an earth-lift switch and a system-bypass facility for power interruptions. The unit can also be fitted with internal active crossover circuit cards in either a bi- or tri-amp configuration. Slope and center frequency are user selectable.

Dimensions of the DN30/30 are 5 1/4 x 19 x 8-inches, and the professional user price is \$1,450.00.

**KLARK-TEKNIK
ELECTRONICS INC.**
262 A EASTERN PARKWAY
FARMINGDALE, NY 11735
(516) 249-3660

For additional information circle # 75

AUDIO MONITOR MIXING CONSOLE FROM AUDY

The new Series 2000M Monitor Mixing Console provides 16 inputs (stackable to 32) with separate output mixes that permit control of up to six independent monitor sends. Use of high-speed, low-noise IC op-amp technology is said to minimize transient and slewing-induced intermodulation distortion. A dual LED system assures proper adjustments of input attenuation switches, and maintains 25 dB of headroom throughout.

Standard with Penny & Giles faders and sealed conductive plastic rotaries, the Series 2000M console provides smooth, quiet control. Other standard features include: input and output channel patching; EQ in/out switch for each input mix control; individual channel muting; talkback; six auxillary

inputs; headphone monitoring with solo priority system; high-resolution, 20-segment LED bargraph meters; phantom power; work lamp socket; and flight case.

The Audy Series 2000M Monitor Mixing Console is list priced at \$6,995.

AUDY INSTRUMENTS, INC.
SHETLAND INDUSTRIAL PARK
P.O. BOX 2054
SALEM, MA 01970
(617) 744-5320

For additional information circle # 76

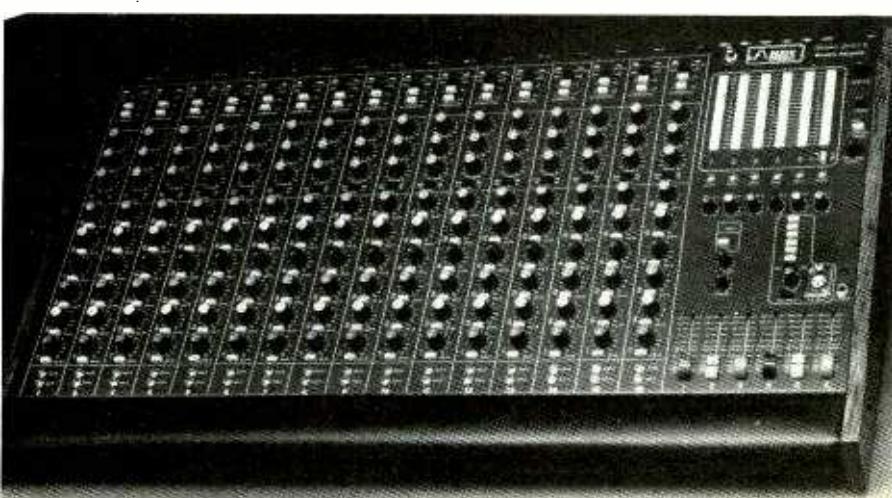
ELECTRO-VOICE UNVEils PL88 VOCAL MICROPHONE

According to Bob Morrill, E-V's vice president of marketing and sales, "The PL88 dynamic cardioid microphone features voice-tailored frequency response characteristics, superb resistance to handling noise and, of course, E-V's reputation for reliability. In addition, the PL88 is priced at under \$70, making it the perfect entry level microphone for the vocalist on a tight budget who is unwilling to compromise his or her standards of quality."

The PL88 is finished in a non-reflecting snow gray with a contrasting charcoal grille, features an on/off switch, and is available in both high and low-impedance models.

ELECTRO-VOICE, INC.
600 CECIL STREET
BUCHANAN, MI 49107
(616) 695-6831

For additional information circle # 77



SYNCON



series B

Designing a console to follow one of the worlds best selling 16/24 track consoles is obviously not an easy task. Syncron series B, however, proves that it is not impossible.

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TASCAM UNVEILS M-16 RECORDING CONSOLE

The new mixer can be configured with 16 or 24 input positions. Eight main program mixing busses are provided, complete with submaster faders, plus eight main board outputs, two independent stereo mixing busses, four auxiliary mixing busses, 16 meters switchable to read buss or external source, and a 16 by 2 monitoring section with eight assignable effects returns.

The M-16 offers stereo solo in-place for input, monitor, and effects returns, and all inputs have pre-fader-listen capability. During remix, the solo logic permits instant comparisons between effects send/receive.

The new console also features 4-band, 8-knob parametric equalizers that may be switch bypassed, and three filters. Faders are conductive plastic with a 100 mm throw.

Suggested retail price of the M-16 console is \$12,900.00.

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For additional information circle # 79

NEW OCTAVE AND THIRD-OCTAVE EQUALIZERS FROM ALTEC

The Model 1651A Active Graphic Equalizer is a single channel unit with 10 minimum phase shift, active band rejection filter sections. Easy to read, center detented slide controls provide up to 12 dB of boost/cut at ISO preferred octave frequencies (31.5 Hz to 16 kHz).

The Model 1652A is a stereo graphic equalizer with the same features as the



ALTEC 1653A 1/3-Octave Equalizer



ALTEC 1651A Single Channel Equalizer



ALTEC 1652A Dual Channel Equalizer

of chorus effects — without the need for six separate delay lines. The extensive control section for the delay time includes capabilities for mixing fixed delay, slow sweeps, and a higher frequency sweep modulation, to generate a wide variety of special effects.

The regeneration circuit allows for selection of feedback from one of three taps, with variable gain and high-cut to simulate a wide range of acoustic



1651A for each of two channels. Both the Models 1651A and the 1652A incorporate a continuously variable high-pass filter with 18 dB per octave roll-off, and a user-selectable low-pass filter with 6 dB roll-off at 12.5 kHz.

For maximum detail in the modification of frequency response, Altec has introduced the Model 1653A third-octave Active Graphic Equalizer. The result of over 12 years of sound-equalization research, the 1653A is described as a fourth-generation EQ device that features 29 minimum phase shift, active band rejection filter sections (25 Hz to 16 kHz), with center detented slide controls to provide up to 12 dB of boost/cut. Continuously variable high-pass and low-pass filters provide roll off at 18 dB per octave from off position to 20 through 160 Hz (high-pass), and from off position to 5 kHz through 20 kHz (low-pass).

Filters in all three units are parallel summed, so that failure of one section will not affect remaining filter sections operation.

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For additional information circle # 80

STEREO TAPPED DELAY UNIT UNVEILED BY A/DA

The STD-1 is a voltage-controlled analog delay with six taps, which can each be assigned to one of two output channels. Each delay tap is non-harmonically related to the other taps, and when combined is said to simulate natural random doubling and a myriad

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For additional information circle # 81

ASHLY SC-68 PARAMETRIC NOTCH FILTER

The SC-68 is a cut-only equalizer that is used to insert relatively sharp dips in the frequency spectrum. Eight individual filter circuits are applied to a common buss, with each filter acting as a frequency-dependent resistance. The resistance drops to zero at the center frequency, providing a nearly infinite cut (30 dB guaranteed) for each band.

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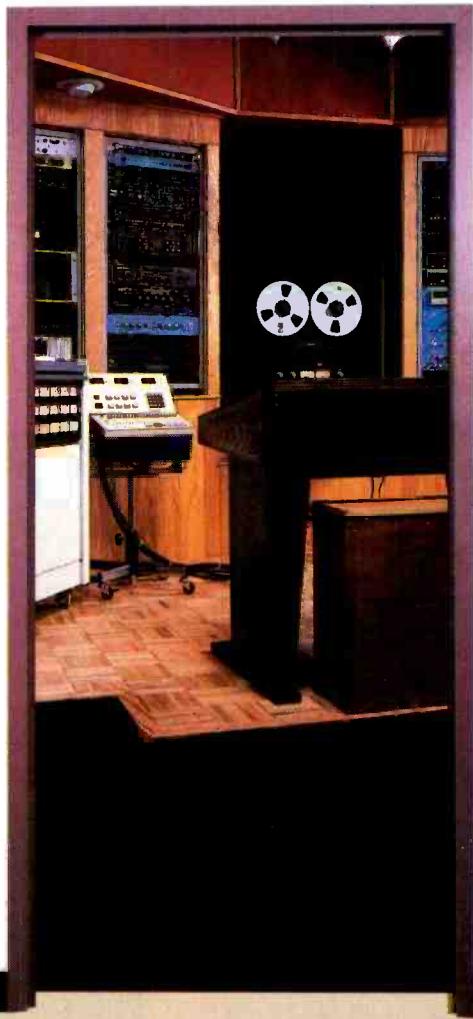
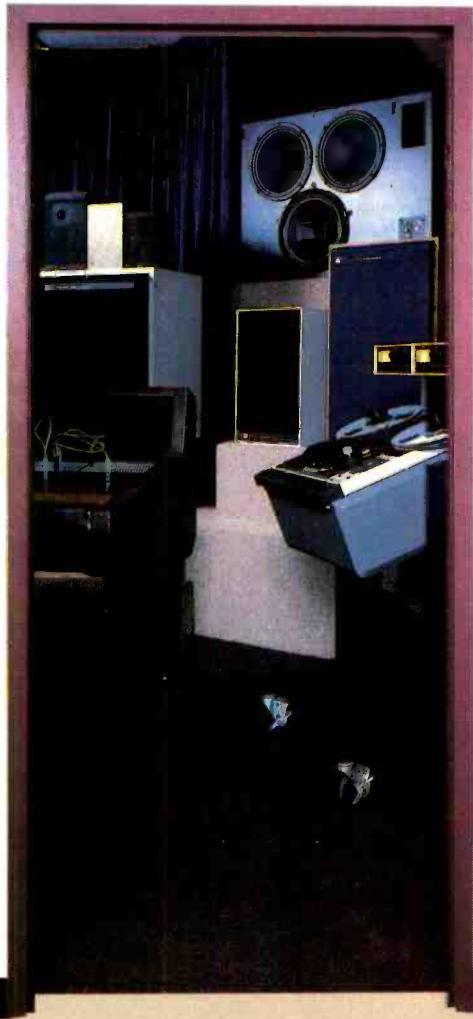
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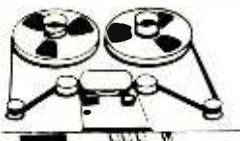


