

Abbey Road Studios

MODERN

RECORDING

& MUSIC

SEPTEMBER 1984 VOL. 10 NO. 9 \$2.25



R.E.M.

TAPE DIRECTORY:

Open Reel & Cassette

RECORDING TECHNIQUES:

Conference: Art
Technology
Recording — Part

REPORT:

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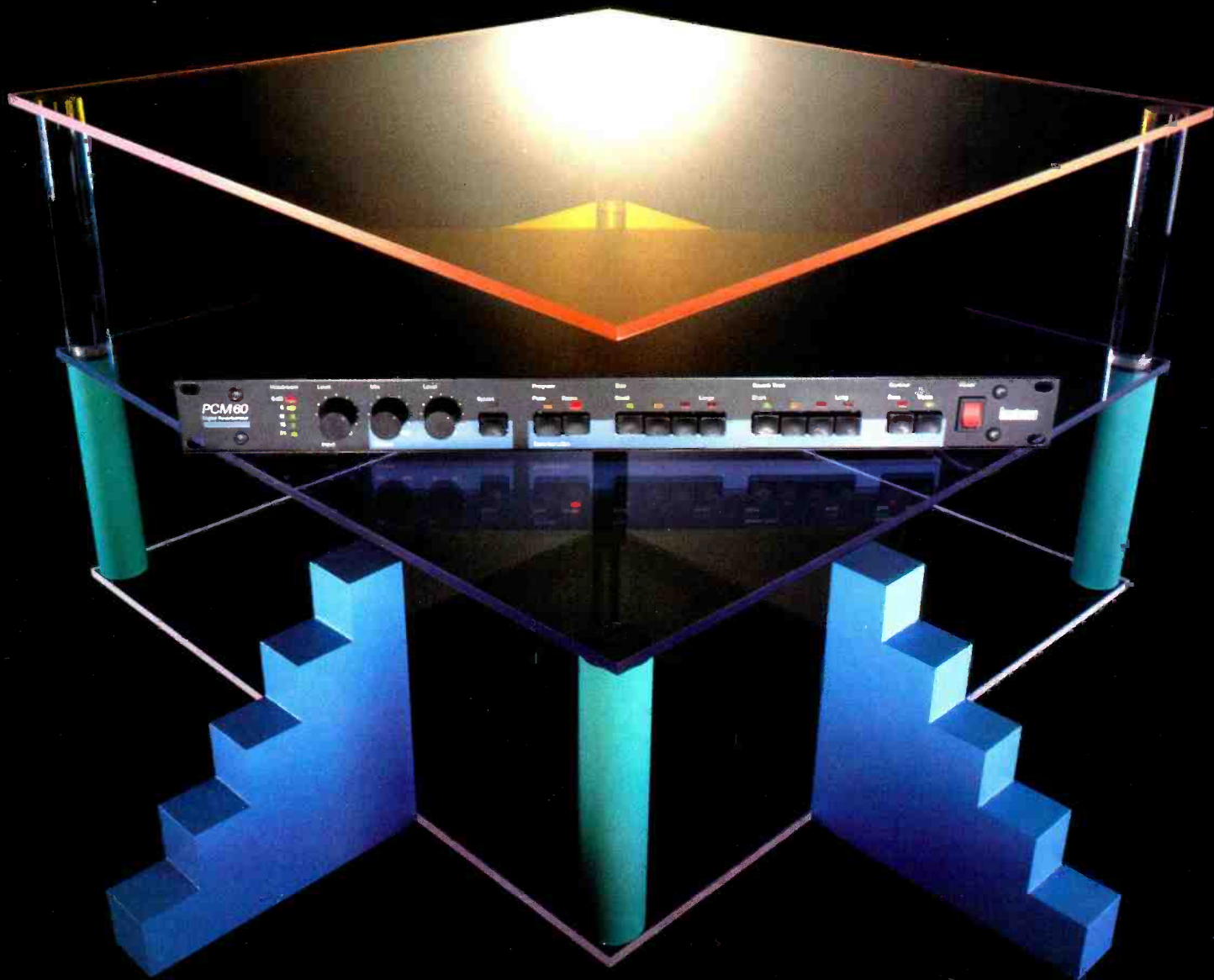
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MR-59

MODERN RECORDING & MUSIC

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Cover photo of R.E.M. by Linda Matlow/PIX Int'l

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Money Can't Buy Everything— But It Helps

In a recent Talkback column a reader asked, "What's the big difference between various tape recorders and all the fuss about using wider tape formats in order to achieve sonically acceptable results when damn good albums have been made on portastudios?"

As the owner of a "semi-pro" studio (1/2-inch 8-track) and songwriter, I would reply in a word "quality." I know this is painful to accept because I too am someone trying to "break into" the record market and I am on a low level of income (let's say not a millionaire). I still have to admit that though Bruce Springsteen's part-portastudio work *Nebraska* sounds sonically acceptable, pleasing, and all of that (after much doctoring up in the studio and cutting lathe, I would add), it still does *not* pack the punch of a "Let's Dance" or the Boss' latest album.

In my 8-track projects we've been working our tails off at things like getting drums to sound like they were done in some 24-track place and I'm proud that we've been able to achieve some of the results we have. With the right outboard gear and skill, there's no reason they can't (on an aesthetic level, at least), and that is all that matters—results. But I feel for the kid who buys a \$500 multitracker and expects to cut a record album on it to compete with superstars' albums mixed by real pros on state-of-the-art equipment. That's not like comparing a Rolls Royce with a Chevy, but more like comparing a car with a bicycle. Then for all of "us" analog "pros" there's digital (a Lear jet and a car perhaps?).

But take heart, kid! You're only a few years and several shoe boxes of your hard-earned cash away from using the greatest creative tool (besides good ears) you need to have a crack at engineering gold: yer brains. A good engineer or an artist who is persistent about doing that *can* do it, as you say, "on portastudios," while the best-dressed chimp (or stock broker) might, be hard-put to produce anything of quality, not to mention art, on "state-of-the-art" equipment.

Still, I'd like to win the lottery 'cause all that stuff would be fun to have in the basement!

—Don S.
c/o The Grapevine Studio
Chicago, IL

They Have Good Taste In The South Pacific

I would like to take this opportunity to congratulate your efforts on such an excellent magazine. I always look forward to receiving each issue and reading the articles. As usual, each issue has a wealth of information to be learned.

Thank you once again for such an excellent magazine!

—Brian Hodges
Christchurch
New Zealand

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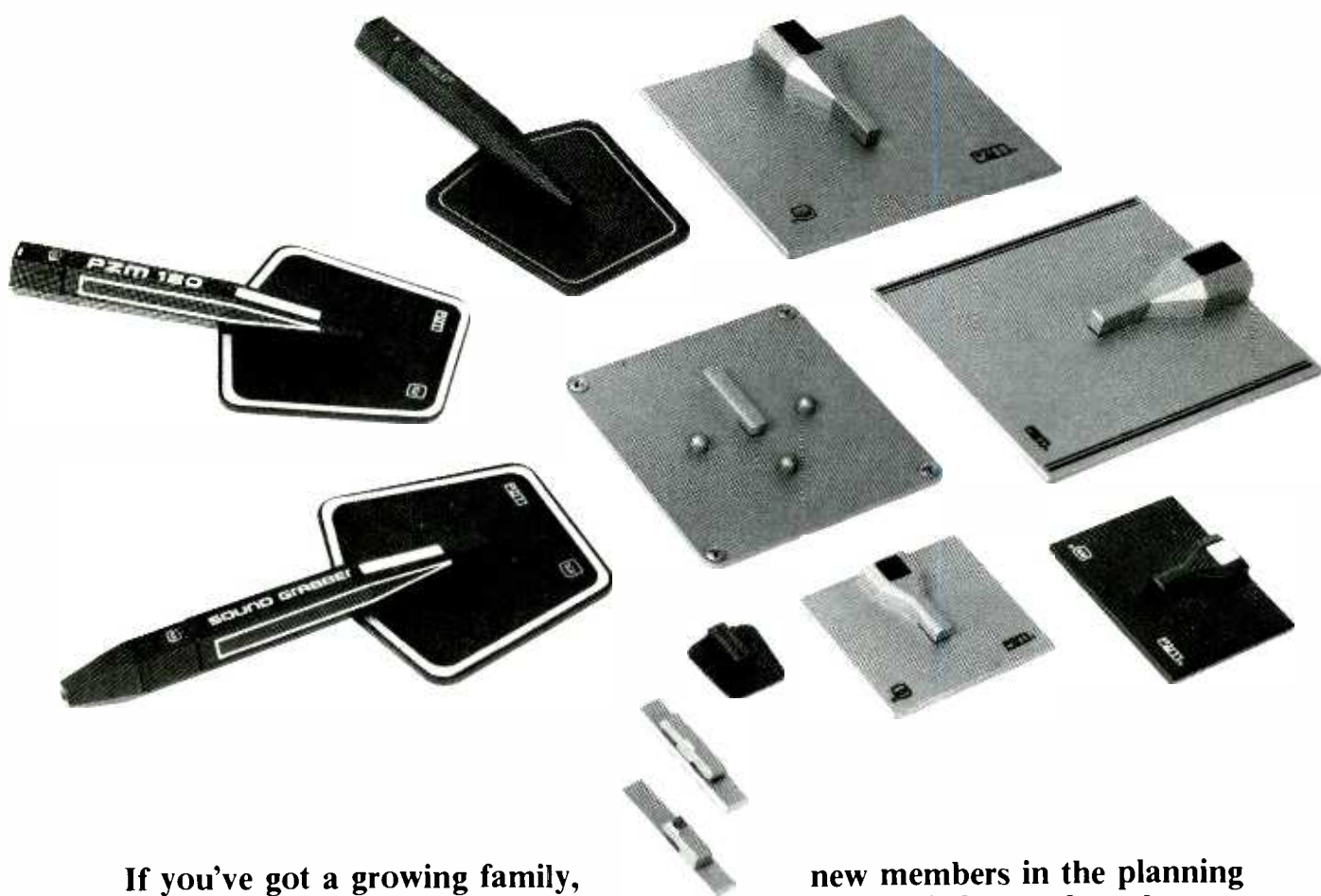
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new members in the planning process is larger than the number in the picture. Since a lot of our friends have only used one or two models so far, we thought we'd better introduce the family. The next time we may not be able to get them all in one picture.

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Gosh, we're blushing. Hope you keep enjoying *MR&M*, and feel free to write again if you have any questions or ideas.

Editing Tips

Bruce Bartlett's article "Recording the Spoken Word" (May 1984) gave some excellent points on recording and editing narrations. However, I'd like to suggest some slightly different procedures for editing out bad takes; for me, it simplifies things and saves enormous amounts of time. Rather than marking and cutting the beginning of the edit, and then doing the same at the end of the edit, mark the beginning and end *before* cutting the tape at all. Then, there is no searching for the end of the edit while the tape is in pieces; just cut both points at once, then tape the splice together.

Also, it is better to mark the exact edit point, rather than the beginning of the sentence, and then cutting half

an inch away. This way, you can be sure to edit exactly where you intend to, cutting out extra noises, breaths, or extra spaces. Additionally, more space can be added, if necessary, by leaving the pause after the previous sentence and the pause before the good take.

—Sam S. Mims
Baton Rouge, La.

An Idea That Clicks

Regarding my review of Synchronous Technologies' SMPL system in the June 1984 issue of *MR&M*, Dan Garfield (designer of the Dr. Click synchronizer reviewed in a previous issue) has pointed out that my use of the term "click track" when describing traditional sync-to-tape systems for sequencers and drum machines could be misleading. While I've always thought that a click track is a click track regardless of frequency, Dan feels that many (if not most) people associate the term "click track" with a track that puts out a

metronome-like pulse. Therefore, he suggests using the term "sync track" to describe those tracks using pulse or FSK techniques in the audio frequency range. The differentiation is important when describing devices such as the Dr. Click, which can use a click track as a reference to sync sequencers and drum machines to tape.

Dan's suggestion made sense to me, so I'm passing the comment along. If anyone has a better suggestion of how to describe some of these things, please write—the industry could definitely use standardized terminology.

Also, several updates have been added to the SMPL system since writing the review (including optional 48 or 96 pulses-per-quarter note sync output and some other features). Write to Synchronous Technologies directly for more information.

—Craig Anderton

You're Absolutely Welcome

Just a quick note to thank you and Jim Rupert in particular for the generous first-place award in your design contest. The article concerning my facilities was written by myself upon Jim's urging. *MR&M* represented me very well and nothing was edited that would relate to the underlying theme I was trying to create. That theme is that neither myself, nor Absolute Recording, is made of anything uncommon to the majority of your circulation. With just a little enthusiasm, creativity, dedication and well guided financing, anyone may create their own facility that can even give them a return for their investment.

Thank you for giving me the opportunity to be a part of your publication. The initial excitement of receiving a prize or two, along with knowing that my clients, friends, and competitors would see me in print, soon gave way to the more meaningful reward—the realization that my efforts were worthy of the attention of Jim Rupert, *MR&M*, and your readers.

So far, this has been the ultimate accolade to my career, and I again thank you.

—Dave Miller
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Talk Back

Mic Sensitivity And Distortion

I have a couple of questions for Bruce Bartlett.

In your fine "dB or not dB" article, how, in layman's terms, do different mic sensitivities relate to the recording sounds going onto the tape (such as those of a Shure SM57, Shure SM81, and Beyer M500 all used on background vocals)? What sonic coloration of the vocals would the mics lend relative to their sensitivity specs or distortion limits?

Also, would a tape master on a semi-pro machine running at 30 ips lose a lot of its gained high end going to a 1/4-inch two-track ma-

chine running at 15 ips? I'm looking for greater fidelity than 15 ips gives me, but can't afford a 30 ips two-track machine now.

—Burt Teague
Granly, CT

Take it away Bruce.

Thanks for bringing up these points, Burt. There is no coloration related to microphone sensitivity. Rather, sensitivity affects the audibility of mixing-console noise (hiss). Low-sensitivity mics require more mixer gain than high-sensitivity mics to achieve the same recording level. More gain usually means more noise.

If you record quiet or distant instruments, you'll hear more mixer

noise with a low-sensitivity mic than with a high-sensitivity mic, all else being equal.

Mixer noise may become a problem when you record a classical guitar solo or chamber music at a distance. With close-mic'ed pop music, however, there's no problem because the microphone signal level is well above the mixer noise floor. That is, the signal-to-noise ratio is high.

If you're mic'ing the background vocals as an ensemble at a distance, place all three mics in front of them, set the faders for equal signal level from each mic, and switch between them while listening for console hiss. If you hear no difference in noise, use whatever microphone sounds best for tone quality.

No studio mic that I know of distorts on background vocals. The sound pressure level of background vocals is well below the overload point of these microphones. The higher the "maximum SPL" specification, the louder the sound you can record without distortion. A spec of 120 dB SPL is fair, 135 dB is very good, and 150 dB is excellent.

Now let's consider the 15 ips/30 ips question. When you compare "source" to "tape" on your 15-ips machine, are you losing high end? If so, clean the heads, align them, and tweak the bias and EQ as recommended by the manufacturer. This will flatten the high-frequency response. Also, record percussion and cymbals at -4 to -10 VU to avoid saturating the tape and losing high-frequency response (or rely on peak-indicating LEDs instead). Then, if the tape playback sounds as bright as the input signal, you have sufficient fidelity.

Potentially, 30 ips can give higher fidelity than 15 ips because 30 ips gives more high-frequency headroom, less noise, and less wow & flutter. You can record percussion at a higher level with 30 ips tape speed. But 30 ips does not necessarily provide flatter high-frequency response in the audible range (say, up to 16 kHz). Some engineers feel that extended response past 16 kHz audibly improves the transient response and high-frequency clarity.

To see how much high end you would lose, if any, compare the published record/reproduce responses of the two machines at the same record level (0 VU or -10 VU).

As far as I know, there is no semi-pro machine that operates at 30 ips.

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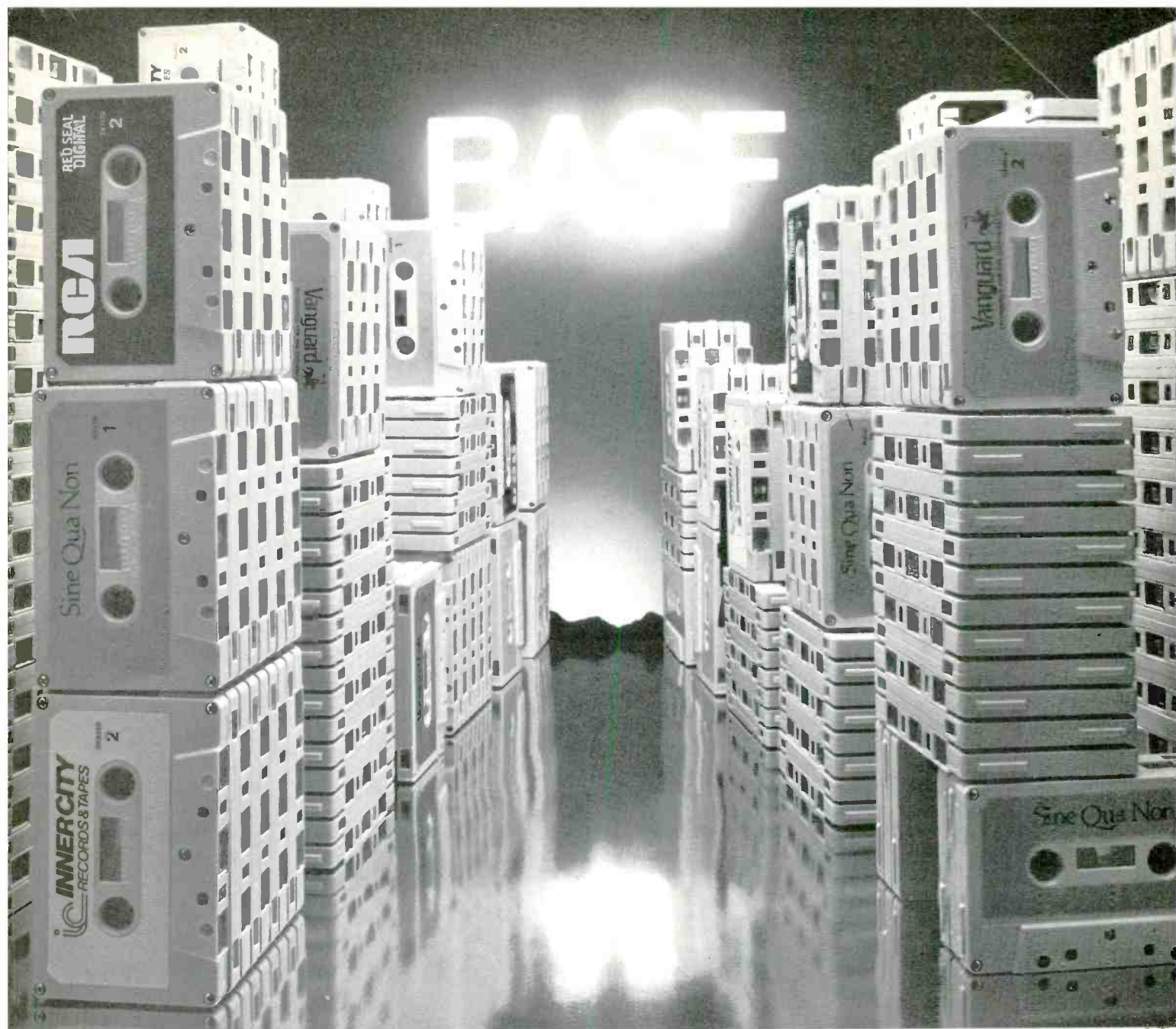
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Recording Techniques

AES Conference on the Art & Technology of Recording, Part 2

This month we continue our coverage of last May's conference on recording presented by the Audio Engineering Society. In the process, we'll investigate the microphone techniques of several experts in classical music recording.

Last issue we described various coincident and near-coincident microphone techniques for recording "true stereo." Now let's consider spaced-microphone methods. I'll first explain the theory behind these techniques, then relay the information on this topic given at the conference.

With the spaced-pair method, two matched microphones are placed several feet apart, aiming straight ahead toward the musical ensemble (as in *Figure 1*). Instruments in the center of the ensemble produce an identical signal in each microphone. During playback of this recording, an image of the center instruments is heard midway between the stereo pair of loudspeakers.

If an instrument is off-center, it is closer to one mic than the other. Sound travels to the nearest microphone sooner than it travels to the other microphone. So, the microphones produce approximately an identical signal, except that one mic signal is *delayed* with respect to the other.

Now, if you send an identical signal to two stereo speakers, with one channel delayed, the sound image shifts off-center. With spaced-pair recordings, off-center instruments produce a delay in one mic channel, so they are reproduced off-center.

It takes only 1 to 2 milliseconds of delay to shift an image all the way to one speaker. So, if we want the right side of an orchestra to be reproduced out of the right loudspeaker, the right-side sound should arrive at the right mic about 1 to 2 msec. before the left mic. In other words, the mics should be spaced about 2 to 3 feet apart, because this spacing produces the appropriate delay to place right-side instruments at the right speaker.

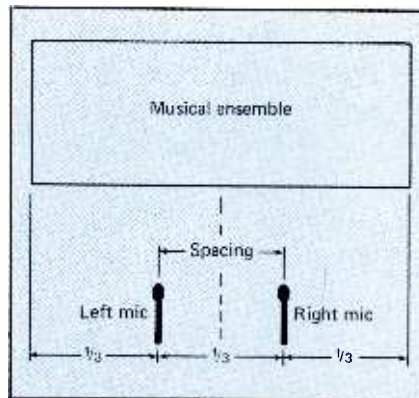


Figure 1. Spaced-pair stereo microphone technique. A typical spacing is shown.

Instruments slightly off-center produce interchannel delays less than 1 msec., so they are reproduced slightly off-center.

If the spacing between mics is, say, 12 feet, then instruments slightly off-center produce interchannel delays greater than 1 msec., which places their images far left or far right. This could be called an "exaggerated separation."

On the other hand, if the mics are too close together, the delays produced will be inadequate to provide much stereo spread. In addition, the

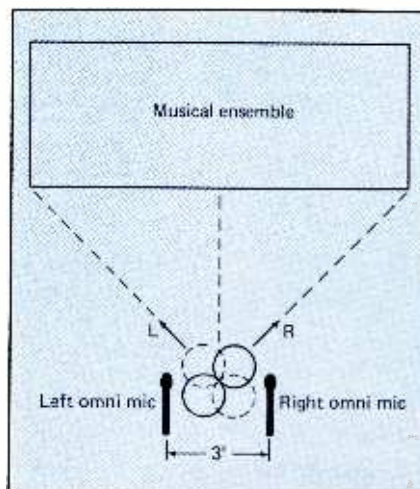


Figure 2. A stereo technique used by Tony Faulkner, combining a Blumlein pair with a spaced pair.

mics will tend to favor the center of the ensemble because the mics are closest to the center instruments.

So we need to place the mics about 10 or 12 feet apart to record a good musical balance, but such a spacing results in exaggerated separation. One solution is to place a third microphone midway between the outer pair and mix its output to both channels. That way, the ensemble is recorded with a good balance, and stereo spread is not excessive.

Stereo images produced solely by time differences between channels are rather vague and hard-to-localize. Centered instruments are still heard clearly in the center, but off-center instruments are difficult to pinpoint between speakers. Consequently, spaced-microphone methods (which operate on interchannel time differences) provide less-sharp images for off-center sources than coincident or near-coincident methods.

There's another problem with spaced mics. The large *time* differences between channels correspond to gross *phase* differences. Out-of-phase low-frequency signals can cause excessive vertical modulation of the record groove, making records difficult to cut unless the cutting level or stereo separation is reduced. In addition, combining both mics to mono sometimes causes phase cancellations of various frequencies, which may or may not be audible.

There is an advantage to spaced mic'ing, however. Spaced microphones are said to provide a "warm" sense of ambience, in which the concert-hall reverberation seems to surround the instruments and, sometimes, the listener. Here's why: The two channels of recorded reverberant sound are *incoherent*; that is, they have random phase relationships. Incoherent signals from stereo loudspeakers sound diffuse and spacious. Since reverberation is picked up and reproduced incoherently by spaced microphones, it sounds diffuse and spacious.

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PRESENTATION ON MICROPHONE TECHNIQUE

Ron Streicher and Wes Dooley covered spaced microphone methods in their talk on stereo mic'ing techniques. They provided the information that follows.

With spaced mic'ing, the stereo spread is greater for instruments close to the mics than for instruments far from the mics.

Spaced mics are generally placed $\frac{1}{2}$ to $\frac{1}{3}$ the distance from the center line to the outer edge of the sound stage (see *Figure 1*). A center-fill mic may compound the phasing problems by bringing the frequencies affected into the more-audible midrange.

Omnidirectional mics generally provide excellent low-frequency response, but may pick up too much ambient noise, or too much rumble from air-conditioning and traffic. Under ideal conditions they can sound very "open and sensual."

Most omni mics sound duller off-axis, so you can partially control the recorded tone quality by changing the angle at which the mics are aimed.

Spaced cardioid mics are sometimes more critical to place than omnis, because some cardioids lend off-axis coloration to reverberation and applause. They also tend to favor instruments they're aiming at.

Spaced bidirectional mics, which have a narrow front lobe, must be placed further from the source than omnis or cardioids for the same coverage. The front signal of a bidirectional mic is the opposite polarity of the back signal. To ensure correct absolute polarity, be sure that the front of the mic is aiming at the sound source. The side null of a bidirectional mic can provide excellent rejection of unwanted noises.

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It's common to add "accent" or "spot" microphones to the main two- or three-microphone pickup. Accent mics are used to spotlight soloists, to add presence, or to improve the musical balance. Care must be taken to delay the signals from the accent mics so that they arrive about 10 to 15 msec. after the signals of the main mics. Otherwise the spotlighted instruments will audibly stick out, rather than blend with the rest of the ensemble.

PANEL DISCUSSION ON CLASSICAL RECORDING TECHNIQUES

Several prominent recording engineers and producers revealed their favorite techniques for classical music recording. Some prefer purist or minimalist methods, employing only two to four microphones. Others use as many as 20 or 30 mics for extra control of balance and definition.

Many of the recording experts on the conference panel preferred spaced-microphone techniques for their "warmer" sense of ambience, in spite of vaguer imaging and phase cancellations between channels.

The participants were:

Jerry Bruck, Posthorn Recording, New York.

Tony Faulkner, independent recording engineer, London.

Marc J. Aubort, Elite Recordings Inc., New York.

Onno Sholtze, Polygram, Baarn, The Netherlands.

Andrew Kazdin, independent audio producer, Jamaica Estates, New York.

The comments of the participants have been paraphrased for this article; there are no direct quotations.

Jerry Bruck pointed out that the home listener is usually better able to monitor the recording in the home environment than the recording engineer can on-location. Jerry prefers to use a simple near-coincident array of Schoeps microphones in front of the ensemble. He feels that, with multiple mic'ing, fader operation is more audible, as well as the effects of microphone placement. These effects are easier to hear now that digital recording is becoming more commonplace.

Occasionally he uses extra stereo pairs of microphones—say, for a soloist or for a choir behind the orchestra. This technique may cause problems, however. Some of the instruments are closer to their spot mics than they are to the main pair. The close-mic'ed instruments are heard slightly before the rest of the ensemble because of the travel time of sound through air. This results in time smear and can destroy the sense of depth.

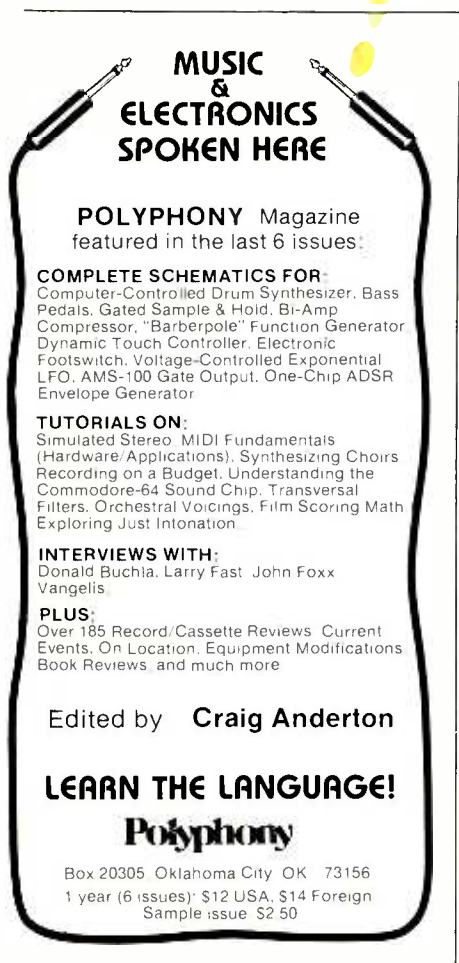
To solve this problem, the signals from the spot mics are delayed to coincide with those of the main pair. That is, all the microphone signals are brought into time alignment. This maintains the sense of depth and eliminates time smear.

Tony Faulkner prefers to use coincident mic'ing if acoustics permit. But he also has to do what the customer wants. Sometimes he uses spot mics or multic'ing when the purist methods don't work.

If the recording sounds bad, and EQ can fix it, Tony will use it. He occasionally rolls off the high frequencies on spot mics to take the edge off.

The object of recording, Tony says, is to convey the music to the listener in the home. There are *musical* reasons for using the various techniques.

Tony typically uses Schoeps crossed figure-eights (two coincident bidirectional mics angled about 90 degrees apart). This "Blumlein" array offers an advantage: The mics can be placed about twice as far from the ensemble as omnis can, for the same balance between direct and reverberant sound. This distant placement tends to improve the



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recorded balance between instruments.

When mics are used close to an orchestra, they must be raised about 14 to 20 feet high to restore a good balance between the front and back rows of the orchestra. Since Tony places his mics fairly distant from the orchestra, he has to raise them only about 8 feet above the floor. This arrangement sounds better to him than close, high omnis.

He generally dislikes cardioid microphones because their off-axis response is not always smooth. They also have measurably less bass than omnis, and may require some corrective equalization.

To add ambient warmth to his coincident recordings, Tony often places two omnidirectional mics spaced 3 feet apart on either side of the Blumlein pair (see *Figure 2*). These omnis are mixed in several dB below the main coincident mics. The result is a more diffuse sense of ambience and a better low end.

Marc Aubort emphasized that engineers need a concept of what they want to achieve before recording. The object is to render the score as faithfully as possible to the listener, and to re-create an ideal seat in the concert hall.

When confronted with an unfamiliar work, Marc checks the instrumentation and looks for solos and special groupings. He tries to audition a broadcast tape or a rehearsal to become familiar with the composition.