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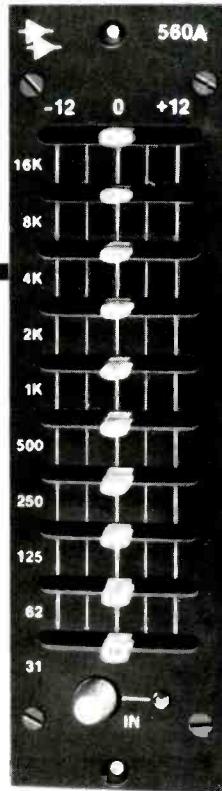
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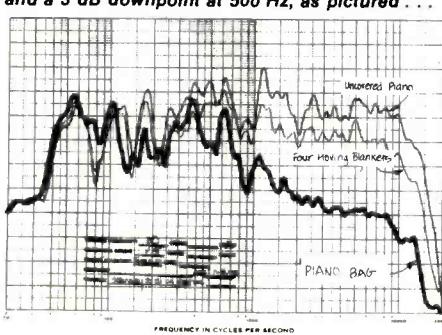
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STUDIO UPDATE

Northeast:

□ **BOOGIE HOTEL STUDIOS** (Port Jefferson, New York) has opened its 24-track live-in facility on Long Island. The studio was built in a theater housed in a 130-year-old Victorian mansion, and until recently was owned by the band, Foghat. The room is equipped with a modified Neve 8058 console feeding a 3M M79 multi-track. Two Studer two-track recorders are also featured, as well as monitors by JBL and Tannoy, several live echo chambers, and a collection of vintage guitar amps and microphones. The old theater studio offers a 20-foot ceiling and a large 50- by 60-foot room. The living quarters can accommodate 8 to 10 guests, and are equipped with a kitchen and club-sized bar. Boogie Hotel is owned by **Don Berman**, formerly of Media Sound and the Power Station, and who has served as Foghat's engineer and producer on a number of projects; **Steve Bramberg**, late of Media Sound and Electric Lady and Kingdom Sound Studios; **Jeffery Kawalek**, ex-chief engineer of House of Music Studios; and **Ron Bretone**, a former member of The Music Explosion and Crazy Elephant. 709 Main Street, Port Jefferson, NY 11777. (516) 473-6655.

□ **ROXY RECORDERS** (New York City) announces the installation of a new Tangent Series 16 console with modifications by Paul Blank of Omnisound/The Mike Shop. The studio was recently used to complete two new albums for the Muse label: the Kenny Burrell Trio, and guitarist Vic Juris. Independent engineer **Malcolm Addey** was at the board for both sessions, with Mike Fries assisting. Roxy is an 8-track studio owned by musicians **Steve Manes** and **Greg DeBelles**. 648 Broadway, New York, NY 10012. (212) 475-6571.

□ **SORCERER SOUND** (New York City) has taken delivery of a newly rebuilt Steinway B grand piano, and has enlarged the studio with the addition of a vocal/keyboard room equipped with a 13-foot ceiling. Other additions include 24 tracks of dbx into the 24-track Dolby noise reduction frame, and the alteration of the two- and 24-track Studer machines to transformerless operation by Acoustilog, Inc. 19 Mercer Street, New York, NY 10013. (212) 925-1365.

□ **KAJEM RECORDING STUDIOS** (Gladwyne, Pennsylvania) announces the acquisition of a Sony DRE 2000 Digital Reverberator, which will be available for both studio work and on a rental basis. 1400 Mill Creek Road, Gladwyne, PA 19035. (215) 649-3813.

- NORTHEAST ACTIVITY -

ATLANTIC CITY RECORDING STUDIO (Blackwood, New Jersey) is laying down tracks for an upcoming EP by pop rocker/songwriter **Ed Majewski**. Production is being handled by Eddie Jay Harris for Record Room Productions. Blackwood, NJ. ■ At **SECRET SOUND STUDIO** (New York City) Kool And The Gang have been recording tracks with **Eumir Deodato** and engineer **Scott Noll**, for De-Lite Records, while **Diva Gray** is in recording new material for Little Macho Productions, with producer **Gordon Grody** and engineer **Nina Rhodes**. 147 West 24th Street, New York, NY 10011. (212) 691-7674. ■ **FILMSPACE AUDIO** (State College, Pennsylvania) has officially initiated its new studio with the help of **Van Dyke Parks**, who has been in producing a project for **The Arthur Goldstein Band**. Co-owner/Engineer **Tom Keiter** has also been co-producing with **Jon Rounds** on projects for **Menagerie** and **Whetstone Run**. 615 Clay Lane, State College, PA 16801. (814) 237-6462. ■ At **ELECTRIC LADY STUDIO** (New York City) Carlelie Couture is recording a new album, produced by **Michael Zilkha** for Island Records. Couture's last album was produced by **Chris Blackwell** at Island's Compass Point Studios in Nassau, The Bahamas. The new album will be titled **Rock Poems**. Michael Frondelli is the engineer on the session. 52 West 8th Street, New York, NY 10011. (212) 677-4700. ■ At **BOOGIE HOTEL STUDIOS** (Port Jefferson, New York), Foghat recently finished recording their new album for Bearsville/Warner Brothers Records, with producer/engineer **Nick Jameson**, while **Good Rats** have an album in progress being produced by the band and **Dan Berman**. Also at Boogie Hotel: **Jay Gold** with **Rob Freeman** producing and engineering; and **Levi Dexter And The Rip Cords** with producer **Richard Gottehrer** and **Freeman** at the board. 709 Main Street, Port Jefferson, NY 11777. (516) 473-6655. ■ **TROD NOSSEL RECORDING STUDIOS** (Wallingford, Connecticut) has finished recording an album for **The Ancient Mariners Fife And Drum Corps**, while **Plan 9** was in laying down tracks for Bomp Records. Other activity included work by **Redhot And Blue**, and **John Kimlingen** producing an album for **Truth For Youth**. 10 George

Street, Wallingford, CT 06492. (203) 265-0010. ■ **THE RECORDING CENTER** (East Norwalk, Connecticut) is recording a second album by **The Elevators** for Arista Records, with producers **Mark Niciper** and **Doug McLennan** of Widespread Productions. **Peter Hodgson** is at the console. Other work includes sessions for the first album by Canadian band **Bounty Hunter**, produced by **Tom Scott** and engineered by **Hodgson**, and bookings with producer **Rob Carlson** and engineer **Pete Bastoni** to record various jingles. East Norwalk, CT. (203) 853-3433. ■ At **SPECTRUM RECORDERS** (Lanesborough, Massachusetts) **Mark Cushing** was back to add some tracks and to remix some songs recorded earlier in the year, while **Windfahl** recorded some of their original tunes, and backed **Pam Peterson** as she cut some of her songs. Shepardson Advertising has also been recording a number of jingles for New England clients. 151 South Main Street, Lanesborough, MA 01237. (413) 499-1818. ■ At **NORTH LAKE SOUND** (North White Plains, New York) **Chuck Rainey** is recording his first solo album in 12 years, with **David Ackerman** producing and **Chris Cassone** engineering, while **Phil Ramone** is working on tapes from the last **Billy Joel** tour for an upcoming live LP; **Jim Boyer** is engineering. North Lake has also been playing host to **Peter Frampton** and his new band, rehearsing for their summer **Breaking All the Rules** tour. 3 Lakeview Drive, North White Plains, New York 10603. (914) 682-0842. ■ **SIGMA SOUND STUDIOS** (New York City) has begun recording a new album project by **The Spinners**, with producers **Mtume & Lucas** and engineer **Jim Dougherty**, while **Ashford And Simpson** is putting the finishing touches on their live album with engineer **Michael Hutchinson**. Also in Sigma, **The Jacksons** are overdubbing and mixing a single for CBS with **John Loungo** mixing and **Jay Mark** engineering, while producer **Jimmy Simpson** is mixing a **Gladys Knight** project with engineers **Hutchinson** and **John Potoker** for CBS Records. 1697 Broadway, 10th Floor, New York, NY 10019. (212) 582-5055. ■ **SIGMA SOUND STUDIOS** (Philadelphia, Pennsylvania) will inaugurate its new 48-track studio with a mixing session for PIR's **Teddy Pendergrass**, produced by

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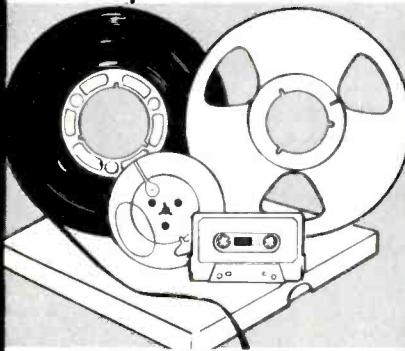
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STUDIO UPDATE

Northeast Activity — continued . . .

Kenny Gamble and **Leon Huff**, with **Joe Tarsia**, Sigma's president, engineering. Work proceeding down the hall includes dates by **Sister Sledge** to record a single for Atlantic with producer **Arthur Stoppe**, and **Instant Funk** tracking a 45 with producer **Bunny Sigler** for Sal Soul Records. Just completed is an album project by **The Temptations** for Motown, produced by **Thom Bell** and engineered by **Dirk Devlin**. 212 North 12th Street, Philadelphia, PA 19107. (215) 561-3660. ■ **THE BARN**(North Ferrisburg, Vermont) is recording **Kilimanjaro's** upcoming second LP. The jazz quartet's album is scheduled for a Fall release, following their appearance at the jazz festival in Montreaux, Switzerland on Lake Geneva. **Wild Rice**, featuring **Derrick Semler**, is also in the facility to record a demo tape and, with **Gordon Stone** and **Robin Remally**, to back up **Michael Hurley** on his upcoming project. **Michael Couture** is chief

engineer, and **Charles Eller** studio manager. North Ferrisburg, VT 05473. (802) 425-2111. ■ **SORCERER SOUND**(New York City) has been recording Sal Soul artists **Inner Life** and **Log** with **Larry Levan** in the control room, while the studio recently finished dates with **The Del Byzanteens** for their upcoming album. In addition, producer **Bill Curtis** is mixing **The Fatback Band**, while **Die Hausefrauen** are recording a single with producers **Eric Dufaure** and **Robert Derby**. 19 Mercer Street, New York, NY 10013. (212) 925-1365. ■ **At ROSE HILLS STUDIOS**(Syracuse, New York) Meat Loaf guitarist **Mark Doyle** has completed production on singles for **Joe Whiting & The Bandit Band** and **The New York Flyers**, just in time to rejoin Meat Loaf in preparation for their upcoming world tour. Other activity includes **Doug Moncrief** of the **Todd Hobin Band** in producing **Vulcano & Micaroni**. 3929 New Seneca Turnpike, Marcellus, NY 13108. (315) 673-1117.