Marc balances the music live as it is being played, and records the result on a 2-track recorder. He feels that multitracking and multitracking are unnecessary expenditures. The extra definition that multitracking provides may go against the intentions of the composer. Too-clear a sound may be unmusical. In addition, depth perception may be lost with multitracking. Marc prefers not to spot mic because, he says, a natural blend is achieved only when the mics are a sufficient distance away.

Typically, Marc uses a "curtain" of four omni mics in front of the ensemble (see *Figure 3*). The central pair of mics seems to work better than a single mic split to both sides. Two more omnis are added to either side for extra definition of the ends of the ensemble.

He uses headphones for monitoring because they provide consistent sound in different environments. He

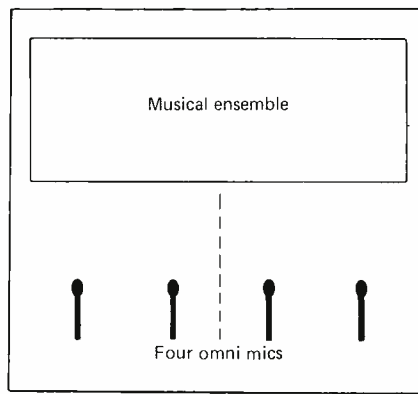


Figure 3. A spaced-microphone technique used by Marc Aubort.

feels that small fader changes are easier to hear with headphones.

Two mics are sufficient to record chamber music, but more may be needed for large orchestras. Spot mics are used to accent the diction of a choir or to add definition to the tympani attack.

Marc prefers to balance the musicians acoustically in the hall before recording them. He might bring a too-quiet harp out front, or put a weak trombone section on risers.

When spot-mic'ing a soloist, Marc pans the soloist's image to coincide with that picked up by the main microphones.

The only EQ he uses is an occasional high-pass filter in the cutting stage to reduce low-frequency rumble.

Onno Scholtze prepares for his sessions by getting a feel for the hall acoustics, say, by listening to rehearsals. He then acoustically treats the hall if necessary, as he discovered that certain instrumental sections become inaudible at various positions in the hall.

Onno commonly uses four Schoeps or B&K omnis across the front (see *Figure 4*), aiming horizontally rather than down toward the ensemble. The two center microphones are spaced about one foot apart. Two "support"

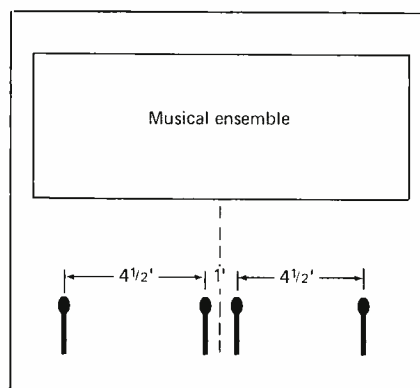


Figure 4. A spaced-microphone method preferred by Onno Scholtze.

mics are placed about $1\frac{1}{2}$ feet to either side, and are mixed in about 12 dB below the main mics. This stabilizes the stereo imaging. The support mics may be cardioid, supercardioid, or omnidirectional.

He uses no equalization except for a low-end cutoff (high-pass filter).

For monitoring, Onno prefers electrostatic speakers. Monitor level is maintained around 85 dB SPL.

Andrew Kazdin feels that the aim of a recording is to create an illusion similar to the concert hall experience. The goal is not always to reproduce what is heard in the audience, because the live balance might be poor at certain spots in the hall.

Andrew usually favors multitracking, using an overall pickup plus several spot mics. Since records must be free of balance flaws, he'd rather not risk recording live to 2-track. He's willing to accept a tape generation loss in order to gain more control. And, with digital recording, there is no generation loss.

Andrew feels justified in using multiple microphones to improve the balance and definition, provided this is done tastefully.

He notes that the extra flexibility multitracking provides can be used or abused. More mics can flatten the sense of depth, but they don't have to. Solo instruments can be brought in and out so subtly that the fader adjustment goes undetected. Spot mics can be used just to add detail, rather than sounding "close-up." With multitracking, a good engineer can create a sonic image identical to that produced by minimalist techniques.

According to Kazdin, the composer's dynamics notations may not be perfect. The conductor and producer, being trained musicians, may be able to improve them. They work in collaboration with the composer's written intentions to best realize the musical piece.

All recordings are approved by the conductor before being released. Therefore, the producer cannot be faulted for tampering with the conductor's desired balances. What the listener hears on a recording is what the conductor intended.

The participants generally agreed that they wanted to hear well-localized instruments, correct-sized instruments, ambience, and depth. And all felt that the major purpose of recording was to faithfully convey the *music* to the home listener.

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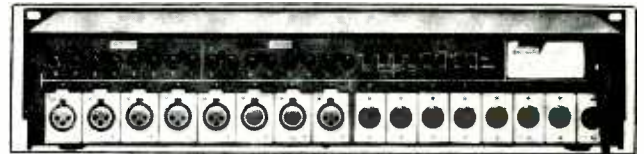
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Musicians Notebook

Fostex 5030 Line Amplifier



This magazine has received many letters over the years asking, “How can I match my +4 dBm tape recorder to my -10 dBV board?” or “How can I match my -10 dBV tape recorder to my +4 dBm board?” Well, it seems that someone at Fostex reads *MR&M* to see what people want, because they’ve just introduced a line driver unit that solves both problems—and some other problems as well. This isn’t going to be a very long review, because frankly, there’s not much you can say about a unit that has no controls, affects the audio signal minimally, and is designed essentially to be installed and forgotten. But what can be said is that the 5300 solves a particular problem, and does a good job of solving that problem.

Why Is Level Conversion Necessary? Level conversion, also called level matching, helps ensure minimum distortion and the best possible signal-to-noise ratio. For example, if you have a board designed to accept high level signals, and feed it with low level signals, the signal-to-noise ratio will suffer because you are not taking full advantage of the board’s headroom. This could be a significant problem if you prepare tracks on a -10 dBV standard 8-track in your home, then try to transfer the tracks you’ve recorded over to a professional +4 dBm machine in a studio.

A related problem can occur if you try to feed +4 dBm outputs into -10 dBV mixer inputs. The -10 dBV mixer will have restricted headroom, and may not be able to accept nominal +4 dBm signals without creating some distortion.

In both of the examples given above, there are several ways around the stated problems. However, no solution is quite as convenient as installing a commercially available, level-matching adapter between the two incompatible pieces of equipment. Once in place, your level-matching problems are solved unless you either change equipment or the level-matching adapter breaks down.

What Is It? The 5030 occupies two rack spaces (3 $\frac{3}{4}$ -inches high) and is AC powered via a three-conductor cord. There is no externally accessible fuse post; however, there are two fuses located inside the

unit. The box is surprisingly heavy, due to solid construction, has a decent-sized transformer, and numerous connectors. The dark-finished front panel has a single On/Off switch and Power On LED. There are no other front panel controls or switches.

Speaking of connectors, the rear panel includes eight RCA phono input jacks, eight RCA phono output jacks, eight XLR input jacks, and eight XLR output jacks (the latter are wired 1 = ground, 2 = cold, 3 = hot). If you plug -10 dBV signals into the RCA phono input jacks, they appear as +4 dBm signals at the XLR output connectors. If you plug +4 dBm signals into the XLR input connectors, they appear as -10 dBV signals at the RCA phono output jacks. Furthermore, there are eight Balanced/Unbalanced switches associated with the +4 dBm XLR connectors to allow the XLR outputs to be either balanced or unbalanced. When unbalanced, the XLR connectors produce a 0 dBm output signal with pins 1 and 2 connected to the shield and pin 3 assigned to the hot connection.

The specs given in the manual are quite conservative, claiming 90 dB unweighted S/N, 0.02 percent THD at 1 kHz, and frequency response that is virtually flat from 20 Hz to 30 kHz. The +4 dBm input stage has a 40-kilohm input impedance and can accept up to a +30 dBm signal; its associated -10 dBV output stage has a maximum available output of +16 dBV. Fostex recommends an output load in excess of 5k, although again, that seems fairly conservative.

The -10 dBV input stage has a 100k input impedance, and its associated +4 dBm output stage has a maximum available output of +25 dBm balanced (or +19 dBm with the balanced/unbalanced switch in the unbalanced position). The recommended output load is 600 ohms or greater.

Inside The Unit. Reliability is always important, but this is particularly true when you consider that the 5030 is designed for semi-permanent installation...you certainly wouldn’t want to stuff this box out of the way behind a console, only to have to break it down a few months later. With respect to reliability, the Fostex 5030 looks quite sturdy and well-built. There is a motherboard/daughterboard type of construction, with a solid metal bar going across the

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inside length of the unit to both add rigidity and hold the daughterboards firmly in place. I did note quite a few ribbon cables and lots of little plastic connectors, both of which make me somewhat nervous (I prefer having everything soldered directly to PC boards, since this only requires one instead of two connections). Still, I play quite a few synthesizers with equivalent connectors and haven't had too many problems with loose connectors or oxidation.

The only other possible problem involves the circuit boards, which are phenolic instead of epoxy-glass. For most applications this isn't too important, but if you live in an extremely humid environment, remember that phenolic tends to absorb water more than epoxy-glass does. With extremely sensitive circuits, this can cause leakage problems and high-resistance "traces" across the board; with the 5030, however, you shouldn't encounter too many problems as this is not a particularly critical circuit.

The unit's transformer is well-shielded and hum is not a problem. The circuitry seems well-designed, with the balanced stages using precision resistors where appropriate; the +4 dBm outputs use fairly hefty transistors in order to easily deliver the output currents required by high-level, low-impedance loads. And kudos to the owner's manual, which includes full schematics for the unit (score one for the do-it-yourselfers). I always tend to feel more confident about properly-documented equipment.

Other Applications. In addition to its intended application, the 5030 has some other uses. For example, you might want to match +4 dBm signal proces-

sors (effects) to a -10 dBV effects loop. No problem: come out of the loop into one of the 5030's RCA phono jack input channels, and feed the channel's associated XLR output into the effect input. Feed the effect output into the 5030's XLR input, and feed the channel's associated RCA phono jack output into the loop's receive jack. You could do the converse if you wanted to match a -10 dBV effect to a +4 dBm effects loop or patch bay.

Also note that many signal processors are now being made with -10 dBV studios in mind. If at some point you graduate to a +4 dBm setup, rather than buying a new batch of effects, you might consider using a 5030 to provide the required level matching for up to four pieces of equipment. Simply treat one of the 5030's XLR channels as the new effect input, and connect the associated -10 dBV jack to the existing effect input. Then, connect the effect output to one of the 5030's -10 dBV RCA phono jack channels, and treat the associated +4 dBm XLR connector as the new effect output. The 5030 can also give a boost to some electronic music instruments (synthesizers et al) in order to kick them up to +4 dBm.

Overall Evaluation. The 5030 is sturdy, well-built, and does what it claims to do. Aside from that, there's not much more that can be said; this is a utilitarian piece of equipment, not a musical instrument or signal processor that requires a great deal of in-depth analysis. The bottom line is simple: If you need to match some -10 dBV and +4 dBm equipment in your studio—particularly if it's an 8-track studio—then the 5030 is designed for you.

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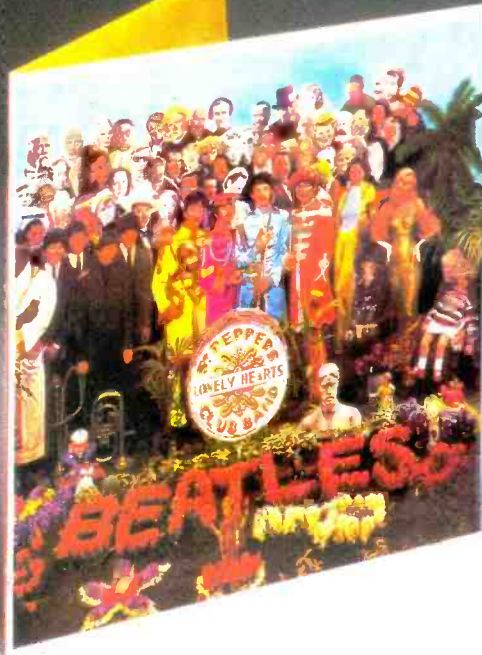
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Sound Advice

Getting the Beat Across With Proper Drum Mic'ing

No study of the PA craft would be complete without mentioning (and usually provoking heated debate about) drum mic'ing techniques. One of the reasons for a disparity of methods is the diversity of drum instruments. It's true that the new electronic drums can simplify the soundperson's job; you merely take a signal out of the drummer's mixer and add cymbal mikes, if necessary. However, the vast majority of your work in clubs will probably be with the "acoustic" drums and percussion instruments which are found on the battleground for good sound: snare, toms, bass (usually termed "kick drum" by sound people to distinguish it from bass guitar), cymbals (crash, ride and hi-hat), and various instruments including bells, tympani, conga and timbale.

Another reason for the Great Drum Mic'ing Debate is that the instruments seem more difficult to capture live than guitars, keyboards, strings, woodwinds, and brass. The sound of drums can be sharp and snappy or boomy and dense. Their frequency and dynamic range are wider than any other instrument and present an endless challenge to even the most experienced sound engineer.

Of the 32 channels on a typical

rock concert board, often 12 will be covering drums and cymbals, which is about one-third of the available channels. This is not to say that if your club system uses 16 channels, you *must* run drums through six of them. In fact, in smaller venues the drums are sometimes not mic'ed at all, or with only one or two microphones. The logic here is that since the drums and cymbals carry acoustically and bleed so much through the vocal mics (or any mics in close proximity), there may be no need to add more drum sound to the mix. Sometimes this approach is sufficient for adequate drum presentation, and sometimes it is merely an invitation that you had better solve the bleed problem and set up separate mics for the drums. How do you know which way to go? Hopefully a discussion of percussion and the nature of its sound will send you in the right direction.

As we mentioned earlier, percussion has a wider frequency and dynamic range than any other instrument (we should say "acoustic" instrument, since a good synthesizer can take the cake). The boom of a kick drum consists of very low frequencies. Plural. Any sound, other than a tone from a frequency generator, consists of overtones in addition to the

primary tone. If seen on a graph, a kick drum would consist of frequencies below 200 Hz with overtones well over 1,000 Hz. Since the low frequencies carry so well, especially outdoors, the kick drum can usually be heard easily without amplification. Does this mean you don't need to mic it? Absolutely not, because the overtones do not carry well without reinforcement, and all the "punch" in the sound can be lost. After mic'ing, you may want to roll off the lows on the kick drum channel and give the upper midrange a boost, guaranteeing a snap in the kick without any added boom.

The low end will reach the audience acoustically and through leakage into other mics, and they will hear the upper mid/high end of the same drum through the sound system. However, this arrangement can make for a disorienting sound, especially if some of the audience is much closer to the main speakers than to the instruments. Like many PA situations, you might improve one aspect while harming another, so use your ears and common sense to strike a balance.

You can use this mid/high reinforcement technique on any percussion instrument that has enough natural low-end projection. Some-

times, however, it will not be obvious that you need any extra coverage to accentuate the crispness of the drums until there's a good crowd in the facility, so it's a good idea to try to have a few mics positioned and ready if you later decide you need them. This is a desirable option to have in many PA situations, provided you have the extra equipment available.

What if you only have a few channels open on your board for percussion? What should you cover first? On a typical drum kit, the snare and hi-hat are of primary importance. These two units figure prominently in most contemporary music and, in a pinch, can often be covered by one mic. The mic should be positioned above the head of the snare to pick up its sharpness, if desired, and it should be pointed slightly upward to catch some of the nearby hi-hat's sound.

Next, go for the kick drum, unless you're in a small room and are sure the drum's full spectrum can be adequately heard without reinforcement. Extra mics would cover the toms and cymbals and, if individual mics are used, would be placed close to their heads, out of the drummer's way, of course.

Once you have a mic on some part of the kit, how do you handle the equalization on the board? It is a good idea to begin by getting rid of the frequencies you don't need, such as the low end of the overhead cymbal mic or the very high end and low end on the kick drum. Often the snare drum has a "boingy" spot in the 500-800 Hz range that can be cut down with your board's mid-range control. Cymbals may have similar "hot spots," depending on where you place the mic and what kind of cymbal is being used. (What we mean by "hot spot" is a frequency area that gets over-amplified or is produced naturally by the instrument that you think is too loud.) It is popular in disco and new music to have a very hot high end on the cymbals, and it's easy to achieve if you want it. A "fat" snare sound, however, is another matter.

One way to get the studio snare sound in a club mix is to use a good reverb unit. Plate reverbs work best (and are also the most expensive). The addition of digital delay can also help. You will want to use a mic with good low-end reproduction that can handle high sound levels without overload distortion.

It is a good idea to assign a limiter

to the snare or, if possible, to the overall drum mix. This will allow you to flatten out the huge peak of the staccato sound. Furthermore, you want to mic the drum as closely as possible, and try to keep everything else from bleeding into that mic. Some sound people mic from under the snare and then drape a heavy cloth around the shell of the snare to help block out sound from other sources. This cloth will sometimes keep the actual snares of the drum from being vibrated by other sound sources.

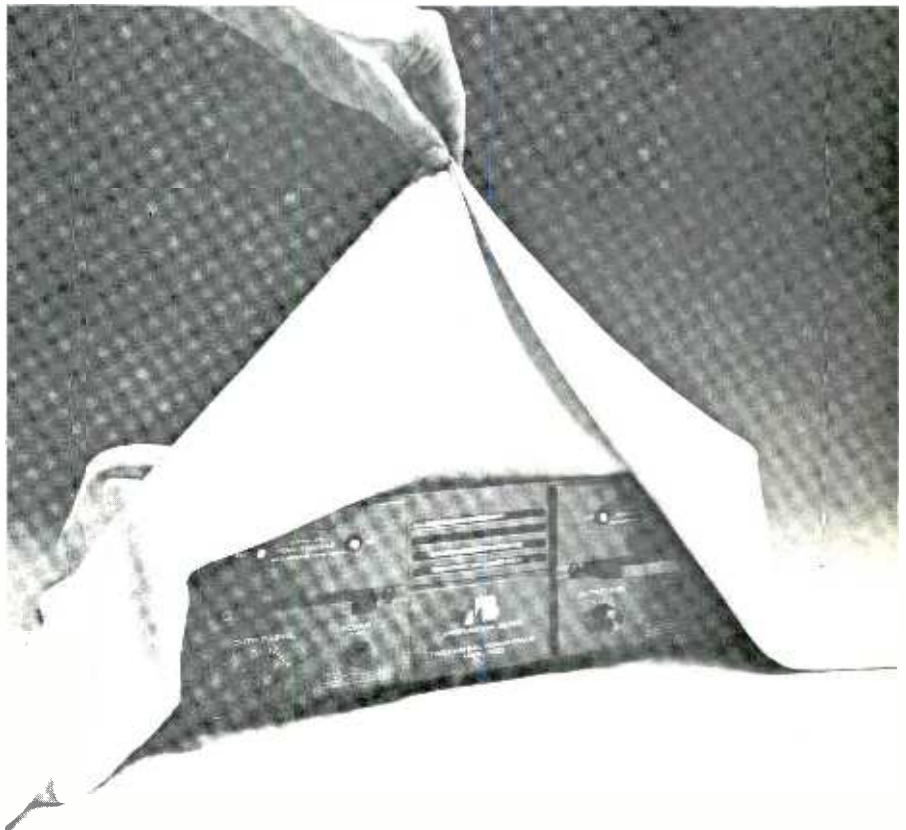
You and the drummer can work with the sound of the drums until

your hair turns grey. It won't make any difference unless you are producing a good clean sound from your general PA system, so try to keep a perspective on the whole project. Pay attention to the crucial matters first, and add refining details if you can. You will play an important part in getting the band's life pulse out to the listeners.

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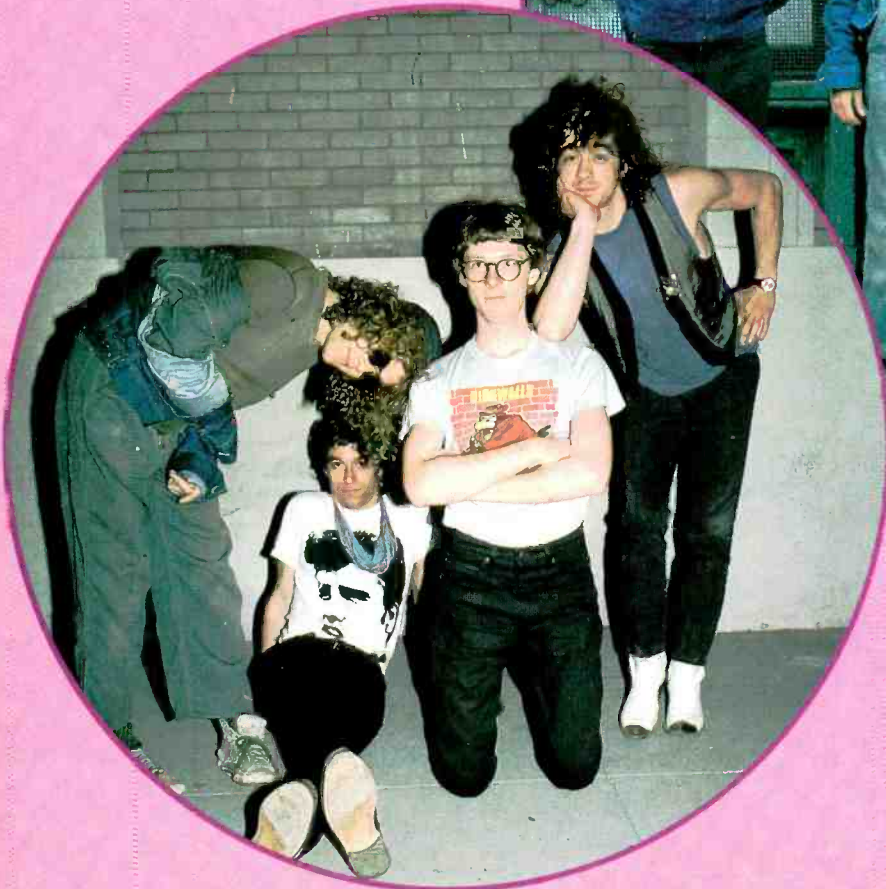
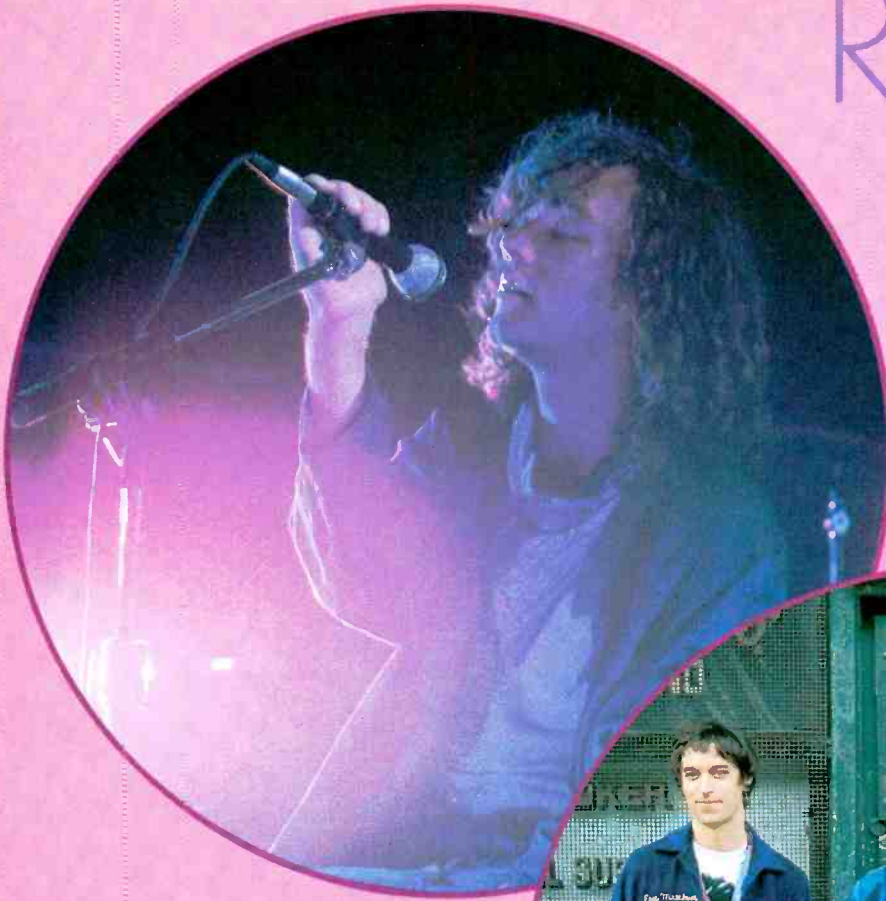
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MITCH EASTER

Only a few years ago, the term "Southern rock" signified the bloated blues of such outfits as the Allman Brothers Band, Charlie Daniels, and the Marshall Tucker Band. But chances are good that if asked to name a rock band from the South today, most fans would sooner cite the B-52's, Let's Active, the Method Actors, the late Pylon, or—especially—R.E.M. as the standard-bearers of Dixie-rock.

Since the B-52's broke out of Athens, Georgia in the late '70s, much attention has focused on the college town, from which a disproportionately large number of innovative new pop bands has emerged. And none of those bands has garnered as much praise as the quartet featuring vocalist Michael Stipe, guitarist Peter Buck, bassist Mike Mills and drummer Bill Berry—R.E.M.

R.

M.

E.

R.E.M.—it stands for Rapid Eye Movement and has no hidden significance to the band—initially formed in 1980 for a party at an abandoned Athens church which was then occupied by Buck and Stipe. Although they had no intention of taking their musical ambitions beyond that single evening, the response to their debut was great enough that the four friends decided to stick together.

From the start they avoided musical and fashion trends, preferring to work within—and expand upon—the basic guitar-bass-drums configuration. Buck's ringing Rickenbacker tones and the sturdy but rollicking rhythm section of Mills and Berry provided the perfect counterpoint to Stipe's hypnotic, passionate vocal style.

The band was an immediate success, and its first single, the independently released "Radio Free Europe," recorded in 1981—only a year after the band's formation—led to an I.R.S. Records contract. The *Chronic Town* EP (1982) garnered critical praise (number two in the *Village Voice* year-end critics poll) and topped college radio airplay charts for months.

Chronic Town also focused attention on producer Mitch Easter, who had pioneered the new Southern pop sound in the '70s via his work with such bands as the Sneakers, Rittenhouse Square (with future dB's Peter Holsapple and Chris Stamey) and the Crackers. Easter, who went on to produce the Individuals, Beat Rodeo,

Bongos Richard Barone and Jim Mastro, and his band, Let's Active, became known for his minimalist approach, avoiding thick mixes in favor of a natural sound concentrating on simple percussion, chiming guitars and as few obvious overdubs as humanly possible. Easter's method is to let the musicianship and the natural attributes of his acts speak for itself, preferably without the additional but artificial push the modern studio is capable of providing.

To allow himself more recording freedom, Easter opened his own studio, the Drive-In, which has since emerged as one of the most desirable recording spots in the East. Located in Easter's home base of Winston-Salem, North Carolina, the converted garage of his parents' home has provided an alternative to the glossy



Photo by Ed Colver

city-based studios usually used by name bands.

Although Easter has recorded many bands at the Drive-In, including his own, he has chosen to record R.E.M. at Reflection Sound in Charlotte, NC. It was there that he worked on both *Murmur*, the 1983 album which placed number one in the *Rolling Stone* critics poll, and the recent followup, *Reckoning*. Both records were co-produced by Don Dixon. Following the release of *Reckoning*, which includes the popular cuts "S. Central Rain," "Pretty Persuasion" and more, *Modern Recording & Music* spoke with R.E.M.'s guitarist Peter Buck and co-producer Mitch Easter.

Modern Recording & Music: The new album, *Reckoning*, like the first, was produced by Mitch Easter and Don Dixon. But you didn't record at Mitch's studio, which so many other bands have used.

Peter Buck: We did both albums at Reflection Studios in Charlotte, North Carolina, which is sort of our home away from home. But Mitch has upgraded his personal studio, the Drive-In, to 24-track, so it's possible we may use that in the future. It's real homey, fairly cheap, and fun. Mitch's mom runs around making us coffee and making sure we have donuts. I always hope that Mitch will record the Cramps or someone that looks really funny and blow her mind. She's used to us and people like the band the dB's, and we all look fairly normal.

MR&M: What is it that you like about Reflection?

PB: It has a nice "live" sound to it. We set up the place like we play on-stage and you can play as if you really are doing a live show. You can overdub, of course, but it has a real nice live feel. It's not as hustle-bustle as other places and it's cheaper than studios in New York or L.A. and has comparable sound quality. We don't really need all the machines. It's always been Mitch's theory, and I subscribe to it, that one of the reasons records take so long is that there are so many choices that one feels obligated to explore them all, as far as mic placements and stuff. We don't feel that option down there; we just crank it out and do it.

MR&M: What is Mitch's approach to production? Does he take an active part in arrangements?

PB: No. By and large, by the time we come in the songs have been



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Someone, maybe it was Bruce Springsteen, once said that the important thing is to capture the feeling of spontaneity without being really spontaneous.

written and played live. Mitch and Don might suggest arrangement ideas, like chopping out half a verse, or adding to an intro, but usually they try to get a feeling for a song and color it: they help us decide mixes for electric and acoustic guitars, whether something needs a keyboard, if we should prune out some of the vocals or have 18 different vocals.

MR&M: This album sounds simple on the surface but I get a feeling that there's a lot going on underneath. Is that true?

PB: Yeah. Someone, maybe it was Bruce Springsteen, once said that the important thing is to capture the feeling of spontaneity without being really spontaneous. We try to keep it as spontaneous as possible and keep the basic tracks live. But we use a ton of overdubs, hundreds of guitars. But instead of 18 different parts that interlock, like Yes or someone, we just double and triple up parts. I'll use different guitars to get different feelings. Michael does all the vocals and he refuses to punch things in; it has to be a take all the way through.

MR&M: How does *Reckoning* differ from *Murmur* in your opinion?

PB: The songwriting is stronger. The first record was consciously made as a mood record. Rather than make the first record typical, which would have been to record the live show, we tried to make a record that would sustain a feeling. So there were songs that didn't make it to the record which might have been better songs but which didn't necessarily fit in with the flow of things. This time we wanted to make a song record, to work away from what people saw as our strengths. I think everyone saw us as a moody folk-rock band, so this time we didn't worry about an overall feeling and concentrated on the songs.