Southeast:

□ **CRITERIA RECORDING STUDIOS** (Miami, Florida) has completed its new East Wing studio, and begun production in the new facility. The two-story complex contains private lounges, offices, and a new mastering suite. The studio itself, designed by **John Storyk**, with input from the Criteria staff, is totally asymmetrical: it has no parallel walls, and a ceiling that rises to 28 feet and then staircases down to eight. The nine-sided control room features a fully automated and completely transformerless MCI JH-556/48 console feeding two JH-24 24-track tape machines and a digital two-track recording system. Monitors are of an Edward M. Long design utilizing a three-way Time-Aligned™ system with cone mid-range drivers. The facility was designed to accommodate video taping sessions as well as audio. **John Cougar And The Zone** inaugurated the studio, recording an album for Riva Records produced by Cougar and **Don Gehman**, with Gehman doubling as engineer. **Don Felder** of The Eagles was also one of the first customers, scoring the title song for the animated film **Heavy Metal**. The sessions were engineered by **Joel Moss**, with Felder producing. 1755 NE 149th Street, Miami, FL 33181. (305) 947-5611.

□ **MARK FIVE STUDIOS/THE ROOM** (Greenville, South Carolina) has taken delivery of a new Neve 8058 fully automated console with a Fadex/16K automation package. Also, a new Studer B-67 has been installed to accompany the 16- and 24-track MCI machines previously in use. In addition, reconstruction is beginning on Studio A, which includes the installation of a wide variety of noise reduction and outboard gear. 10 Michael Drive, P.O. Box 7084, Greenville, SC 29610. (802) 269-3961.

□ **WEB IV STUDIO** (Atlanta, Georgia) recently remodeled its studio and added 24 tracks of Dolby, in addition to its dbx noise reduction. The studio's lounge and recreation areas have also been expanded. 2107 Faulkner Road North East, Atlanta, GA 30324. (404) 321-5993.

□ **REFLECTION SOUND STUDIOS** (Charlotte, North Carolina) has recently upgraded its Studio A with the installation of an MCI JH-636 console with Plasma Display Metering, and 1-A1 monitoring system with TAD components. Reflection is also expanding with the construction of Studio C, a 24-track room designed by **John Gardner** of Nashville. 1018 Central Avenue, Charlotte, NC 28204. (704) 377-4596.

SOUTHEAST ACTIVITY —

At **REFLECTION SOUND STUDIO** (Charlotte, North Carolina) the **Marshall Tucker Band** and engineer **Kevin Herron** recently mixed a live performance for broadcast via NBC's **iThe Source Radio**, while **The Killer Whales** are also in recording tracks for their upcoming **Moonlight LP** with producer **Don Dixon**. In addition, **John Anthony** is in producing studio sessions for **Arrogance**, with engineer **Steve Haigler**. The band recently finished a live double album utilizing the Reflection mobile 24-track unit, with **Chip Garrett** and Haigler at the board. 1018 Central Avenue, Charlotte, NC 28204. (704) 377-4596. ■ **ARTISAN RECORDERS** (Pompano Beach, Florida) recently provided location services for a live broadcast of **Earl Klugh** and **Michael Johnson** from the Gusman Cultural Center in Miami, Florida; **Peter Yianilos** and **Richard Hilton** engineered the dates. The same personnel and equipment also recorded **The Temptations** live in Fort Lauderdale, while Yianilos is also instructing on-location recording techniques at the Full Sail Recording Workshop in Orlando. 1421 South West 12th Avenue, Pompano Beach, FL 33060. (305) 786-0660. ■ **WEB IV STUDIO**(Atlanta, Georgia) reports **Peabo Bryson** in recording his new album for Capitol, with producer **Johnny Pate** and engineer **Ed Seay**; the **S.O.S. Band** recording their second album for Tabu/CBS Records with **Sidgi** producing and **Steve Williams** at the board; and **Cameo** in laying down tracks for a new album, with producer **Larry**

Southcentral:

□ **SOUND STAGE STUDIOS**(Nashville, Tennessee) has updated their "A" studio with the installation of a new Trident TSM console. The unit was custom designed with an overbridge housing 32 meters, and a

STUDIO UPDATE

separate monitor mixing section. The new desk, supplied by Wilson Audio of Franklin, Tennessee, has 32 inputs with graphic EQ, and is pre-wired for 40 inputs. There are 24 bus outputs with 24 monitor channels expandable to 32. Each monitor control can serve as a mixing input with its own EQ, fader, and auxiliary sends, providing a total of 56 inputs during remix. The console is automated by VCA grouping. 10 Music Circle South, Nashville, TN 37203. (615) 256-2676.

□ **RUFF CEDAR SOUND STUDIO**(Austin, Texas) announces the acquisition of a Cinema Products CP 16/A motion-picture camera, thus allowing the studio to offer film/video production in addition to its 24-track audio services. Facilities are available for studio and location filming concurrently with album projects. 5012 Brighton Road, Austin, TX 78745. (512) 444-0183.

□ **NORTH TEXAS STATE UNIVERSITY**(Denton, Texas) has upgraded the School of Music's recording studio with the expansion of its TEAC Tascam Model 15 console to 24-tracks, and the addition of a custom remote control to allow single or group operation of the facility's five Ampex two-tracks. Two PZMs have also been added to the collection of Neumann, Beyer, Sony, and RCA microphones. The operation recently utilized an Otari MTR-90 24-track machine to record an album by the NTSU Symphony, conducted by Anshel Brusilow. Richard Dupree is the studio manager, while staff engineers are Tim Kloth, Rob Ensey, Pat Moriarty, and Neil Rutland. Denton, TX 76203.

SOUTHCENTRAL ACTIVITY

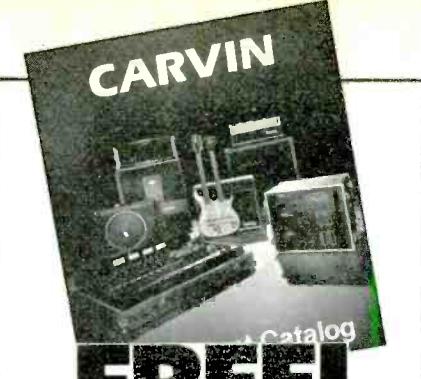
SOUND EMPORIUM STUDIOS(Nashville, Tennessee) is recording Sammy Davis Jr.'s upcoming album on its 3M 32-track digital recorder with subsequent mixdown to two-track digital, making the project one of the first completely digital multitrack sessions in the city. Back-up recordings are also being made on the studio's analog gear so, upon completion, both types of masters will be available. Equipment includes 32-track and four-track digital machines supplied by 3M, the studio's own Studer 24-track analog recorder, and an SMPTE Q-Lock time code reader and autococator from Audio Kinetics. Involved in the project are producer Larry Butler, independent engineer Billy Sherrill, Rodney Pearson of Audio Kinetics, maintenance engineer John Abbott of Sound Emporium, and studio president Jim Williamson. In other activity, the studio recently played host to Grand Records artist Jonathan Edwards recording his debut album for the Toronto-based label. Larry Butler is producing the project, Grand's first U.S. release due for distribution by Capitol/EMI in Canada and independents in the U.S. Nashville, TN. ■ **OMEGA AUDIO**(Garland, Texas) reports the use of its 24-track truck to record the audio portion of a television special with Delbert McClinton. The program was a part of the Dallas Symphony Orchestra's Outdoor Summer Fest, and Omega was called upon to record the program using SMPTE time-codes and to post-produce the audio portion of the program using their new BTX Interlock system. Engineering was handled by Paul Christensen and Russell L. Hearn, while the video portion of the program was by Richard Kidd Productions of Dallas. The Omega Audio mobile truck was also used to record a television special hosted by the Gatlin Brothers at the Hyatt Regency in Dallas for the benefit of the Muscular Dystrophy Association. 2805 Clover Valley Drive, Garland, TX 75043. (214) 226-7179. ■ At **ARDENT RECORDING**(Memphis, Tennessee) Isaac Hayes has been recording tracks, while Keith Sykes is completing a new album for Back Street Records, with producer Jerene Sykes and engineer John Hampton. Point Blank is also in the studio to mix live tapes for London Wavelength and the King Biscuit Flower Hour, with Bill Ham producing and Terry Manning engineering. 2000 Madison Avenue, Memphis, TN 38104. ■ **RUFF CEDAR SOUND STUDIO**(Austin, Texas) has completed an album with Extreme Heat, produced by Neil Pederson and Ben Thornton. Currently in the studio, Lucky Stripes has been recording an LP for Brighton Road Productions with Russell Whitaker and Peter Butcher co-producing. 5012

Midwest:

□ **STREETVILLE RECORDING STUDIOS** (Chicago, Illinois) has taken delivery of the first of three MCI JH-24 recorders for their three 24-track studios. All three rooms are equipped with Harrison consoles and 3M M-79 multitracks. Besides the new equipment, several staff additions have been made, including mixers Bill Beyer, Fred Breitberg, and Larry Huerta. New facilities have also been added, including a kitchen, a client lounge, and a post-production room. 161 East Grand Avenue, Chicago, IL 60611. (312) 644-1666.

□ **RED ENTERPRISES** (Chicago, Illinois) announces the completion of its new 24-track studio facility. The room was designed by Tom Irby and George Zriaick, and features a Harrison/Studer equipment

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package from Studio Supply/Chicago. The operation also offers a screening room with 35 mm, 16 mm, and video capabilities interfaced with the studio's audio equipment. Chicago, IL.

□ **E/R MULTIMEDIA RECORDING COMPANY** (Chicago, Illinois), which specializes in location recordings and video teleproductions, is equipped with Tapco C-12 and Tascam Model 5 and 3 mixers, noise reduction by Dolby and dbx, mikes by Shure, Audio-Technica, and Beyer, monitors by JBL, EQ and delays by MXR, and tape machines, including a TEAC Tascam 80-8, 3440, and 35-2 models. Chicago, IL.

□ **KELLER-CRESCENT COMPANY** (Evansville, Indiana) has appointed **Jack K. Sweeney** to the position of chief recording engineer, according to **Jack Fenimore**, vice-president of the company's audio/video division. Sweeney's background includes work with RCA Service Corporation, Universal Recording, Altec Service Corporation, and Wilding Pictures, Inc. Keller Crescent is an advertising agency with an in-house audio/video production section available for hire. 1100 East Louisiana Street, P.O. Box 3, Evansville, IN 477101. (812) 426-7781.