MR&M: It's interesting that you mentioned folk-rock because so many people have compared R.E.M. to

groups like the Byrds. But I don't really hear a Byrds sound on this album.

PB: I'm glad someone doesn't! It's funny because none of us are real Byrds fans, or fans of that type of stuff. Michael and I really do like Big Star, who got some of their feeling from the Byrds. Folk-rock to me is just something I've seen in reissues; people with funny hair and glasses. It was just a phrase to me that didn't make sense.

MR&M: Does the band like to become involved technically in the studio?

PB: All I know is that we used a 24-track board. Mitch and Don talk about those things but we just like to make sure that the equipment is technically capable.

MR&M: What guitars do you use?

PB: Onstage almost all Rickenbacker. In the studio I use various guitars. I have a 1961 Gretsch Chet Atkins I played on a couple of things and a mid to late '70s Telecaster Thinline that I like for the twangy sound. I think the Rickenbacker is a 330 and I use it for the ringier rhythm parts. And Mitch has another Rickenbacker which gets a better rock 'n' roll sound, with fuzzy tones. When I first started nobody wanted Rickenbackers and you couldn't find them. I went around

Atlanta and I could only find one; the guy asked me, "Why would you want one of those?" He said, "You can't play jazz, you can't play rock 'n' roll." So I said, "Good, because I'm not going to play either." Now the times have changed and they're real popular again.

MR&M: What does Mike Mills use?

PB: Mike used a Rickenbacker bass. I think it's called a 4001. And I think he used a Fender Precision on a few cuts, for a more low end type sound.

MR&M: And what about Bill Berry's drums?

PB: I think he used Sonar drums. He'd use tin cans if he could get away with it.

MR&M: Do you use any effects?

PB: Onstage I don't really use anything. In the studio I used a tremolo in one place, and added flange to the board for some guitars. I might overdub two guitars and one would be straight and the other would use flange. I used a fuzz device for the first time in my life on a couple of songs. Not in a heavy-duty Yardbirds way, but just to add strength to the chorus. Also a bit of reverb to the board.

MR&M: There seems to be additional instrumentation on this record, such as keyboards.

PB: Yeah, there is. We never thought about it only being a guitar band or record. I think I did the whole last record without changing the tone of my guitar. I did mess around with pedals and stuff.

MR&M: Did Mitch and Don use any special setups or techniques?

PB: It was pretty straightforward. Mitch and Don really try not to mystify the whole experience of recording. They'll set up mics and within earshot purposely talk about

Mitch and Don really try not to mystify the whole experience of recording. They'll set up mics and within earshot purposely talk about setting up mics just because they look nice in that area. Or they'll pick out a mic because it looks good for a particular song.



impossible to understand Michael's singing? Probably the most often-repeated criticism leveled towards R.E.M. is that he sounds like he's mumbling. Why keep the words a secret?

PB: (laughs) That's why we did "South Central Rain" as pretty much a straight narrative on this album. "Letter Never Sent" is also pretty straightforward. "Seven Chinese Brothers" is pretty off-the-wall, though.

MR&M: What's the source of that song? I remember reading a book when I was a kid called *Five Chinese Brothers*.

PB: That's it. Michael and I were talking one night about the most terrifying things that parents tell kids and we remembered this story. Except that we thought it was seven. Anyway, there were five Chinese brothers and one of them could hold the ocean in his mouth and the others could all do similar things. And the copy I had had a frightening illustration and I was thinking, how could a parent read this to a kid? So we talked and it kind of worked around to being that song.

MR&M: The lyrics of that one are pretty hard to decipher.

PB: Yeah. We didn't deliberately decide to make everything obscure, like "You can't understand this, ha ha." Michael just sings like that. He talks like that, too. If you ever interview Michael you won't understand what he says. Some of the songs you can understand some of the words or all of them, and others you won't pick up any at all. I can't remember who, but some literature critic was praising some guy because he never felt bounded by the restraints of grammar or even coherency. Actually, it was a putdown

setting up mics just because they look nice in that area. Or they'll pick out a mic because it looks good for a particular song. They use a lot of weird mic placements as far as room mics and such. On one track, "Time After Time," the whole drum mic is just the room mic. So it has this quarter of a beat off, real dead feeling.

MR&M: How long did *Reckoning* take to record?

PB: It went real fast. I think I.R.S. was used to having trouble with second albums so they booked us for about 25 days because the first took us 14. But this one took only about 11. We had to cancel studio time and the record company was saying, "What do you mean you're done, and under budget and three weeks early?" We even had time to have monster darts tournaments. We almost could have done another album.

MR&M: Do you write in the studio?

PB: We go in pretty prepared. Every album we have a few pieces that maybe we never worked out onstage so we kind of throw it together in the studio. Michael will often change words and melodies in the studio. He really likes to work under pressure. Like "Time After Time" I don't think we'd ever played before; we just went in and did it. We totally ad-libbed the bridge and certain instrumental things. On the first record "Perfect Circle" and "Talk About The Passion" were also kind of written but not written.

MR&M: The record label doesn't indicate individual writing credits. What exactly is the division of labor? Does Michael write all the lyrics?

PB: Not really. We all really

construct our own parts and everyone has veto power. Mostly the process of writing is all of us taking masses of stuff and throwing away whatever we all don't like. We all edit and come up with titles and phrases. It's really a democracy and we don't really have any big arguments. Usually we know how a song should go.

MR&M: There are some surprising new directions on this album: a country song, a ballad.

PB: Again, that's because the first record was such a total, unified body. We didn't want people to get the impression that that's what we are. We felt that there were a lot of things we could do that we hadn't even approached and rather than making the same record over and over we wanted to show that there are other things we are capable of. Also, people got an impression of Michael as being very impressionistic, so we decided to include a straight narrative where you can understand all the words.

MR&M: Okay, you beat me to my next question! Why is it usually

We had to cancel studio time and the record company was saying, "What do you mean you're done, and under budget and three weeks early?" We even had time to have monster darts tournaments. We almost could have done another album.

but there are a lot of ways to say things and quite often you can get the feeling or an idea of what the messages are without beating it across the head. Michael always says that subtlety is a virtue and sometimes things you have to work for mean more than things handed to you on a silver platter. It's not like we're just throwing things together and saying, "They'll really wonder about that." The songs all start and end and move towards a point. People can pick out the intent and feeling first and then flesh it out with images of their own. But this album is a lot more straightforward; at least half of it is.

MR&M: Is that because of the criticism?

PB: No. We all read the criticism and some if it's real interesting but we can't go around making records for critics because they don't buy them anyway.

MR&M: The critics really loved *Murmur*, though; number one in *Rolling Stone* and the *Village Voice* and so on. Were you surprised and impressed?

PB: Surprised, yes, impressed, no. I probably would have ended up being a critic if I wasn't a musician, though. I've always loved music and wanted to do something with it. I wrote criticism in high school. Critics are people who are fans first and then get into it on a professional level. So, by and large, we're the same kind of people so it's not really surprising that people like us who make records would appeal to critics. We're interested in the same stuff. But then again, I look at some bands that I really don't respect and they're high on the polls, too. It makes me feel good that people appreciate us, but even if nobody liked us we'd still be doing it.

MR&M: There seems to be a resurgence of guitar-oriented bands, perhaps as a backlash to the synthesizer sound. Do you see this happening and if so, is it a coincidence or do you think there's a real movement opening up?

PB: I think it's a coincidence. Or at least, we're certainly not influencing anybody to go pick up guitars. There have been guitar bands around; it just wasn't the popular thing for awhile. Certainly the stuff I've been listening to has been guitar bands, whether it's Big Star or the Easybeats, or Black Flag or Husker Du or the Replacements. When we went over to England it was like a big



R.E.M. on "Solid Gold." (l. to r.): Mike Mills, Bill Berry, Michael Stipe, Peter Buck.

Photo by Ron Wolfson Photos

shock to them. "Guitar band? How original! How did you come up with that?" They seriously couldn't believe it. And we'd say, "Well, you know, the Sex Pistols did it." I think the times are changing a bit so that people are realizing that being from England doesn't necessarily make you great. It doesn't make you bad, either; it just doesn't make you anything. It makes you money over here.

MR&M: How do you feel about what's been coming out of there?

PB: It's pretty irrelevant to me. I like stuff like XTC, Gang Of Four. I loved the Buzzcocks; the punk stuff really excited me. Recently, there hasn't been that much. U2 and the Alarm are pretty good. There are a lot of American bands I like. Let's Active is good, Minutemen are good.

MR&M: I'd like to ask about some of the individual songs on the new album. "Harborcoat" is interesting.

PB: That's a weird song. That was one of the few times that Don and Mitch suggested an arrangement change. We had a real crappy intro which no one ever liked. Now it sounds like "Born To Run." It has a little bit of a ska feel.

MR&M: How about "South Central Rain"?

PB: That came after a bad flood that we had and everything was under water. I was pretty certain we were going to be wiped off the map.

MR&M: What is the scene like in Athens now?

PB: It's a real non-scene; it's great. Real untrendy. I don't think I'd ever seen anyone wear a leather jacket in Athens until last year. Now a couple

of kids have moved there to become hip. There are still a lot of upcoming good bands there: Art In The Dark is good, kind of drone pop. Oh OK is another one. Michael's sister is in that band; they sound like a new age Mamas and Papas.

MR&M: What do you do in Athens when you're not touring or recording?

PB: For the last three years that's really all we've done. Recently we had some free time so Bill, Mike and I put together a band with some local guys and played around under the name Hindu Love Gods. We also backed up Warren Zevon for some demo tapes. Michael has done some singing with Anton Fier; Anton was in Golden Palominos and Pere Ubu and played with Herbie Hancock. I like to play and if I don't play once a week or so I get nervous. I'll get up and play with anyone who asks; I got up with Love Tractor and played Z.Z. Top songs. There's really only two clubs to play at and the school has bands.

MR&M: Getting back to the songs on the album, how did "Pretty Persuasion" originate?

PB: That's one of the older songs on the album. Years ago when we first started the band Michael had a dream three nights in a row that he was a photographer taking the last Rolling Stones picture sleeve. They were all sitting on a dock with their feet in the water and the cover was "Pretty Persuasion." None of us believe in that message-from-above stuff but if you get it three times in a row someone is trying to tell you that at least it's a good title. It's never been

my favorite song but everyone who heard it liked it.

MR&M: In "Time After Time," is the harpsichord sound made by a harpsichord or by synthesizers?

PB: Neither, it's all guitars. Mitch and I stood with one mic placed between us and strummed 12-string guitars; with a little bit of flange it gets a real mystical sound to it. We punched in all kinds of weird things, like Mitch beating on a chair in time, and bongos. It's kind of a drone/chant song.

MR&M: The second side of the album is a lot different than the first.

PB: A lot of people have said that. It's more diverse. I don't know why it worked out that way. "Second Guessing" opens that side and it's just a rocker. "Letter Never Sent" is a new song and, like some other songs on the album, seems to have something to do with communication. Not that it's a concept album or anything but if you write eight songs in one week you end up with some kind of feeling that circulates. That song is more open emotionally and lyrically than a lot of our other stuff. I would have picked that as the first single,

PB: It's kind of like Booker T. on acid. We did the basic track—one guitar, bass, drums and vocals—and we were wondering what to do with it. I always wanted to do something like Booker T.'s "Green Onions," and so we put some organ on it. Then we got this great concept to put on all these different sounds, so we put on about eight things, none of which repeat. They're all banged on, slowed down, sped up. When we slowed everything down, it all sounded like the same thing. Bill is whistling and rubbing a wine glass to make a sound and I'm playing bells, slowed down about 20 times. There's backwards guitar solos, backward church bells. We wanted it to sound like ghosts hovering around.

MR&M: "Rockville" is the other shocker, a straight country song.

PB: You forgot the little funk thing in between. That's basically how we write songs. We just sit down and start making noise. One of us will be warming up and playing a riff and the others will follow. Mitch taped it because he thought it was pretty funny. It was ludicrous; we could've done a whole album of outtakes like

absurdity we inflict on the world and vice versa.

MR&M: Obviously, you've felt no need to make a so-called dance record.

PB: Well, I'd never say that we'll never do something, and some of the music I like most is dance music, like James Brown. But I don't find most of that synth stuff danceable; it's that fascist rhythm. The drummers are either drum machines or play like them; most of the dance stuff I like, like James Brown, the drummers speed up and slow down tempos. I just don't like that whole studio feeling that you have to play like a metronome.

MR&M: Who were some of your guitar influences?

PB: I really liked Zal Yanovsky; that's probably the first time he's been mentioned in 15 years. And country guitarists. It's concise. I always hated that Bad Company style of heavy playing that sounds like bacon frying. When we first started it wasn't even certain which instrument I'd be playing, because Mike played better guitar and bass than me. I thought I'd play bass.

MR&M: Is it difficult getting the sound you want in the studio?

PB: I just plug in my amp and play. Sometimes I want to get a sound and I can't, though. But usually it hasn't been too hard. I really like the sound Tom Verlaine gets and I don't know how he does it.

MR&M: Do you think R.E.M. will ever have huge top 40 hits?

PB: The way it's going I don't know if it'll be our second record or even our fifth. But some time during the next eight or 10 years when we've been around and made enough quality records, we'll sell a lot of records, like Talking Heads, who didn't have a hit till their fifth album.

MR&M: The industry is too busy hyping everything from England. They'll push bands like U2 and Big Country and say they're the new "guitar bands" while you guys have to struggle without the hype.

PB: Big Country is a hype. They sound like Jethro Tull to me. I like the "Big Country" single but everything else sounds like Jethro Tull and I dare anyone to say that it doesn't. I do like U2 and the Alarm, though. I do think we're getting acceptance though, and this is a more commercial record than the first, so we should get more.

MR&M: Well, let's hope so, because you deserve it.

We didn't deliberately decide to make everything obscure, like "You can't understand this, ha ha." Michael just sings like that; he talks like that, too. If you ever interview Michael you won't understand what he says.

but radio being what it is, who knows? Besides, we did "South Central Rain" as the first video.

MR&M: Do you like doing videos?

PB: No, and the rest of the band feels the same. I don't enjoy watching them, either. We would never do one, though, that has naked girls running around or anything like that. As long as we don't do anything we feel is a sellout or bad for us, we might as well do them. It's my least favorite thing to do in the business, but they may help sell records, just like print ads and interviews.

MR&M: "Camera" is a departure for you, a ballad. How would you describe it?

that. You can hear me making mistakes. I always liked sticking in little things like that so people will go "What is that?" As for "Rockville," that's an older song, which we originally wanted to sound like Buddy Holly, played faster. We slowed it down and did it in one take. It's got my little Zal Yanovsky (of the Lovin' Spoonful) guitar solo, with reverb and all.

MR&M: And finally, "Little America."

PB: That's basically our year in review. We're not going to write typical road songs, like how hard it is being on the road and I miss my girlfriend. So this kind of looks at the



Let's Active (l. to r.): Mitch Easter, Faye Hunter, Sara Romweber.

never did think it was *real* crummy. It's great because there are so many studios in the country that are real slick. But that also goes to show that that's not all that counts.

MR&M: What equipment do you have at the Drive-In?

ME: The console is an Amek. It's a mid-priced 24 bus. And I have a 3M 56 16-track tape machine, which is really wonderful. I have a 3M 64 2-track, and a 3M 23 4-track. I've ordered but haven't received yet an MCI 2-track. I have an Ecoplate II reverb, and a Lexicon 200. I've got a Urei 1178 limiter, and a Symetrix 501 Compressor. The other compressors are a Universal Audio 175 and an Altec 436A. For delay I've got a Lexicon Prime Time, DeltaLab Effectron 1024, and two Audio Instrument Company Time Delay Units. For EQ I have three Pul Tech equalizers, and a Biamp 210 graphic equalizer. For amps I have an Adcom GFA 1, a Hafler 200 watt amp, and a Dynaco 80-watt amp. For microphones I have a couple of Electro-Voice RE20s and AKG 414s, Senn-

heiser 421s, and Neumann KM 84s. Electro-Voice CS 15 condensers, a couple of Shure SM7s, a couple of SM57s, and ADG D1000Es.

MR&M: With your own group, Let's Active, you chose to mix away from your own studio, in places such as the Power Station. Why?

ME: Since we were signed to a record company and had some money to spend, I thought it would be fun to mix somewhere else. We also booked time at Skyline. I knew the engineer, Scott Litt, from his work with the dB's. I didn't have as much stuff last year so I wanted to do it somewhere else.

MR&M: How did you choose the equipment that you did for the Drive-In?

ME: By reading magazines, and I sort of knew what I wanted. The first thing I bought was the Quantum recording console. It never broke and I just sold it this year. Also, I bought that in 1978 when there weren't as many low-priced consoles as there are now. The tape machines I bought in Atlanta; I saw an ad for

them in *Billboard* and just went down. I think the 3M is the most superior of all the old tape machines; the lube transport and all is real solid. It seemed like the most elegant of all those machines.

MR&M: Are you constantly updating now?

ME: Kind of, but I don't think that there's any analog tape machine that's gonna sound better than the 3M 56. I'm gonna keep them forever. Certainly the transports now are a lot more elegant. Some day I'll probably get a 24-track machine but I don't really care; it'll have to wait until I have that spare \$20,000 lying around.

MR&M: How do you feel about digital?

ME: I think it's fine but I've never really gotten to use it so I'm kind of ignorant about it. I know about all the formats, but it's hard for me to get excited when there are 50 different formats. Also, so many people I've spoken to just don't like it; it does sound different. I'm sure digital will be the thing of the future but it doesn't make any sense for a guy like me to get involved. If I had the kind of studio that turned over equipment every three months and I was trying to compete, I'd worry about having it. But right now it's really out of my grasp.

MR&M: Do you do all of your own engineering?

ME: Yeah, except that I recently did a session with Marshall Crenshaw at Reflection and they have their own engineers there. Steve Hagler was the engineer and he knows that equipment a lot better than I do. In general, I'm real comfortable turning knobs and rather uncomfortable if I'm not.

MR&M: Do you prefer being an engineer/producer to being a musician? Could you give up one over the other?

ME: I get bored if I'm doing a long session and I don't get to play something. If I was strictly an engineer I'm sure I wouldn't be able to keep my mouth shut because I'm so full of ideas. But I couldn't just sit in a chair and be a producer, either. So I sort of tread water between all the roles.

MR&M: Why didn't you record *Reckoning* at the Drive-In?

ME: The record company was concerned that we couldn't get a very professional sound there. They wanted us to use 24-track. There's still a huge body of people out there who think

that the more tracks you use, the more hi-fi it'll sound. The band is a bit confused about that too.

MR&M: What do you like about Reflection?

ME: I'm real glad I went there to record *Murmur* because they've got a great piano down there and it's just a great place to record; it's closer to where R.E.M. lives too. The label was interested in doing some of *Reckoning* at my studio but I had just gotten in the new console and I wasn't that familiar with it yet.

MR&M: How were the sessions for *Reckoning* approached?

ME: I just wanted to make a record that the band would like. I'm not the kind of producer who secretly fires the band and just uses the singer. That's real foreign to me. Fine records are made that way but I just don't want to know about it. I'd feel ridiculous doing that. So we just let them play and when something comes up that they like we use it. An R.E.M. record is by R.E.M.; I think groups should stand or fold on their own merit.

MR&M: Do you work on the material or arrangements with them?

ME: We all work on the songs and talk about what parts we like, whether a part's going on too long or whether a piano is needed instead of a guitar. It wasn't a case where they gave me a tape of 30 songs and I picked the ones I liked. What we did was to record more songs than we needed and by the time we had been working for awhile it became obvious which ones were working and would fit in. It's a self-selecting process. This was more of a guitar record than *Murmur*.

MR&M: How were the tracks laid down? Did the band record live?

ME: Yeah. We set up the drums out in the room with both the bass and guitar. We didn't really expect to keep anything but the drums, but you never know. I think we ended up getting rid of the guitar parts so we could re-do those in stereo. The bass ended up being used almost exclusively from the live tracks, where on the *Murmur* album it was almost completely re-done. We all like to keep as much as we can from the basic tracks.

MR&M: Were there a lot of overdubs?

ME: Yeah, there were. We did a lot of stuff in stereo or maybe we'd have to adjust a mic or something. We used the Rockman a lot; I wasn't familiar with it but Don Dixon had

one. There are a lot of places where a 12-string comes in halfway through.

MR&M: What did you do to record Peter's trademark guitar sound?

ME: I tried to get glittery sounds. Especially on *Murmur* there'd be a close mic and two far mics. The far mic would be real compressed so they'd pull in a lot of the room sound. Reflection's got a real big room sound.

MR&M: What did you use to mic the vocals?

ME: On *Murmur* we used a Neumann U47 and on the album a U87. This is mainly because, as Don correctly says, the U47 is the best looking microphone ever made. And since it looks so good it's obviously the one to use. There's a hallway between the control room and the studio at Reflection that Michael likes to sing in; it has hard walls and gets a good sound. We put the mics out in the hall.

MR&M: One criticism of R.E.M. is that Michael's vocals sound swallowed up. Is that done on purpose?

ME: Well, I think that Michael's vocals are as loud as any Engelbert Humperdinck record, especially on this new record. People can't hear the words because that's the way he sounds. People have asked me what secret electronic device I use to get him to sound like that. That's ridiculous. And for another thing, I can understand those words real well. I'll admit that there are some songs, like "Pretty Persuasion," on which you can't understand the words. But that's the sound that came out of his mouth.

MR&M: What is your working relationship with Don Dixon?

ME: Don, when he heard that I was going down to Reflection, offered to help me because he knew I didn't know what I was doing. He has been engineering, playing, and producing a lot longer than I have. He's done a lot of projects.

MR&M: How would you compare working with R.E.M. to working with other bands you've produced?

ME: They're a real rock band and real lazy, and they don't want to do it again, so they get it down just fine and then they don't want to hear about it. Then someone like Chris Stamey (formerly of the dB's) likes to do it a million times. Both are equally viable ways to make records. With R.E.M., after the basic tracks, it's usually like three of them are off somewhere reading books while one

guy is in working. The other thing about them is that they have a real bias against synthesizers or anything they think is too modern, although we do use plenty of modern stuff on the records. We used the Lexicon 224X reverb all over the place.

MR&M: A lot of people say R.E.M. sounds like a classic '60s band. Would you agree?

ME: I don't really think so, although we do use a lot of classic '60s equipment.

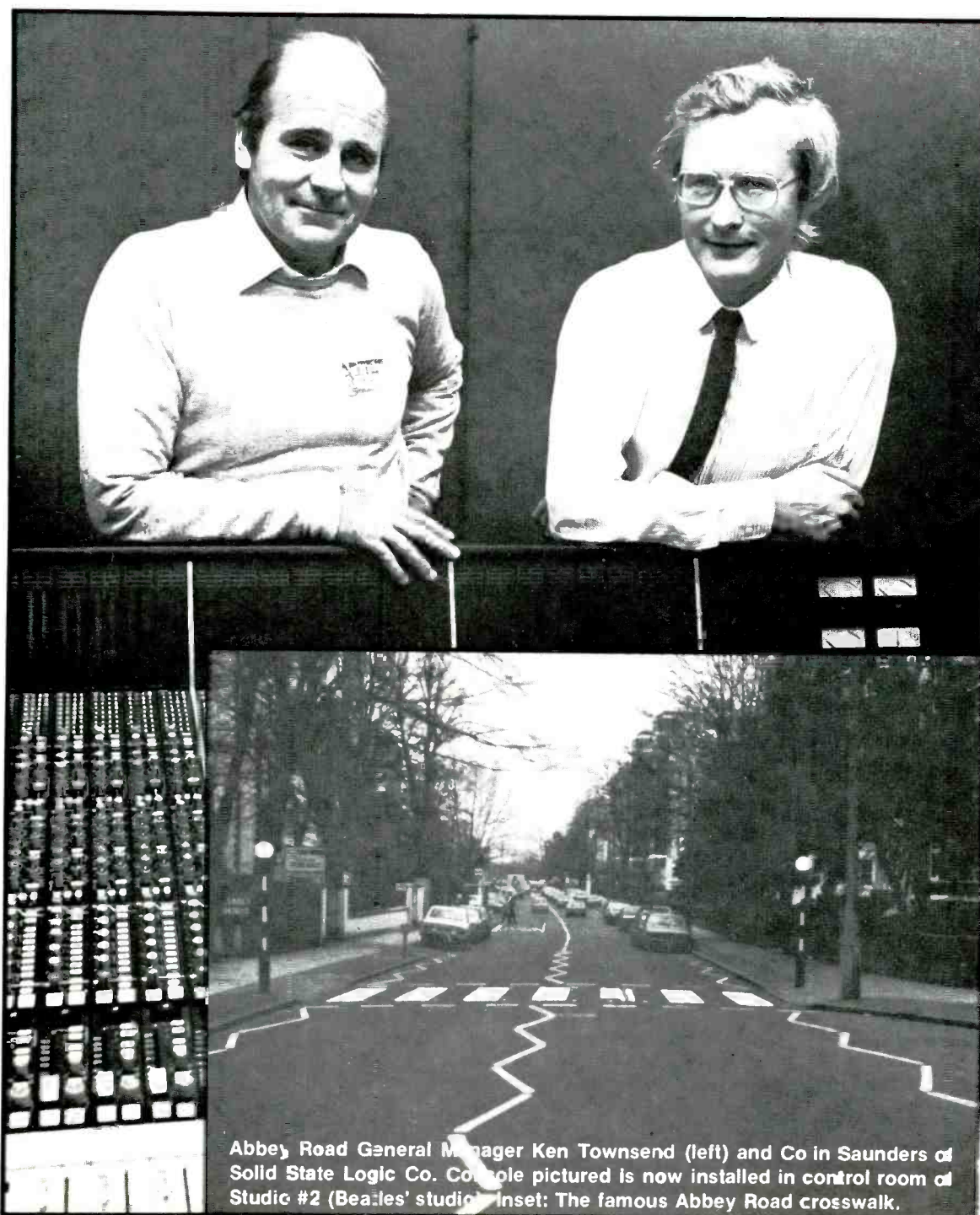
MR&M: When you went in to record the Let's Active EP (*afoot*, IRS Records), was it difficult to get a perspective on your own music?

ME: In some ways it is. I take the remote control box from the tape machine out into the room. Then I pick up my guitar pick and start playing. We really did that record in secrecy, with just the three of us. For the next one we have Don Dixon engineering, which makes it easier for me to think about playing instead of about levels. It's really good when we go in because all of us like making records. A lot of bands worry about things like "How are we gonna do that onstage?" But we don't care about any of that stuff; we just wanna make good records. So this time around we can throw in the kitchen sink if we feel like it, which is lots of fun. One thing we're doing is using two amps to record everything, including a Fender Twin Reverb for the bass. And we're using a Leslie for everything. We've done a whole lot of bass through the Leslie. We're hardly doing anything direct. Another thing we're doing that's working out real well is using a real garbage drum sound; the heads are real loose and the mics are all back from the drums. It's really working. In the past I used to think you had to really work on the drums and get all the garbage out, gate tom-toms and all that. We're going for the opposite approach. We started doing that on *Reckoning*, where the big part of the drums is this sort of binaural setup that Don Dixon made. There were stereo mics that were 10 or 12 feet back from the drums.

MR&M: Is there a healthy club scene in North Carolina now?

ME: In this area it's just starting to happen again, after disappearing for a long time. But taken as a whole, the state is pretty good. I'm really happy about Let's Active though; it's the band I always wanted to play with.

ABBEY ROAD STUDIOS



james f. rupert and michael roberts

home of the beatles



*"I would say that Abbey Road is the best studio in town, town being the world."
—Paul McCartney*

Last February, many rock fans were feeling nostalgic as they remembered the Beatles' arrival in America 20 years ago. They came to us as the newly-crowned princes of the beckoning British rock invasion. Never before and not since has an alien arrival to this continent been met with such a frenzied response.

But that was already February 1964, and the Beatles were international stars. A mere year and nine months earlier the Beatles were just another band of talented musicians looking to sign a record contract, which, to no one's surprise, was quite elusive in those early, scuffling days.

Ken Townsend was a house engineer at EMI Studios in London in 1962. In June of that year, Ken agreed to stay late with balance engineer Norman Smith to work on a commercial test recording for a music group producer George Martin was bringing into the studio. In the understatement of the year, Townsend recalls, "There was something different even then about the four lads from Liverpool who turned up for that test."

In 1984 that same young man who joined EMI as an apprentice in 1950 is now the general manager of what has become known as the world's most famous recording studio. Abbey Road Studios and the Beatles have become almost synonymous terms in the mythology of the pop music world. Hardcore Beatle-maniacs may think they've heard the whole story on those early studio days, but when interviewed in his London offices, Ken Townsend and his staff at Abbey Road proceeded to gently poke holes in many of the popular misconceptions regarding the recording career of the fab four, while providing valuable insights into the history and development of multi-track recording as well.

"The Beatles themselves came to Abbey Road for an artist test on the 6th of June, 1962, and I was fortunate enough to be one of the engineers on that session," said Townsend. "At that time they had already been turned down by Decca. Brian Epstein had sent tapes to various people who'd given him the thumbs-down sign. As a Liverpool based band—Liverpool being very remote from London—it was a bit out of the way. It sounds silly now, doesn't it? But the breakthrough, to a certain degree, was on Oxford Street. One of the largest record shops is 'His Master's Voice,' which is owned by EMI. In that particular location there was a small demo studio where you could actually cut an acetate disc and take it away afterwards; you paid a fee for doing this. That demo facility has vanished because now it's purely a record shop, one of the biggest in the world.

"What happened was, Brian Epstein, having despaired at his inability to get the Beatles signed to a record company, took a tape down and wanted a record cutting of it. While it was being cut in the shop somebody heard it and passed the information over to EMI Records,

where George Martin was contacted. He listened to it and thought it was worth an audition test. Most people say that it was after the artist test that the Beatles were signed. In fact, the contract for the Beatles was actually signed *before* the artist test, on the 4th of June, 1962. The commercial test took place on the 6th of June and not much was heard until they came back on the 4th of September, when Pete Best had been replaced on drums by Ringo Starr."

In the wonderful book *Abbey Road* by Brian Southall, engineer Norman Smith recalls being less than impressed initially that first night in the studio. "When they arrived, a half hour late, I couldn't believe what louts they looked with their funny hair cuts. They basically played their stage act and it wasn't at all impressive with their little amps. I had to open up the mic for the bass player and we got more extraneous noise than the bass signal. It wasn't very good at all."

After an impassioned plea from George Martin, Ken Townsend was forced to undertake a last minute miracle overhaul of the equipment to keep the session rolling. "The bass guitar was giving out a very distorted sound that was hardly congenial to being recorded," Townsend noted. "George asked if I could do something to improve the bass, otherwise he would have to call off the session. I soldered a jack socket to the input stage of the Leak TL12 amplifier. Norman Smith and I managed to get a reasonable sound out of the bass and Paul was back in business."