- MIDWEST ACTIVITY -

AUDIO SERVICES COMPANY (Mishawaka, Indiana) is hosting Autry Walker of Jr. Walker And The All Stars as he lays down tracks for an album project. Meanwhile, Indiana-based band **Pedaler** has completed two sides for a regional release. 3016 Home Street, Mishawaka, IN 46544. □ At **THE CHICAGO RECORDING COMPANY** (Chicago, Illinois) Jerry Butler is working on his new, self-produced LP with engineer Hank Neuberger; jazz keyboardist Charles Earland recorded his forthcoming Columbia album with the Earth, Wind & Fire horn section, and producer Tom-Tom 84; Keith Thomas produced Christian-rock artist Steve Camp's new LP for Word Records; and Billy Squier mixed a live performance tape for broadcast on the nationally-syndicated "King Biscuit Flower Hour," assisted by mix engineer Jeff Newsome. 528 North Michigan, Chicago, IL 60611. (312) 822-9333. □ At **FIFTH FLOOR RECORDING** (Cincinnati, Ohio) Godmoda is working with producer Bootsy Collins on mixes for their debut album on Elektra Records. Rich Goldman is engineering with Bob Craig and Greg McNeily assisting. 517 West Third Street, Cincinnati, Ohio 45202. (513) 651-1871. □ At **HOME GROWN STUDIOS** (Bloomington, Indiana) Jan Henshaw's as yet untitled album for Red Bud Records is now in the mixing stages, co-produced by Henshaw and Bob Lucas of the group Electricity. Ruthie Allen and TJ Jones have also been laying basic tracks for a new single. Dan Radcliffe and the Emvoees are near completion of their EP project for Sirius Music, and The Riff-o-matics, described as a cosmic funk jam band, are in the middle of a singles project. 611 East Empire Road, Bloomington, IN 47401. (812) 824-2400. □ **STREETVILLE RECORDING STUDIOS** (Chicago, Illinois) has been tracking album projects for Roscoe Mitchell, Albert Collins, The Blue Riddim Band, and KoKo Taylor with Fred Breitberg at the console, and an LP by Rocken Horse with Todd Von Ohlen engineering. Also in the studio, Big Twist and The Mellow Fellows are recording their second album for Flying Fish Records, produced by Jim Tullio. 161

East Grand Avenue, Chicago, IL 60611. (312) 644-1666. □ **FAITHFUL SOUND STUDIOS** (Urbana, Illinois) announces the installation of an 8-track Ampex 440B master recorder. According to chief engineer **Mark Rubel**, initial 8-track projects included sessions with The Edge, Erin Isaac, and album pre-production work with Adrian Belew. The Vertebrates, Big Daddy Sun, and the Rocking Clones have all recently released singles recorded at the studio in the past several months. P.O. Box 2359, Champaign, IL 61820. (217) 328-5065. □ **THE RECORDING CONNECTION** (Beachwood, Ohio) has been providing its Roadmaster II 24-track mobile recording truck to NBC Radio, for taping of Joe Walsh and Friends in Columbia, Maryland, Jefferson Starship at The Greek Theater, Los Angeles, and The Tubes at The Cleveland Coliseum. Westwood One has also utilized the van to record Rick James and Maze at the Meadowlands in New York, Stanley Clarke and George Duke at the Front Row Theater in Cleveland, and Deadly Ernest in Columbus, Ohio. 23330 Commerce Park Road, Beachwood, OH 44122. (216) 464-4141. □ **UNIVERSAL RECORDING CORPORATION** (Chicago, Illinois) provided its digital recording operation to The Lettermen, produced by Tony Butala and engineered by Universal's Bill Bradley. Other dates in the studio include gospel singer Inez Andrews for Savoy Records, with producer Milton Bingham and engineer Danny Leake. 46 East Walton Street, Chicago, IL 60611. (312) 642-6465. □ **HEDDEN WEST RECORDING STUDIO** (Schaumburg, Illinois) recently recorded tracks for The Buzzards with engineer Iain Burgess, who also engineered dates with Poison Squirrel, Sport of Kings, and Fawn. The Wildwood Pickers are in recording their second album with Joe Ott, while mastering at the studio has included dates by Phil 'n' The Blanks, The Red Ball Jets, and The Odd. Kevin Vogts is Hedden's staff cutting engineer. 1200 Remington Road, Schaumburg, IL 60195. (312) 885-9378.

Southern California:

□ **THAT STUDIO** (North Hollywood) announces the opening of its 16-track facility. Design and construction of the studio was handled by Michael Eberl and studio manager Richard Holbrook, while the facility's equipment roster features Otari 16-, 8- and two-track machines, a Revox stereo machine, and an Audiontronics 110-8 24x8 mixing console. Monitoring is handled by JBL 4311, Altec 604, and Auratone speakers driven by Crown and BGW amps. Outboards include units by dbx, Lexicon, MicMix, Sound-Workshop, Bi-Amp, UREI, and Audio Design and Recording. Microphones are by Sennheiser, Beyer, Sony, Electro-Voice, Shure, AKG, PZM and PML, while the instrument list offers a Yamaha 7-foot grand piano, Hammond B3 organ, Fender Rhodes, and Sonar drum kit. P.O. Box 958, North Hollywood, CA (213) 764-1421.

□ **MAD HATTER STUDIOS** (Los Angeles) announces the opening of its new 24-track recording facility. The studio covers 1,300 square feet of area, with 13- to 18-foot sloped ceilings and an adjoining isolation booth. The control room is equipped with a Trident console, two Studer tape recorders, two EMT 140As and a 240 Gold Foil for reverberation, and monitoring delivered by a John Meyer ACD system. The first recording project at the facility is a Warner Brothers LP entitled *Three Quarters*, featuring Steve Gadd, Eddie Gomez, Michael Brecker, and studio co-owner Chick Corea. 2635 Griffith Park Boulevard, Los Angeles, CA 90039. (213) 664-5766.

□ **SOUNDTEK STUDIO** (Campbell) has announced the forthcoming opening of a new 16-track studio, featuring a Neotek Series III 26x24 console, Ampex tape recorders, a full complement of outboard gear and microphones. Soundtek will also feature a complete assortment of acoustical and electronic keyboards. 85 South 2nd Street, Campbell, CA. (408) 370-3313.



THAT STUDIO

STUDIO UPDATE

□ **MIRROR IMAGE CASSETTE COPIES**(Hollywood) has moved to a new location in Hollywood, and offers real-time copying from tape, cassette, or disk on ten Hitachi D-90 decks with metal tape capability and comprehensive EQ by Audio Control. Owner **Tony Rockliff** is a British producer/engineer/musician, while the chief engineer is **Paul Gibbons**, formerly of ASR and Superscope. 7113 Hawthorn Avenue, Hollywood, CA 90046. (213) 669-0813.

□ **INTERNATIONAL AUTOMATED MEDIA**(Irvine) has announced that **Jerry Shirar** will assume the post of president of the corporation following the resignation of former IAM president **Skip Konte**, who left to pursue a career in independent production. Additionally, **Terry Sheppard**, formerly the studio's director of marketing, has been appointed to the post of vice-president operations by Shirar. 17422 Murphy Avenue, Irvine, CA 92714. (714) 751-2015.

□ **QUAD TECH STUDIO**(Los Angeles) owners **Hank** and **Joani Waring** are preparing their Studio #7 for recording and mixdown sessions, featuring a 32x24 Neotek Series III console, 3M M79 24- and two-track machines, JBL and E-V monitors, and a full complement of outboard gear. 4007 West 6th Street, Los Angeles, CA 90020. (213) 383-2155.

□ **HOUSTON RECORDING**(Cucamonga) is opening a remote facility in San Francisco with dual 24-track recorders and an MCI JH-636 automated console. 9340 Foothill, #32, Cucamonga, CA 91730. (714) 987-0379.

— SOUTHERN CALIFORNIA ACTIVITY —

SPINDELTOP RECORDING STUDIOS(Hollywood) is tracking the **Brian Chatter Band** with **Shel Talmy** (former producer of The Who and The Kinks). In the mix stages at the facility is a children's soundtrack under the direction of producer/writer **Don Goodman**. Both projects are being engineered by **Charlie Paakkari** with **Steve Thume** assisting. 3449 Cahuenga Boulevard, Hollywood, CA 90068. (213) 851-1250. ■ **CALIFORNIA RECORDING STUDIOS**(Hollywood) finds Emmy Lou Harris' fiddle player, **Wayne Goodwin**, finishing his new single *Rocky's Breakdown*, with producer/engineer **Steve Pouliot**. Also in the studio, country singer **Eddie Marie** recently finished her latest LP with producer **Tony Adams** and engineer **John Brady**, while **Jan and Dean** have been tracking their latest single with producer **Alan Miles**. 5203 Sunset Boulevard, Hollywood, CA 90027. (213) 666-1244. ■ **INTERNATIONAL AUTOMATED MEDIA**(Irvine) will be recording the new MCA album by **The Archers**, *Spreading Like Wild Fire*, with producer **Dony McGuire**. 17422 Murphy Avenue, Irvine, CA 92714. (714) 751-2015. ■ At **RUDY RECORDS**(Hollywood) **Graham Nash** and **Stephen Stills** are reported to be nearing completion of their new album. Equipment being used on the project includes a Studer A80 ½-inch stereo machine, and an EMT 251 digital reverb. **Stan Johnston** and **Steve Gursky** are engineering, with **Jay Parti** assisting. 1522 Crossroads of The World, Hollywood, CA 90028. (213) 467-6000. ■ **UNITED WESTERN STUDIOS**(Hollywood) reports that **The Little River Band** was in the studio with producer **George Martin** laying down tracks for the motion-picture soundtrack of *Honky Tonk Freeway*, while **Michael Miller** has been producing **Dionne Warwick**, **Chuck Mangione**, **Rick Nelson**, and **Don Wilson** for the syndicated television show, *Solid Gold*. Also at

United/Western: **Michael Chapman** is producing *Exile* for Warner/Curb Records, with **Doug Schwartz** and **Michael Boatner** assisting; while **Oingo Boingo** has finished its A&M album with **Pete Solley** producing and **Steve Brown** at the board. 6050 Sunset Boulevard, Hollywood, CA 90028. (213) 469-3983. ■ **KENDUN RECORDERS**(Burbank) reports **Kool And The Gang** are in laying down instrumental and vocal overdubs for De-Lite Records, with producer **Deodato** and staff engineers **Mallory Earl** and **Mack Sackett**, while **Carol King** is in cutting tracks with producer **Mark Hallman** and engineer **Chet Himes** and assistant **Tom Cummings**. Also at Kendun, Motown artists **Nolen And Crossley** are mixing their self-produced project with engineers **Barney Perkins** and **Sackett**. 619 South Glenwood Place, Burbank, CA 91506. (213) 843-8096. ■ **K-DISC MASTERING**(Hollywood) reports that **Jo Hansch** and assistant **Ray Olson** recently cut the master for *Tinsel Town Rebellion*, **Frank Zappa**'s latest for Barking Pumkin Records. Other projects include **Tom Scott**'s live LP, *Apple Juice* for CBS, **Teena Marie**'s latest on Motown, *It Must Be Magic*, and *Pure Prairie League*'s *Somewhere in the Night* on Casablanca produced by **Rob Fraboni**. 6550 Sunset Boulevard, Hollywood, CA 90028. (213) 466-1323. ■ At **ARTISAN SOUND RECORDERS**(Hollywood) engineer **Gregory Fulginiti** recently finished mastering the new **Pat Benatar** album, *Precious Time*, with producer **Keith Olsen** for Chrysalis Records, **Ella Fitzgerald**'s International release with producer **Eric Miller** for Pablo Records, **Rick Springfield**'s latest for RCA with producer **Bill Drescher**, and the new Warner Brothers project by **The Tazmanian Devils** with producer **Eric Jacobsen**. 1600 North Wilcox Avenue, Hollywood, CA 90028. (213) 843-8096. ■ **CLOVER**

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Quotations are from contributors to recent issues of PZM Memo, a newsletter of PZM ideas published by Crown.