Two test numbers were recorded in that audition session, "Love Me Do" and "Ask Me Why." When the machines were finally shut down at the

end of the evening, the four musicians from faraway Liverpool learned that Norman and George had a few things to say to them in the control room. "George and I laid into them for about an hour," Smith said, "and we were pretty forthright in telling them what they had to give us in the way of sound and we told them how they could embellish the sound.

"At the end of it all George Martin said that we had been going on for quite some time, going on at them for most of that time, and was there anything that *they* didn't like? George Harrison looked up and said to George Martin, 'For starts, I don't like your tie.' I still maintain that was the turning point. They didn't stop talking for an hour or more after that and I had tears of laughter running down my face. When they had gone—Pete Best was still with them—George Martin turned to me and asked me what I thought. I said, 'We've got to sign them for their wit; that's my opinion.' I believe to this day they talked themselves into a contract."

Although George Martin could see beyond the clowning, he gave a somewhat surprising answer when asked why he made the decision to put them under contract. "I remember the Beatles as very bubbly people, great fun to be with. But the fact remains that when I brought them down from Liverpool and worked with them that first time at Abbey Road I was convinced they were star material as live performers. I didn't think they could write music. I didn't sign them because they were great composers, because they weren't; they were rotten composers. If I remember correctly there were only one or maybe two of their own songs in the

George Martin had been going on with them (the Beatles) for quite some time, and he asked if there was anything that they didn't like. George Harrison looked up and said to George Martin, "For starts, I don't like your tie." I still maintain that was the turning point.

first audition and they weren't very good: 'P.S. I Love You' and possibly 'Love Me Do.' They hadn't shown any evidence of what was to come in the way of songwriting."

When the cast was again assembled in September at Abbey Road, the auditions were over. Now it was time to make the first of what everyone involved hoped would be many records together. Ken Townsend gave us the schedule of what was to be recorded. "On the 4th of September, we recorded two songs that we ended up using; 'Love Me Do' and 'P.S. I Love You.' And it was 'Love Me Do,' not 'Please Please Me.' Some of the books on the Beatles completely contradict the facts on this. The first song that we recorded, though didn't use, was 'How Do You Do It?,' which was later recorded by Gerry and the Pacemakers. All of the books say differently, but anyway that's a different story. The following week, on the 11th of September, we did 'Please Please Me' but that wasn't the main item. We also did 'Love Me Do' again but the second time we used a session drummer. The session drummer and Ringo were both here and the drummer's name was Andy White. Ringo played tambourine. The version that came out as a single was the version recorded with Ringo, and the version with Andy White came out on the LP later on. So Ringo is actually on the original single."

As the Beatles' understanding of the intricacies of the recording studio was sharpened, so too did the demands they made upon the technology increase. Within months, the same young men who had been called on the carpet and thoroughly chewed out for their lack of professionalism were sparking a revolution in the recording industry. Techniques and new equipment that had been dismissed as economically unfeasible before the Beatles were suddenly possible when requested by the most successful rock 'n' roll band in history. Technical wizard Ken Townsend was one of the boys' favorites when it came to imaginative solutions to problems in the studio. "They started off with simple 2-track, recording with voices on one track and backing on the other. But they soon got into the 4-track scene and began to revolutionize the very way in which Abbey Road had worked for 30 years. I got the idea of double-tracking the vocals in order to cut down the amount of time we spent double-

tracking. Using various pieces of equipment I was able to create a system whereby we could record two sets of voices at once and then space the second voice at any required time interval either side of the original."

The official name given by Ken to his new invention was ADT, or Automatic Double Tracking. Upon hearing the complicated terminology for Ken's wonder machine, John Lennon would have none of it. "It's Ken's Flanger," he intoned in his most serious voice. And Flanger it has remained. Through Lennon's refusal to accept the more correct title, the process known by the nickname 'flanging' has long since abandoned the unused ADT denomination. George Martin, as always, helped to put it into perspective. "ADT came out of a genuine need. We had become so fed up with spending so much time adding voice after voice that Ken and I used to talk about it continually until one day he went off and invented it. We then had to find out the hard way exactly how it worked."

Just as the Beatles had become the standard bearers for new studio innovations, too often the unsuppressed Beatlesque tendency toward anarchy could prove to be an equally frustrating roadblock. One morning in particular found the famed "Beatles' Studio 2" in an uproar over a brand new piece of equipment that the Abbey Road technical staff had developed especially for the use of the four lads of Liverpool. During the previous evening's all-night session, John Lennon had completely disassembled the piece of equipment and had painstakingly arranged the individual parts neatly in a row on the floor of the studio in order of size, from the smallest to the largest. The next morning the technical engineer who had built the equipment entered the studio only to find his prized creation in a 141-piece column stretched out at his feet!

Multitrack was still in its infancy when the Beatles first began their tenure at Abbey Road. "I Want To Hold Your Hand' was the first thing we did on 4-track in 1964 and then later on, in about 1967, we went to 8-track," Townsend said. "In between, on the *Sgt. Pepper's* album, for instance, we did several tracks on which we locked two 4-track machines together by putting a 50 cycle pulse on one and making that drive the other machine through a fre-

quency control. 'A Day In The Life' was one example on which we actually recorded the orchestra several times on different tracks and mixed the whole orchestra down. To get the final sound, we had to run the machines together. That's a forerunner to what we all are doing now in tape-lock and cuelock and such."

Townsend also noted changes in the approach to studio scheduling. "Sessions were no longer based on three-hour schedules. Up until then an artist would come in the morning, record four songs then and four more in the afternoon; an LP would be finished in the space of two days. Suddenly came this new era of studio time, with groups being booked for eight, nine, 10 weeks, or longer. Kate Bush spent nine months here making an album, working almost every day, ever so hard. In the early '60s, there was a rapid expansion of studios because studios became not just a service to their record companies, but areas in which people could make money. You hired a studio, took a fee for it and you actually made a profit by doing so.

"The Beatles were a forerunner of the explosion of group recording. Judged by the old standard of three-hour sessions, multitrack became highly inefficient. In the new era, the studio became a place to produce a product. The Beatles, for example, would come in at 2:30 in the afternoon and work right through until they decided to stop. The studio had ceased to be just a recording studio and was now a workshop."

One of the best examples of the Beatles' late-night innovation came during the recording of "Being For The Benefit Of Mr. Kite" for the *Sgt. Pepper's* LP. John Lennon was trying to achieve a pseudo hurdy-gurdy effect for the tune and had searched the studio's library of recordings of old steam organs without being able to pin down the sound he was looking for. He had recorded special tracks with himself and George Martin playing separate electric organs in tandem, but still wasn't satisfied with what he was hearing when compared to what he had visualized in his imagination. Faced with Lennon's insistence, Martin suggested a somewhat unusual solution. Cutting the assorted tapes of the rejected tracks into 60 varying lengths, he flung the pieces into the air of the control room and told his engineer to splice them together in any random order. Anything that

"A Day In The Life" was one example on which we actually recorded the orchestra several times on different tracks and mixed the whole orchestra down. To get the final sound, we had to run the machines together. That's a forerunner to what we are all doing now in tapelock and cuelock.

was recognizable was to be removed and spliced back in the string of tape, backwards. The result was the incredible sound montage that can be heard as a background "wash" to give "Mr. Kite" the circus music flavor Lennon was striving for.

Following the avalanche of interest in British bands in the wake of the Beatles, 1963 proved to be the year of the "Midas Touch" for Abbey Road. Out of the 19 records that reached the coveted #1 position on the charts during that period, EMI/Abbey Road Studios could boast that 15 of those hits were recorded within their walls. Artists such as Gerry and the Pacemakers, Billy J. Kramer and the Dakotas, Peter and Gordon, the Hollies, Cliff Richard, Freddy and the Dreamers, Cilla Black, the Seekers and Manfred Mann seemed to be passing the #1 baton back and forth from room to room in the three studio complex. The huge old house in London's St. John's Wood was no longer just a recording studio; it had been transferred into a magic factory.

Today Abbey Road is a bustling four-studio center of research, technology and commerce. Much of the studio time now booked in the larger rooms is spent producing musical soundtracks for such movies as *Raiders Of The Lost Ark* and *Return Of The Jedi*. In the light of such huge-budget projects, one might think that Abbey Road no longer has time for the type of small group recording that skyrocketed them to the top in the '60s. Ken Townsend was pleased to report that this is not so.

About two or three years ago, we wanted to still be able to compete with the smaller pop recording

studios and we decided to build a fourth studio here at Abbey Road," he says. "This studio would be for picking up work from smaller-type rock groups, to try to give them a budget price, a daily rate. I hit upon the idea of having a studio on our top floor and we decided to call it 'The Penthouse' for obvious reasons."

"The Penthouse" soon proved its worth to Ken and his staff at Abbey Road. Highly successful work has emerged from the 48-track-plus studio, including the backing tracks for the *Hooked On Classics* LP, now having sold over nine million copies worldwide. Still, the main emphasis remains on small group recording.

"The very first group that we had in there on opening day was A Flock Of Seagulls," Townsend said. "Actually they came in on the day that John Lennon died, which was very sad in many respects because they'd come from Liverpool. They were quite heartbroken at the news that morning."

"We thought A Flock Of Seagulls was a great act, but sadly EMI (Abbey Road's parent company) turned them down. When I dropped into L.A. recently, I jumped into a cab and what was coming on the radio but A Flock Of Seagulls doing their last single, which sold 250,000 units in the States alone!"

The success of "The Penthouse" aside, Abbey Road's legendary Studio 2 still draws artists in the pop music world like a magnet, each hoping that a bit of the mystical powers of its four former residents remains to bless their efforts in the room. "We were aware of the myth thing," Paul McCartney commented when asked about Studio 2. "About six years ago an American studio guy came here

and just because I wanted to change the look of the place, we had an umbrella, a little cafe table and a few potted plants and things just to break the mood. This American guy came round here and said, 'So this is the famous studio, then. Hey, I didn't know you had palm trees and umbrellas,' and I told him it helped the sound. I always imagined after that, this string of little West Coast studios with palm trees and things and this guy saying, 'This is how the Beatles did it, guys!' I've used them all, including 'The Penthouse,' which is very nice. But Studio 2 is the great studio."

Beyond the music that has established Abbey Road as the most famous recording studio in the world, they have the particular distinction of being the only studio in memory that has had a book published about it. Written by Brian Southall with special assistance and research by Peter Vince and Allan Rouse, the book *Abbey Road* is an incredible living history of both the studio and the science of recording itself. We are indebted to the author and his publisher for allowing us to quote from and refer to this piece of writing. In the library of any Beatle fan or audio enthusiast, Southall's liberally illustrated volume is a must! (For more information on this highly recommended book contact Mr. Bruce Quarrie at Patrick Stephens Ltd., Bar Hill, Cambridge CB3 8EL England.)

Within the same walls that once alternately coaxed and sheltered those four creative young men, new names have picked up the musical gauntlet and continued the growth process. The imposing doors of the former dwelling house in suburban London still buzz with the magic, albeit a new sounding magic, that is being created inside. After more than 50 years of operation, Abbey Road had retained the right to be even bigger in reality than the legends that surround it.

A last word from George Martin is in order concerning his former studio home base. In an open letter to his one-time employers he says, "Dear Abbey Road: You demanded, and took, a great deal; but you gave much more back. I am very proud to have been part of you and I thank you and salute you in your half century of magic."

We all thank you also, Abbey Road. For letting the rest of us in on the magic.

Practical Music Video Production

Part 1: Fundamentals of Video Technology

This new series of articles is intended to break you into practical music video, step-by-step. We'll take you through the full spectrum of small-format video production—from multi-camera studio production to portable/remote shooting at live gigs and rehearsals. We'll cover the fundamentals of video recording, video switcher and camera operation, pre-production, lighting and set design, directing, special effects, editing, and post-production—even techniques for performing effectively *in front* of the cameras.

As the series progresses, you'll learn how to use video to tighten up an act, develop a more professional visual image, and project more energy onstage. You'll gather all the tools you need to put together an effective video demo—either for obtaining club dates or for seeking a recording contract. Along the way we'll be building on your previous audio and musical experience. We'll help you apply what you already know about audio recording to practical music *video* production.

All set? Let's begin with the basics of video recording. How does video actually work, and how does video recording compare with the audio recording process you're already familiar with?

The Video Image

You probably already know that a movie is actually made up of a series of still pictures, or frames. When these frames are projected in rapid

succession, your eye sees them as a fluid, moving image. The video picture works on the same principle; when you watch TV you're seeing a series of still pictures being projected onto the screen.

In a movie theater, however, each still picture is projected onto the screen in its entirety, all at once—zap! Not so with video. Each still frame of a television picture is made up of 525 horizontal lines. Each individual line has to be “sprayed out” across the screen by a narrow stream of electrons. (Imagine yourself trying to cover a movie screen, one horizontal stripe at a time, with a can of spray paint.) The electron stream is fired by an electron-gun at the rear of the television picture tube. The front of the picture tube—your TV screen—has a phosphorescent coating which lights up when the electrons hit it. The more electrons, the more light. The varying light patterns make up the image on the screen in the same way that varying ink dots make up a newspaper photo.

Each frame is “painted” in two steps, or “fields.” First, the electron-gun sprays out the *even*-numbered lines, one at a time, beginning at the top of the screen. When all the even-numbered lines have been completed, the electron-gun shuts off, returns to the top of the screen, and begins spraying out the *odd*-numbered lines, one at a time, the same way. This two-step cycle is repeated for each still frame—and there are 30 such frames

every second. (That's one speedy little spray gun in there!)

Believe it or not, there's never a complete picture appearing on your TV screen. You may *think* you see Mick Jagger jumping around up there, but in fact only a few of the 525 lines are actually illuminated at any one time. The whole scanning process happens so fast that your eyes and brain are fooled completely.

The Video Signal

The camera is the first link in the video chain. Unlike most cameras, which record complete images directly onto film, a video camera converts images into a stream of electrical impulses—the video signal. The internal workings of the camera are complex, but the key component

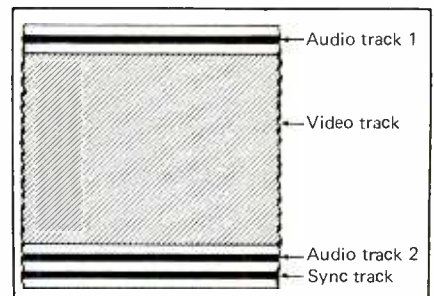


Figure 1. The audio and sync signals are recorded on narrow tracks along the edges of the tape, and the video signal occupies a much wider track down the center.

is the video pickup tube, which works like your TV picture tube in reverse. When light hits the front of the pickup tube, it generates an electrical signal—the more light, the more signal generated. The camera lens focuses the image onto the front of the pickup tube, which is scanned, line-by-line, and the varying light patterns of the image are converted into a stream of electrical impulses.

The video signal consists of this stream of picture information, line-by-line (“more paint, less paint”), as well as instructions to the electron “spray gun” itself (“end of line, move to start of next line,” and so forth).

During a brief interval at the halfway point in each frame, when the last even line has been scanned and the electron-gun is moving back to the top of the screen to begin the first odd line, a burst of information pertaining to color is squeezed in, as well as a sync signal.