STUDIO UPDATE

SOUTHERN CALIFORNIA ACTIVITY — continued . . .

RECORDERS(Los Angeles) was the recording venue of Bob Dylan's upcoming album, *Shot of Love*. Produced by Chuck Plotkin and engineered by Toby Scott, the album features guest appearances by Ringo Starr, Ron Wood, Andrew Gold, and Ry Cooder. For echo and reverb, the new Sony DRE 2000 digital reverberator was utilized on all cuts, to give a live sound to the controlled studio acoustics. The project was completed shortly before Dylan left for his summer European tour. Other notable projects out of Clover include Bruce Springsteen's *The River*, which was mastered digitally using the Sony PCM system. Los Angeles, CA. ■ **DAVLEN SOUND STUDIOS**(Universal City) is recording Polygram artist Bobby Caldwell as he does overdubs with keyboardist Steve Porcaro for his new album. Down the hall, Air Supply producer Robbie Porter is tracking a Teri Desario album for Polygram with Jim Hilton at the console, and Mike Stone is mixing the new April Wine video presentation to be aired soon for Capitol Records. 4162 Lankershim Boulevard, Universal City, CA 91602. (213) 980-8700. ■ **TIM PINCH RECORDING**(Van Nuys) recently supplied its 24-track remote truck to record *Humble Pie* at Wolf & Rissmiller's Country Club in Reseda, California, for the BBC Rock Hour. Tom Johnston was also recorded in the same venue by Pinch for a video presentation; while other dates include *A Day in the Country* video production at the Rose Bowl in Pasadena, California, starring The Gatlin Brothers, Merle Haggard, and Rosanne Cash; and a television production with Tina Turner and Jim Stafford at the California Expo Fair in Del Mar, California. Pinch also provided its services for the recently released *Friday Night in San Francisco* LP with John McLaughlin, Al DiMeola, and Paco DeLucia, recorded live at the Warfield Theater in December of 1980. All dates were engineered by Tim Pinch and Rex Olson. 6201½ Van Nuys Boulevard, Van Nuys, CA 91401. (213) 988-1160. ■ **WESTLAKE AUDIO**(Los Angeles) reports artist Patti Austin is recording a new album with Quincy Jones producing for Qwest Records, with Bruce Swedien engineering assisted by Ed Cherney. Meanwhile, Roberta Flack was doing tracks for the new Richard Pryor movie with Joe Ferla engineering and Erik Zobler

assisting for MCA/Universal, and Don Felder and several of The Eagles were in to finish up the title track to the movie *Heavy Metal*. Joe Moss and Matt Forger handled the control room chores. Also in the studio, George Benson is finishing up overdubs for a forthcoming Warner Brothers album, with Wayne Henderson producing and Alan Sides and Brian Reeves engineering. 6311 Wilshire Boulevard, Los Angeles, CA 90048. (213) 655-0303. ■ **THE PASHA MUSIC HOUSE**(Hollywood) is finishing up Billy Thorpe's first album for the Pasha/CBS label, with producer Spencer Proffer and engineer Larry Brown in the control booth. Proffer is also producing sides for the Florida artist Keith L'Neire, with Brown and Duane Baron handling the engineering chores. Meanwhile, producers Charlie Calello and Steve Bedell are recording Phyllis Baily with Baron at the board, and Brown is also mixing Rochelle Robertson with producer Jeff Rich. 5615 Melrose Avenue, Hollywood, CA 90038. (213) 466-3507. ■ **SUNSET SOUND STUDIO**(Hollywood) finds Eddie Rabbitt finishing the mix on his upcoming LP for Elektra, with producer David Malloy and engineer Peter Granet, while Neil Diamond is in Studio 2 recording strings for his next CBS album with Bob Gaudio producing and Ron Hitchcock at the board. Nicolette Larson was also in Sunset to track a song for the soundtrack of *Arthur* on Warner Brothers, with Andrew Gold producing and Jim Isaacson engineering. Other dates include sessions by Pat Simmons of the Doobie Brothers, working on a solo LP with producer Ted Templeman and engineer Donn Landee, and The Dirt Band in mixing a new release for United Artists/EMI, co-produced by Jeff Hanna and Bob Edwards. 6650 Sunset Boulevard, Hollywood, CA 90028. (213) 469-1186. ■ **RUSK SOUND STUDIOS**(Hollywood) finds The Chipmunks in to record their new Christmas album, produced by Ross Bagdasarian and Janice Karman, with Randy Tominaga at the console. Roberta Kelly is also in laying down tracks with producer Juergen Koppers and engineer Steven D. Smith. The album is for Bloody Hehl Productions, which is also recording Marlene Ricci in the studio with the same control-room crew. 1556 North La Brea Avenue, Hollywood, CA 90028. (213) 462-6477. ■ At **SKYLIGHT EXCHANGE STUDIOS**(Granada Hills) The

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STUDIO UPDATE

Lettermen have recorded radio promotion spots for KYA-FM, San Francisco, with Tony Butala of the band producing; producer engineer **Steven Richardson** is cutting tracks with singer songwriter **Rory O'Brien** for his up-coming EP release; and British rock group **Jersey** cut three songs with Richardson at the console. P.O. Box 3173, Granada Hills, CA 91344. (213) 363-8151. ■ **HOUSTON RECORDING**(Cucamonga) recently sent its remote truck to Las

Vegas, Nevada, to record a live 24-track audio/video taping of **Kool And The Gang**, **Johnathan Winters**, and **Waylon and Madame**. Engineers were **Fred Tator**, **Rich Houston**, and **Steve Hawk**. Video Productions of Nevada handled the visual end, while sound reinforcement was provided by A-1 Audio Services. The shows at the Aladdin Theater were taped for cable television release. 9340 Foothill, #32, Cucamonga, CA 91730. (714) 987-0379.

Northern California:

□ **SHOE STORE RECORDING**(Berkeley) announces the completion of its new recording studio located in the basement of McElroy Shoes in downtown Berkeley, making it the city's first truly "underground" recording studio. The Shoe Store is the result of a partnership between **Hank Ceigler**, **Calvin McElroy**, and **Dr. Richie Moore**. Moore designed and interfaced the studio after totally gutting the basement. The facility is equipped with a TEAC Tascam 80-8 8-track recorder, said to have been modified for improved frequency response and faster, noise-free punch-ins. The console is an upgraded Sound Workshop 1280-B, with Tannoy monitors powered by Yamaha amplifiers. Auratones are also available, along with a Furman and Orban reverb system, Symetrix compressors and noise-gates, an MXR Flanger Doubler, and an Aphex Aural Exciter. Microphones are by AKG, Sennheiser, Shure, and Beyer. The equipment can also be utilized for remote recording. #1 Shattuck Square, Berkeley, CA. (415) 540-6055.

□ **AUDIO TRANSFER RECORDERS**(Lafayette) announces the opening of its new 8-track recording facility. Designed and interfaced by **Dr. Richie Moore** of Studio Operations Service, San Rafael, the studio features the new "Auracoustic" room design that is said to promote even frequency response and optimum reverberation time in both the recording and control room. The recording room measures 19' by 22-foot, and the control room 17½ by 19'; both areas have a variable ceiling that averages at 13 feet. Equipment comprises a new and upgraded Sound Workshop Series 30 console; Scully 280 1-inch 8-track; Scully 280 two-track; and a wide range of outboard gear and microphones. The monitoring system is a pair of flush-mounted UREI Time-Aligned 811As and Auratones. 3327 Mt. Diablo Boulevard, Lafayette, CA 94549. (415) 283-4094.

□ **SENSA STUDIO** (Sunnyvale) announces the recent installation of an Ampex MM-1000 16-track recorder, purchased from Fantasy Studios, Berkeley, California. The new multitrack features many modifications and retrofits, including Variable Speed Oscillator and provisions for SMPTE time-code. Recent projects at the studio include a radio commercial for **Laurence of London**, an album by **Ray Nelson**, a 45 by **Bryan Cannon**, and a four song demo by **Michael Silversher**. 1016 Morse Avenue, #16, Sunnyvale, CA 94086. (408) 734-2438.

□ **BODACIOUS AUDIO** (San Mateo) has announced the addition of the new Sony PCM Digital Recording System. 4114 George Avenue, #1, San Mateo, CA 94403. (415) 573-5297.

□ **BAY SOUND REPRODUCTION** (Oakland) has updated their 16-channel/8-track studio with the purchase of new Crown PZM microphones, EXR Exciter, Eventide Instant Phaser, and MIC MIX Master-Room Super C reverb. 5 Yorkshire Drive, Oakland, CA 94618. (415) 655-4885.

□ **UNICORN STUDIO** (Nevada City) has purchased a Studer A800 24-track machine to handle master recording chores. The facility is owned by **Roger Hodgson** of the rock group **Supertramp**. Nevada City, CA.



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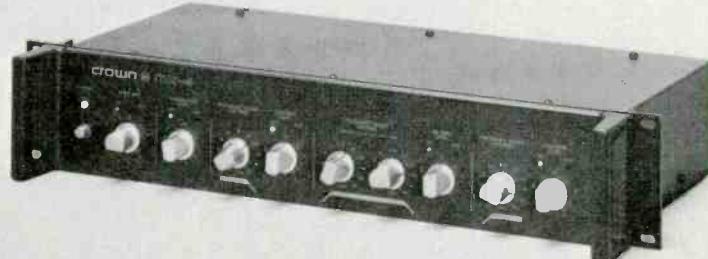
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STUDIO UPDATE

— NORTHERN CALIFORNIA ACTIVITY —

At **AUDIO TRANSFER RECORDERS**(Lafayette) The Tickets recording several singles for Associated Broadcasters with Richie Moore engineering and producing, and Mary Davis assisting. The Mark Stanley Band recorded a single, with Duncan Rowe engineering and Peter Rowe assisting. Other activity has been a commercial for "This Month In The East Bay," produced by Bob Falstein; a single by Japanese artist Takami Umehara for release in Japan; and pre-production album work by the group Tattoo; all engineered by Moore assisted by Davis. Jimmy Lyon, guitarist with Eddie Money, was also in mixing demos of Kid Palomino with Rowe engineering. 3327 Mt. Diablo Boulevard, Lafayette, CA 94549. (415) 283-4094. ■ **SHOE STORE RECORDING**(Berkeley) has been recording The Roosters for their upcoming EP with Calvin McElroy and Richie Moore co-producing and engineering, with assistance from studio manager Mike Beynon. Ken Greenberg is in the studio producing The Lawyers with Hank Ceigler at the console, while Holly Hanson is also finishing an independent album. #1 Shattuck Square, Berkeley, CA. (415) 540-6055. ■ At **VILLA RECORDERS**(Modesto) Cornelius Bumpus of the Doobie Brothers has been mixing a solo album project with John Wright engineering. Also, Nigel Benjamin, former lead singer of Mott, has started an album project with Ashley Brigdale engineering and producing. 3013 Shoemake Avenue, Modesto, CA 95351. (209) 521-1494. ■ At **FANE PRODUCTIONS**(Santa Cruz) Ray Bolger is wrapping up his narrative version of Peter and the Wolf, with the Santa Cruz Chamber

Orchestra and engineer Peter Carlson. The Garcia Brothers have also been in, recording tracks for their new LP with Tom Anderson producing and engineering, while Interface is finishing up their latest single for Bluebeat productions, with Fane Opperman at the console. 115-B Harvey West Boulevard, Santa Cruz, CA 95060. (408) 425-0152. ■ **BAY SOUND REPRODUCTION**(Oakland) recorded the recently released EP by Back Up & Push with producer Tim Ware and engineer Glen Oey. Also in the studio, Rasul Saddik has finished mixing his upcoming album, while Holy Smoke and Napata were in to record demo tracks, the latter with producer Joachim Young. 5 Yorkshire Drive, Oakland, CA 94618. (415) 655-4885. ■ At **HEAVENLY RECORDING STUDIOS**(Sacramento) Dewayne Blackwell is working on new material for Snuff Garrett Productions, Larry Lauzon engineering; B.Y.U. Music Director Newell Dayley has finished producing the new Synthesis jazz album, Lauzon engineering with Ray Pyle assisting; Ted Kimura producing Odysus with Lauzon engineering; and Perry Jones producing and Lauzon engineering on Bob Crocker's new album. 1020 35th Avenue, Sacramento, CA 95822. (916) 428-5888. ■ Recent sessions with the **BODACIOUS AUDIO**(San Mateo) remote truck includes The Johnny Van Zant Band recorded live for Polygram Records at the Keystone, Palo Alto, for future radio broadcast. Dave Haynes engineering with Herb Pallant assisting. Also, The Casuals recorded at various Bay Area clubs for a future live album. 4114 George Avenue #1, San Mateo, CA 94403. (415) 573-5297.

Mountain:

□ **BONNEVILLE PRODUCTIONS**(Salt Lake City) has installed an Audio-Kinetics Q-Lock 310 SMPTE time-code synchronizer system. The portable system can be used in any of Bonneville's three specialized studios to run two or three tape sources simultaneously, including Ampex MM1200 24-track, 440C 8-track, and ATR-104 4-track audio machines, and a Sony 2860 U-matic video cassette recorder. 130 Social Hall Avenue, Salt Lake City, UT 84111. (801) 237-2800.

— MOUNTAIN ACTIVITY —

SOUND COLUMN STUDIOS(Salt Lake City, Utah) reports that producer Lawrence Tamblyn has just finished overdubbing and mixing *The Lolliwinks*, a children's album for K-Tel Records. Jim Anglesey engineered the sessions. 46 East Herbert Avenue, Salt Lake City, UT 84111. (801) 355-5327.

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STUDIO UPDATE

Northwest:

□ **SOUND SMITH STUDIOS**(Portland, Oregon) has begun construction on a state-of-the-art control room designed by **Tom Gandy** using Energy Time Curve Analysis. According to Sound Smith vice-president **David Tower**, Gandy is one of the 50 individuals in the world licensed to use this method of analysis. 426 North West 6th Street, Portland, OR 97209. (503) 224-7680.

Hawaii:

□ **KONA GOLD RECORDING** (Hawaii) has acquired an Ampex MM-1100 16-track with Search-To-Cue. The deck was formerly the property of Sea-West Studios, and has been linked to a Sound Workshop Series 30 console equipped with full sweep EQ. A good selection of outboard gear and microphones is also said to be available. The studio boasts a large selection of instruments: ARP string ensemble; Hobart Cable acoustic upright grand piano; ARP 2600; Rogers and Ludwig drum kits; Digital Sequencer; 1980 Fender/Rhodes with active EQ; Les Paul Stratocaster; and Gibson Hummingbird. Kailua-Kona, Hawaii. (808) 329-6439.



Le Studio's Perry, Brown, Northfield

Canada:

□ **LE STUDIO** (Montreal, Quebec) has acquired a two-channel JVC Model BP90 Digital Recording Processor, which features 16-bit linear quantization. The unit was elected the best choice by producers **Andre Perry, Terry Brown** and Le Studio's engineers **Nich Blagona** and **Paul Northfield**, after comparison tests made with other available systems. The facility is already equipped with a 36-channel Solid State Logic console, and Studer A800 Mark II 24-track recorders. Morin Heights, Quebec, Canada J0R 1H0.

Mexico:

□ **SONIDO GRAB, S.A.**(Mexico City) is a new 24- and 4-track studio, the main control room of which features a Neotek 24x24 Series III console custom built for the facility, MCI JH-24 and JH-110A tape machines, and a complete array of outboard equipment. There are two studios and a vocal booth serving the main control room. The 4-track studio is intended primarily for radio commercials, and features a 16x4 console, TEAC/Tascam 40-4 with dbx, and a good selection of outboard equipment. Mexico City.

Great Britain:

□ **THE BRITISH BROADCASTING CORPORATION** (London) have installed a Solid State Logic SL4000 E-Series Master Studio Systems at its prime rock recording venues: Studios 4 and 5 in the BBC music production complex at Maida Vale, London. The 40-input E-Series console in Maida Vale 4, which is interfaced with a Studer A800 24-track machine and A80 twin-tracks, may be switched between track-laying, overdubbing and mixing configurations. This flexibility may be extended to the point of live transmission, with simultaneous feeds to two-track tape machines, sync-locked multitrack machines for simulcast repeats, and off-air dynamic mixing memory. Other broadcasting features include safety switching logic, which locks out all potentially dangerous switching functions that could interrupt main signal paths during transmission or live recording. Broadcasting House, Portland Place, London W1A 1AA, England. 01-580 4468.

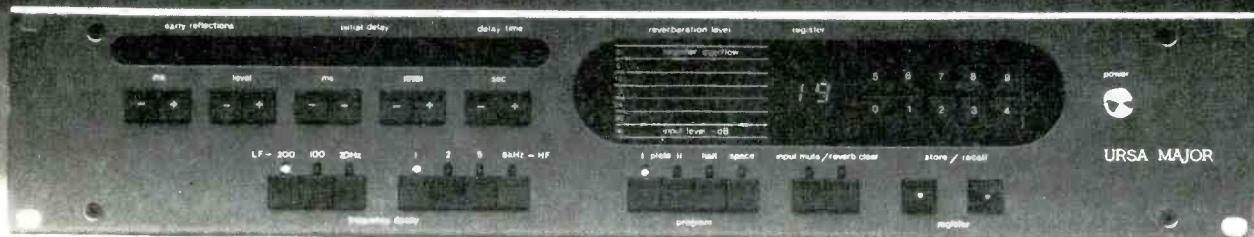


BBC's Chinnery, McEwan . . .
SSL's Sanders

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STUDIO UPDATE

Great Britain:

□ **GENESIS' PRIVATE STUDIOS** (Surrey) was recently completed with equipment provided by HHB Sales of London. The facility includes an Amek 36x24 M2000A console linked to Studer A80 24- and two-track recorders. EMT Echo Plate is also featured, as well as UREI monitors powered by Crown amps and mikes by Shure, Beyer, Neumann, and PZM. *Surrey, England.*

□ **R G JONES RECORDING STUDIOS** (Wimbledon, London) is to embark on a major studio redesign, involving the installation of a Solid State Logic 4000 E-Series Master Studio System. The SSL will be interfaced with a Studer A80 Mk3 in a control room, which will have completely new acoustic architecture by Eastlake Audio. The Total Recall Studio Computer will provide all title, track, cue and mix listings either on a video screen, or on a printed copy for production planning outside the studio. As studio owner **Robin Jones**, explains: "We had a good look at everything on the market, but we kept coming back to the SSL, not just on the sound, but also because of the flexibility in both mixing and maintenance. The other thing that attracted me, is that hooking up a synchroniser to an already integrated Studio System is a neat and easy task, and the inevitable expansion to 48-track recording and to audio/video sweetening for videodisks will be very cost effective." *Beulah Road, London SW19 3SB, England. 01-540 9881.*

Denmark:



□ **DANMARKS RADIO** (Copenhagen) recently took delivery of what has been described as the World's first computer-controlled sound recording truck. At the heart of the project is the Solid State Logic Master Studio System, which includes a 44-input SL4000 E-Series console. While primarily intended for location recording, the truck will provide the necessary facilities to create separate mixes for live stereo broadcasts plus simultaneous twin 24-track recording, and either mono or stereo feeds to a location video truck. Additionally, the unit will be equipped with Solid State Logic's Total Recall computers, which provide complete tape machine management, and store every detail of the console set-up, including all mixes and foldbacks, panning, equalization and filters, compression, limiting and gating, as well as input and output selections. Acoustics of the truck were designed by Tom Hidley of Sierra/Eastlake.

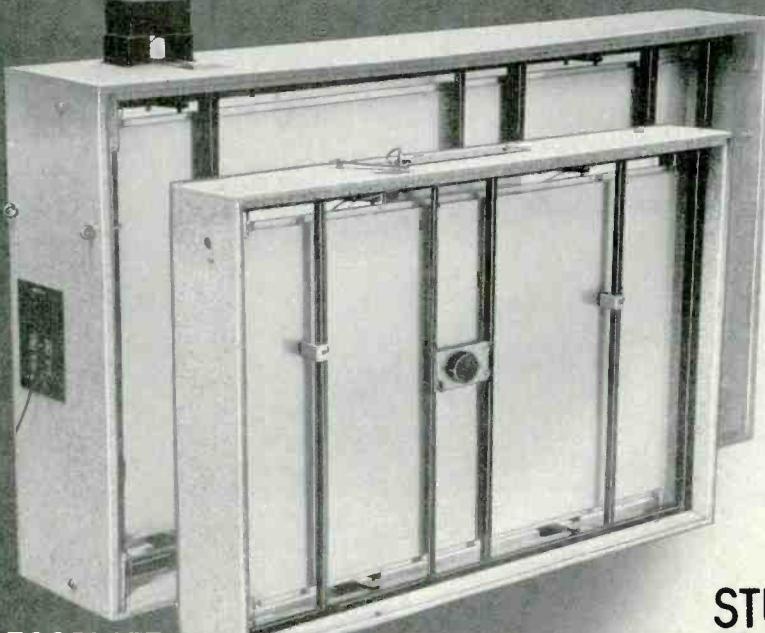
AUDIO/VIDEO UPDATE

Eastern Activity:

□ **ADWAR VIDEO CORPORATION** (New York City) announces the addition to its staff of **John Trayna** as director of special projects. Previously a corporate consultant to the company, Trayna recently finished design and installation of Adwar's new post-production center, which features a CMX on-line/off-line editing suite. He was also previously a director of video resources at Electronic Arts Intermix, and an instructor in video at New York University. *100 Fifth Avenue, New York, NY. (212) 691-0976.*

□ **BO HIGBEE PRODUCTIONS** (Atlantic City, New Jersey) has been supplying broadcast-quality video tape services for such stars as Ben Vereen, Bill Cosby, and Neil Sedaka, and non-broadcast tapes for the likes of Frank Sinatra and Jerry Lewis. Equipment used includes one-inch Type "C" highband tape machines — with both $\frac{3}{4}$ - and $\frac{1}{2}$ -inch formats also being available — fed by Ikegami HL-79A camera systems. The company has also produced tapes for corporate documentaries and training tapes, industrial presentations, TV commercials, and remote news broadcasts. *P.O. Box 779, Atlantic City, NJ 08404. (609) 653-1833.*

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STUDIO UPDATE

AUDIO/VIDEO UPDATE

□ **COLUMBIA PICTURES** and **RCA**(New York City) have announced the formation of a joint venture for the marketing of home video entertainment programs throughout the world, excluding the U.S. and Canada. Under the new arrangement, the organization will open offices around the world to distribute existing and future theatrical and television programs produced by participants in the venture, and by outside producers. **RCA Records** video music programs and **RCA SelectaVision** videodisks will be processed by the operation, which will also handle all formats of home video, including the various formats in disk, and cassette tapes. *711 Fifth Avenue, New York, NY 10022. (212) 751-4400.*

□ **DEVLIN PRODUCTIONS**(New York City) provided video editing time for the British New Wave band, **The Stranglers**, to promote their appearance at Bond's International Casino in Manhattan, as well as the release of their new album on **Stiff Records**. The editing was performed by **Gregg Featherman**, and supervised by the band's manager **Ed Klieman**. Devlin has also been handling a number of commercial bookings in their post-production suites. *150 West 55th Street, New York, NY 10019. (212) 582-5572.*

□ **E.J. STEWART**(Philadelphia, Pennsylvania) recently recorded a video promotion of Columbia Records artists, **The Quincy Band**. The presentation features the five-member band performing atop a glowing stage, and is highlighted by special effects generated by the company's Grass Valley Group Mk II digital special effects system. The band was also taped on location for intercutting with the stage performance. The piece was produced for E.J.S. by **Corrine Cardillo**, with an assist from music director **Marcus Peterzell**. *525 Mildred Avenue, Primos, PA 19018. (215) 626-6500.*

□ **MAGNOSOUND AND VIDEO** (New York City) has added a seventh 3M TT-7000 one-inch C-formatt video tape recorder with time base corrector. All VTRs are interfaced with the CMX editing hardware, which includes in its outboards a 3M D-8000 graphics generator. Other services offered include original video production, film-to-tape transfer, cassette and tape duplication, editing, and PAL SECAM and NTSC conversions. *212 West 48 Street, N.Y. NY 10036. (212) 757-8855.*

□ **NATIONAL VIDEO CENTER AND RECORDING STUDIOS** (New York City) has completed post production video special effects for a one-hour stereo special featuring MCA jazz-fusion artist **Spyro Gyra**. Video engineer **Steve Fitzpatrick** utilized National's Grass Valley Mark II digital effects unit to achieve the producer's goals, including superimposed laser visuals to accompany the song *Laser Material*. The program was produced by **Steve Benton** and **Gary Donatelli** for Axial Productions. **Kent Watson** and **Cat Bennett** were executive producers. *460 West 42nd Street, New York, NY 10036. (212) 279-2000.*

□ **SCHARFF COMMUNICATIONS**(New York City) has opened its new demo room to offer clients hands-on experimentation with an extensive collection of audio/video gear. According to company president **Peter B. Scharff**, the equipment includes an MCI JH-114 24-track tape deck interlocked with a Sony U-matic $\frac{3}{4}$ -inch video recorder to showcase the new BTX Shadow SMPTE code unit, UREI 813-A studio monitors, and McIntosh power amps. Any one unit can be routed through a patch bay to interface with any other piece of equipment in the room. *1600 Broadway, New York, NY 10019. (212) 582-7260.*

□ **WINDSOR TOTAL VIDEO**(New York City) has opened a new CMX 340X editing suite centered around a Grass Valley Group Series 300 switcher, with a DVE Mark II that offers two channels for digital video effects. The unit has infinite re-entry and past key features, plus a myriad of wipes and optical effects. Other features of the suite include a Chyron IV Title Generator, two Cohu title cameras, a 16-track Neve audio console, and a Scully $\frac{1}{4}$ -inch tape deck slaved to the VTRs via BTX's new Shadow SMPTE reader/controller. The room can accommodate one- or two-inch formats, or both. **Bob Henderson** is Windor's chairman and the chief executive officer. *565 Fifth Avenue, New York, NY 10017.*



Magno's Mark Yopal (left)
John Delatorre (right)

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STUDIO UPDATE

AUDIO/VIDEO UPDATE

Central Activity:

□ **CINEMA AMERICA**(Houston, Texas) has moved to a new 5,000 square foot production center, which includes executive offices, editing and studio facilities, plus a 35 mm and 16 mm interlock screening room with video capability. The company is currently producing films for Capitol National Bank, Oceaneering, and Shey Advertising. P.O. Box 56566, Houston, TX 77027. (713) 757-0028.

□ **INNERVISION PRODUCTIONS**(St. Louis, Missouri) has acquired a newly developed two-person studio camera crane, said to be one of the first in use in a mid-West video production. The Tulip crane by Matthews Studio Equipment, Burbank, California, allows for easy disassembly and complete portability for location shooting. The unit can be transported anywhere a 4x4 truck or a helicopter can travel. The 18½-foot crane has a range of from five feet below ground level, to 16 feet above ground level and, with all its components, weighs less than 1,500 pounds. 11783 Borman Drive, St. Louis, MO 63141. (314) 569-2500.

□ **ON TRACK PRODUCTIONS**(Chicago, Illinois) announces the completion on its first in-house project: a TV documentary focusing on the Chicago rock scene. Taping for the program took place on locations throughout the city, with musical segments complemented by rehearsal sequences. Partners on On Track include **David Webb**, vice president, sales and marketing for Third Coast Records and a record producer for Tails Out Productions; **Tom Pabich**, also a producer for Tails Out, and **Brian Boyer**, an Emmy Award winning television producer and author. 817 W. Hillgrove, La Grange, IL 60525. (312) 352-3022.


... the RMBC Center ...
□ **THE ROCKY MOUNTAIN BROADCAST CENTER** (Denver, Colorado) has completed the major redesign of its Denver facility, and will soon provide expanded video editing and general post production services. The facility can handle two- and one-inch time code editing, film on tape editing, multitrack sound mixing, and satellite distribution of programming. The sound suite includes a Neotek audio board with a 16-track tape machine, while the video editing suite was laid out to offer a face-to-face approach to editing. The RMBC is a division of the Rocky Mountain Corporation for Public Broadcasting. Suite 50B, Diamond Hill, 2480 West 26th Avenue, Denver, CO 80211. (303) 455-1514.

Western Activity:

□ **CHRONICLE PRODUCTIONS**(San Francisco, California), a video/film production house, unveiled its new Aurora Videographics System to provide clients with three types of real-time animation. The Aurora features a variety of brush shapes, and can create custom shapes. A tilting function with multiple fonts, drop shadow, and overlay capability is included in the system. 1001 Van Ness, San Francisco, CA 94109. (415) 561-8663.

□ **COMPACT VIDEO SERVICES**(Burbank, California) has purchased four Ampex Digital Optics systems to create sophisticated special effects in its post-production facilities. ADO is a new digital video effects system which enables a picture to be rotated in a three-dimensional perspective. Burbank, CA.

□ **IMAGE RESOURCE CORPORATION**(Westlake Village, California) announces the appointment of **Richard Sager** to the position of vice-president of engineering for the company. Prior to joining Image Resource, Sager founded and was the general manager of the Video Display division of Bell and Howell. 2260 Townsgate Road, Westlake Village, CA 91361. (805) 496-3317.

□ **LUCASFILM LTD.**(San Rafael, California) has officially located its Los Angeles office to its Marin County headquarters in Northern California. Previously, two-thirds of Lucasfilm's operation was located in Marin: its special effects division, Industrial Light and Magic, which

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STUDIO UPDATE

provided the visuals for *Raiders of the Lost Ark*, and its post-production facility and research and development division, Sprocket Systems. Joining them now are the administration, Marketing, legal, art, and photo departments, as well as the Star Wars Fan Club P.O. Box 2009, San Rafael, CA 94912. (415) 457-5282.

□ **RUSK SOUND STUDIOS**(Hollywood, California) was the mix-down site for a 90-minute television special on the Carridine family narrated by Peter Fonda. Mixdown was done with picture and interlocked with multitrack and mag recorders via an Audio Kinetics Q-Lock 310 synchronizer locked with the film distributor bus. **Steven Smith** engineered the sessions with producer **Jay Ginsburg** for Alfie Productions. 1556 North La Brea Avenue, Hollywood, CA 90028. (213) 462-6477.

□ **SOUND FX**(Burbank, California), a full-service post-production complex, now has a dubbing stage equipped for film and television recording and featuring Dolby stereo and stereo video equipment. A Neotek three-position dubbing console is provided for the stage, as well as a new Neotek Series I console used in automated dialogue replacement and for live sound effects recording. The machine room, which houses the two digitally controlled, high-speed, servo-driven MTM four-track recorders and one single-track recorder, also has 23 high-speed dubbers with up to 73 tracks available. Rounding out the facility is a staff of sound effects editors, a comprehensive sound-effects library, offices, and a guest lounge. 2603 West Magnolia, Burbank, CA 91505. (213) 841-4023.

□ **SOUND MASTER RECORDING ENGINEER SCHOOLS**(North Hollywood, California) announces the opening of a video engineering program designed to provide students with both the theory and "hands-on" experience necessary for work in the audio/video fusion area of the recording industry. The course will be given in 10 week increments, alternating lecture and lab classes, with all students participating in the "Showcase" productions, in which students will record live groups in the 24-track studio using the SMPTE sync format. The bands will later be videotaped performing to this track. All aspects, from lighting to make-up to editing will be covered in the Showcase productions. A fully-equipped color studio and remote facility are used in instruction. 10747 Magnolia Boulevard, North Hollywood, CA 91601. (213) 650-8000.

□ **TRANS-AMERICAN VIDEO**(Hollywood, California) provided post-production and film to tape transfer facilities to **Kramer/Rocklen Studios**, Hollywood, to prepare a new opening prologue for this summer's re-release of *The Beatles A Hard Days Night*. The film will now begin with a segment incorporating 2,000 production stills set to the song, *I'll Cry Instead*. Editing and transfer work for the film's distribution were also handled at TAV. The film's producer, **Walter Shenson**, and **Jim Katz** selected Kramer/Rocklen for the assignment. The company also recently completed work at TAV on promotional films for **The Brothers Johnson** and for **Michael Jackson**. 1541 North Vine Street, Hollywood, CA 90028. (213) 466-2141.

□ **TRANS-AMERICAN VIDEO** (Las Vegas, Nevada) provided mobile facilities for a live satellite feed to Japanese television over the Memorial Day weekend. The program originated from the Griffith Park Observatory in Los Angeles, and featured the Japanese group, **The Chaneles**. Under the direction of American Production Services president **Mark Omodaka**, the signal was fed from the site via a microwave dish to the San Francisco area, where it was transmitted from an uplink to a Pacific Telephone satellite. This marks the fourth time the production company has utilized TAV's services for a live feed to Japan. 3349 South Highland, Suite 403, Las Vegas, Nevada. (702) 733-2922.

□ **THE VIDTRONICS COMPANY** (Hollywood, California) has expanded the post production division's staff to provide for night time services with no labor premiums. The special staff on hand Monday through Friday until midnight, to supply post production services such as one- and two-inch on-line/off line editing, film transfers (Rank Cintel), and commercial and program dubbing in formats from $\frac{1}{2}$ -inch to two-inch. 6671 Sunset Boulevard, #1525, Hollywood, CA 90028. (213) 462-6260.



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book review

THE MUSICIAN'S GUIDE TO INDEPENDENT RECORD PRODUCTION

by Will Connely

208 pages; \$8.50 including postage

ranging from the pressing of 1,000 units to 100,000 units.

The chapter entitled "Record Business Economics" could have been called "The Producer's P&L Statement Guide." Income, cost and profit interrelationship are examined clearly. In this section it doesn't matter if you are a high-school band director producing a fund-raising album for the local high school, or a famous recording artist starting your own record label. You'll all need to know how to equate sales, profits and losses. This chapter is the shortest in the book, but covers the subject well, explaining how to gather the necessary information.

Opening chapters provide the reader with information about the nuts and bolts of the record-making business, from the artist's performance to the final disk. The technical vocabulary is explained in graphs and prose, with a brief history of how this process of record making came about. Many of the options are explained and explored for the independent producer.

My favorite chapters are: "The Producer's Role," and "Related Operations." Reading through these pages, you get the feeling you are already doing it: producing records! Not one stage is overlooked, from the type of personalities a producer will encounter, through the mastering process and the jacket, artwork, and layout stages. All these processes are explained in the easy-to-read text.

The book's next two chapters, "Budget Preparation," and "Record Business Economics," are of the most value. It is in these areas that an independent producer can really get into trouble. (How much do you pay? How much do you get back?) This economic game plan reveals the monetary side of the business; the yard stick by which success and failure are measured. If the game plans explained in these chapters are followed, the maximum amount of money lost in an unsuccessful venture can be closely predicted. In the chapter, "Budget Preparation," every stage has its own breakdown into sub-categories, giving you a working plan to prevent any unpleasant cost surprises.

Such surprises can be a strong negative force if they arise just when your project is getting underway. There are enough examples to lead you through the maze of applicable union agreements, and even if you are a non-union producer, many of these principles will apply. (For example: estimating manufacturing costs, metal work, packaging, printing plates, labels, pressings, cassettes, cartridges, sleeves, etc.) Workable formulas are laid out in easy to read examples,

At the end of the book there appears a series of three appendices. Appendix C, "Phonograph Record Labor and Related Agreements," is the most interesting, and covers all of the Musician Union Guidelines relating to the making of phonograph records. Such information is a must for the person starting a small, independent record label.

This book should be a big help in reducing the financial risks involved in making independent records. More could have been said, however, about getting air play for your product. A list of radio stations with their programming format would have been a nice addendum, such as: Middle of the Road (MOR); Adult Oriented Radio (AOR); Contemporary Adult (CA); Top 40; Country; Jazz; Soul; Album Reels; etc.

Half of a producer's working time is involved with the artist: picking tunes and making those tough decisions in the studio. A list of mikes, multitrack and two-track recorders, effects devices, etc., might also have been listed in the addendum, as a useful aid to the kind of recording facilities to look for.

In the Eighties, the quality of a recording is also judged with the artist's performance. A badly-recorded product can work against you. A well-recorded product stands a much better chance in the music marketplace. I would suggest wedging this book with additional information on multitrack recording, and possibly basic electronics.

The *Musician's Guide to Independent Record Production* teaches you the business side of making records.

Jimmy Stewart

"THE MUSICIAN'S GUIDE TO INDEPENDENT RECORD PRODUCTION"

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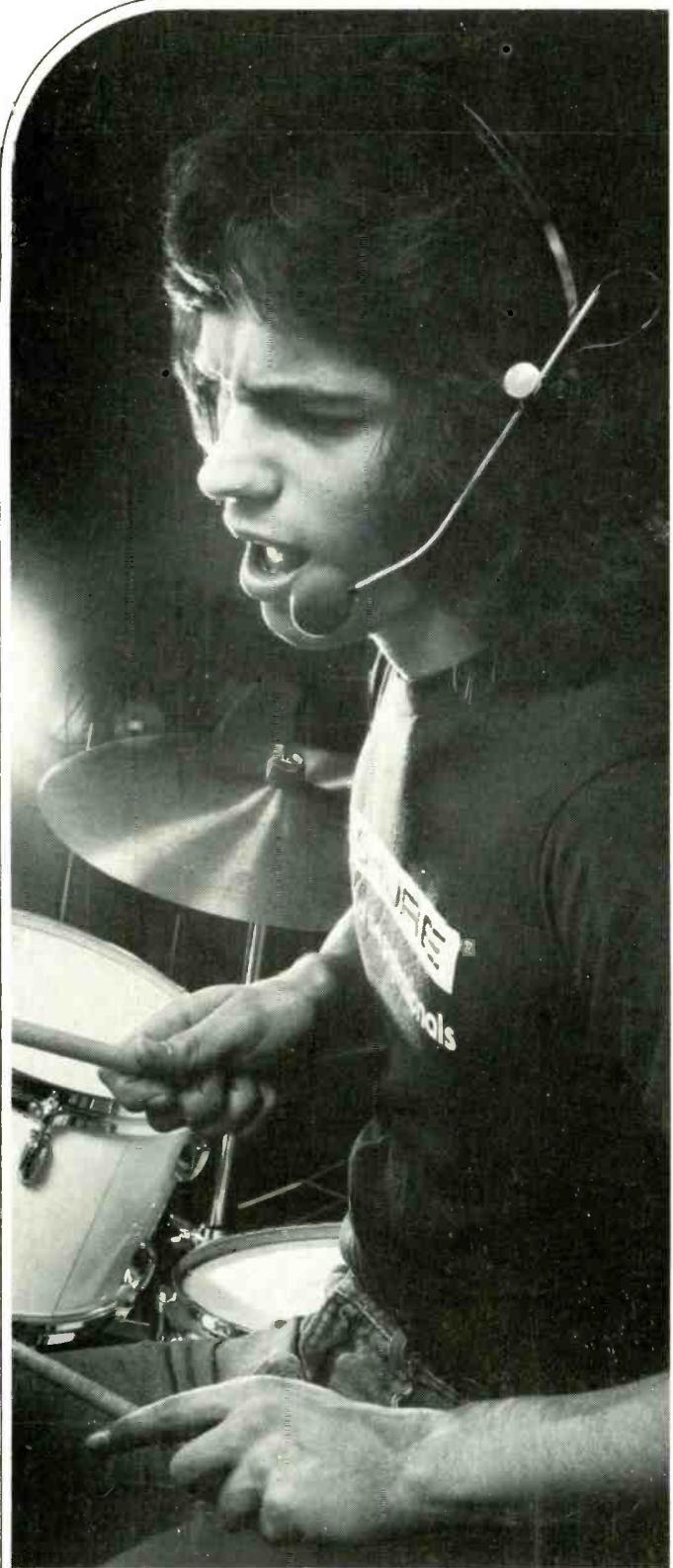
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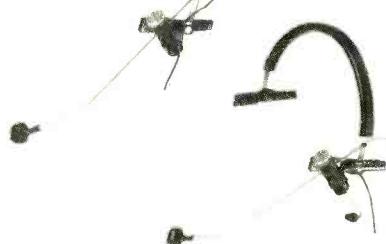
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