This sync signal consists of a series of evenly-spaced pulses, one for each frame. The sync pulse is necessary to keep all the various pieces of equipment—cameras, videotape recorders, TV monitors—“marching to the same drumbeat” and working together in unison.

Perhaps you’ve seen references to “SMPTE time code” in audio recording. It’s often used to lock two multitrack machines into sync with one another, allowing 32- or 48-track recording. This time code and a video sync signal are one and the same thing. (“SMPTE” stands for “Society of Motion Picture and Television Engineers.”) In video, the time code can not only lock the various pieces of gear into sync with one another; it can also be used to number each frame with a unique “time code address.” This gives you precise, pinpoint reference points on the tape—a very useful feature in editing.

Videotape Recording

Video recording is essentially similar to audio recording. Videotape is different from audio recording tape in that the orientation of magnetic particles is different, but the fundamental process—recording electrical signals by magnetizing the oxide coating on the tape—is the same. It’s just that with video we’re recording pictures as well as sound. To be more precise, we’re recording the video signal described above as well as the audio and sync signals.

Different videotape recorders have different track arrangements, but

generally the audio and sync signals are recorded on narrow tracks along the edges of the tape, and the video signal occupies a much wider track down the center (see *Figure 1*).

The video signal is laid down *cross-wise* on the tape as it passes over a drum containing several rapidly spinning record heads. On some recorders the heads lay the video signal diagonally across the tape (helical scanning); on others the video is laid down perpendicular to the edges (transverse scanning).

Most production video recorders now have two audio tracks; this is necessary for stereo audio. (More sophisticated machines have additional tracks for cueing or time-code information.) The audio tracks on videotape are virtually identical to the audio tracks on a multitrack audio tape, and the audio record heads on videotape recorders are exactly like those found on audio tape recorders. You shouldn’t have any trouble applying your audio recording experience directly to the audio aspects of video production.

The sync track contains the sync signal. Proper synchronization is so essential in video that it deserves a closer look.

Maintaining Sync

For television pictures to be recorded and reproduced properly, a constant, uninterrupted sync signal must be present on the tape. If the sync pulse is disrupted, the picture will flip and “glitch” until the electron-gun relocates the pulse and gets back into step with it.

When you start up a videotape recorder, it takes a few seconds for the machine to get up to speed. The picture glitches and rolls until the sync pulse is stabilized. If you stop the machine while it’s recording, then start it back up again, the sync pulse will be disrupted on the tape at that point, and the picture will flip and glitch at that spot whenever you play the tape back. (Imagine a dance floor where the music suddenly changes from one song to another with a different tempo. There are a few seconds of chaos until the dancers relocate the beat and adjust to the change in tempo.)

For this reason, the sync signal plays an important role in video editing. Videotape is not edited by physical cutting and splicing, like film or audio tape. Instead, edits are accomplished by transferring shots from one recorder to another, com-

piling them in the desired sequence on the finished tape. There’s more to this than simply patching a couple of video recorders together and dubbing straight from one machine to the other. You can *do* that, but you’ll get a glitch at every edit point due to disruption of the sync signal.

In order to achieve a clean, glitch-free edit, the recorder must be running up to speed and locked in on the incoming sync signal *before* it kicks into record. Video editing decks accomplish this by performing an intricate “pre-roll” maneuver. Both the playback deck (containing the source tape) and the record deck (containing the edited dub) begin by rolling *backwards* from their designated edit points for a few seconds, then give themselves a running start forward. During this pre-roll, the “receiving” deck locates the recorded sync signal on the source tape and gets into step with it. Both decks, running up to speed and locked into sync, arrive simultaneously at the designated edit point. The receiving deck kicks into “record” without missing a beat, and the transfer is made. The sync pulse remains constant right through the edit, so the picture switches cleanly from one shot to the other when the tape is played back. (We’ll cover editing procedures more fully in an upcoming installment.)

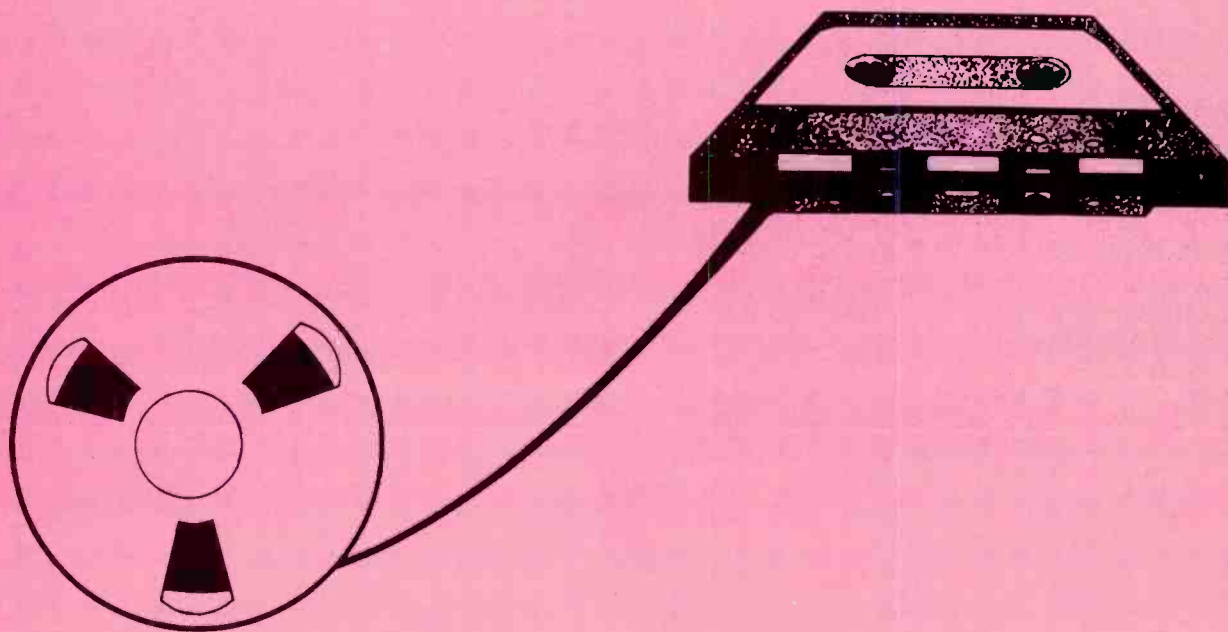
Maintaining an uninterrupted sync signal is also essential to multi-camera studio production. If each camera was allowed to run on its own internal sync pulse, independent of the others, the sync signal would be disrupted every time you switched from one camera to another. This would cause the picture to flip and glitch between shots, just like a bad edit. The problem is solved by having all the cameras lock up on the same external sync signal. A sync generator is used to supply one common, uninterrupted sync source for the entire studio. With all the cameras lock-stepping to the same sync pulse, you can freely switch back and forth between them and the sync pulse remains constant. The picture changes cleanly from one shot to the other without a glitch.

Next month we’ll explain switcher operation in full detail. We’ll look at basic production switcher layouts, including mix and effect buses, then take you step-by-step through the procedures for takes, dissolves, supers, wipes, and a host of special effects.

MODERN
RECORDING
& MUSIC

Looks At

Recording Tape



How to Buy Recording Tape

The tape charts that appear on the following pages show some of the common characteristics of tape. Some of them seem to be obvious—back coating, tape length, and thickness are, after all, statements of simple fact. But what do these specifications and others actually mean?

Open Reel Tapes

- **Open reel tape is a lot less complex than cassette tape.** Length and thickness are really the same spec. A thicker tape on the same size reel will ultimately not have the same length as a thinner tape.

Tape typically comes in two basic thicknesses. A thickness of 1.5 mils (a mil is one-thousandth of an inch) will put 1/3 less tape on a reel than will a tape of 1.0 mil thickness. (There are some 0.5 mil tapes on the market, but their extreme thinness makes them too fragile for practical use, and none appear on our charts.)

- **Print-through is a phenomenon that affects all recorded tape.** The audio signal on the tape is stored as magnetic impulses. When the tape is wound on a reel, each layer is just one thickness away from the recording on the next layer, causing one layer of tape to become slightly magnetized and absorb some sound from an adjacent layer. (This phenomenon is common to all magnetism. If you bring a piece of iron close to a strong magnet, the iron will itself become slightly magnetized. You hear this print-through as a kind of echo starting just before the beginning of music, but actually, it is there throughout the recording. Three factors affect print-through—time, temperature, and distance. You can do nothing about time. The longer a tape lays around, the greater the print-through. In practice, however, there will be only so much actual print-through, and then there is no more. Higher temperatures promote greater print-through, so it is best not to store recorded tapes where it would be uncomfortable for humans.)

- **Finally, print-through is greater when the adjacent layers of tape are closer to each other.** This, then, poses the question of when to use a 1 mil or 1.5 mil tape. Because of print-through problems, it is usually best to use the 1.5 mil tapes, except when the greater recording time allowed by the 1.0 mil tapes is paramount.

Back Coating

- **Back coating is simply a layer of a carbon compound on the back (non-recording side) of the tape.** Its purpose is to provide a smoother wind of the tape,

especially in fast forward/reverse modes. Tape, running at high speed, can also generate small static charges (which might affect the recorded sound). Back coating the tape reduces this effect. In general, buy a back coated tape, if permanence of the recording is necessary.

Time

- **At the common pro speed of 15 inches-per-second, 1200 feet of tape go by in 15 minutes.** You'll need 2400 feet for 30 minutes, and 3600 feet for 45 minutes.

If you record at 7½ ips, these times are doubled, of course. Some professional machines can accept 12.5 inch reels, which hold 3750 feet of 1.5 mil tape.

Cassette Tapes

- **There is, of course, only one size cassette.** The shells are loaded with tapes of similar characteristics to open reel in that there are thicker and thinner tape—for longer and shorter playing times—and with the same pluses and minuses. Cassette tape manufacturers have developed a standard of Types. A cassette tape is classified by its manufacturer into one of four classes of Type, depending entirely on the bias and equalization characteristics of the tape. In other words, where you set the bias and EQ switches on your recorder is dependent on the cassette tape Type.

All of this is general information. It really is less important whether the tape is coated with a ferric oxide, a chromium dioxide, some combination of the two, or even something new. Perhaps the only exception is the new Type IV metal formulation. These tapes, which require a recorder that has a metal-capable bias and EQ position, are for a specific purpose—live recording. They are capable of truly superior recording, but only if the sound source is either live or from a digital disc or tape. Under these conditions, the new metal tapes are truly superior. They employ an iron metal (not an oxide) coating that is expensive to make, and therefore, to buy.

- **In general, you get a quality level that you pay for in cassettes.** Virtually all are assembled using screws to hold the shell parts together (instead of heat welding). This seemingly fine point will become important if you ever have to splice a cassette tape. There are several professional quality splicing blocks available for the narrow cassette tapes.

Now, on to the charts:

Cassette Tapes

Model	Length	Coating	Type	Construction	Features
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BASF

PRO-II Chrome	C-90	chrome	II	5-screw shell	Lifetime guarantee, also available as C-60.
Perform- ance I	C-90	ferric	I	"	"
PRO I Super	C-90	"	I	"	"
Chrome Maxima	C-90	chrome	II	"	Lifetime guarantee.
Ferro Chrome	C-90	ferric- chrome	III	"	Lifetime guarantee also available as C-60.
Metal IV	C-90	metal	IV	"	Lifetime guarantee, also available as C-60 and C-120.

See the BASF ad on page 7

Fuji

FR Metal	C-90	metal	IV	-	Tension stabilizer guide. Loop prevention guide.
FR II	C-90	Beridox	II	-	"
FR-I	C-90	ferric	I	-	"
ER	C-90	ferric	I	-	"
DR	C-90	ferric	I	-	"
GT-1	C-90	ferric	I	-	Dual-spring pressure pad, heat resistant, vibration proof.
GT-II	C-90	Beridox	II	-	"

Maxell

XLS	C-90	cobalt ferric	II	Polyacetal guides	Screw held, 4-function leader, high density shell. Also available as a C-60
XLS	C-90	"	I	"	"
XL	C-90	"	II	"	"
XL	C-90	"	I	"	"

Memorex

High Bias II	C-90	ferric- cobalt	II	-	Also available as C-60 and C-120.
Metal IV	C-90	metal	IV	-	Also available as C-60.
MXR I	C-90	ferric	I	-	Also available as C-60, C-45, C-30, C-120.

Model	Length	Coating	Type	Construction	Features
dB Series	C-90	ferric	I	-	Also available as C-60.
Sony					
ES-90	C-90	Metal	IV	one-piece mold-	For live or digital recording.
				ing.	
UCX-S90	C-90	cobalt	II	" " "	High bias recording.
		ferric			
UCX-90	C-90	cobalt	II	Wide window	Clear and natural music repro-
		ferric			duction.
AHF-90	C-90	ferric	I	SP mech.	Extra high frequency performance.
HF-S90	C-90	ferric	I	spool hubs	Cleaning leader tape
BHF-90	C-90	ferric	I	SP mech.	High fidelity music tape
LNX-90	C-90	ferric	I	Clear shell w.	For speech or music.
				SP mech.	
HF-90	C-90	ferric	I	one-piece mold-	Easy to use detachable labels.
				ing.	See-through shell.
3M					
XSM IV	C-90	metal	IV	5-screw unit	Has roller guides and ribbed
					shims. Also available as C-60.
XS II	C-90	cobalt	II	"	"
		ferric			
XS I	C-90	"	I	"	"
AVX	C-90	ferric	I	"	Lubricated rollers, nickle silver
					2-piece spring, also available as
					C-20,30,46,60, and 120.
TDK					
HX-S	C-90	Metal	II	Pro Series	Also available as C-60. First high
					bias metal.
MA-R	C-90	Metal	IV	Die-cast metal	Also available as C-60.
MA	C-90	Metal	IV	Lab Standard	Also available as C-60
SA-X	C-90	Super	II	Lab Standard	Also available as C-60
		Avilyn			
SA	C-90	Super	II	Lab Standard	Also available as C-60
		Avilyn			
ADX	C-90	Super	I	Lab Standard	Extended highs. Also available as
		Avilyn			C-60.
AD	C-90	Super	I	Lab Standard	Also available as C-60.
D	C-90	Low	I	-	High output, also available as
		Noise			C-30, C46, C120, C-180.

Quarter-inch open reel tape

Model	Back-coated	Length ft.	Thickness-mil	Reel size-in.	Features
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Agfa

PEM 468	yes	2400	1.5	10.5	Super high output, low noise, extra strong tensilized base, also available on 7-in. reels.
PEM 469	yes	2500	1.5	10.5	"
PEM 369	yes	3600	1.0	10.5	"

Ampex

406	yes	2500	1.5	10.5	High output, low noise. Also available in 600-1200 ft lengths.
407	yes	3600	1.0	10.5	"
456	yes	2500	1.5	10.5	Grand Master. Also available as 1200 ft. on 7-in. reel and as 3750 or 5000 ft on 12½ or 14-in. NAB
631	no	2500	1.5	10.5	Standard output. Also available in 1-mil thicknesses.
632	no	2500	1.5	10.5	"

BASF

Chrome EE	yes	3600	1.0	10.5	Chromium dioxide formulation designed for EE settings, also available on 7-in. metal reel-1800 ft., has clear and metal foil leader. As above, but not EE compatible.
Ferro Super	yes	3600	1.0	10.5	
Ferro LH	no	2400	1.0	7	High output, low noise, clear and metal foil leader, also 1800 ft. on a 7-in. reel.

See the BASF ad on page 7

3M

206	yes	2500	1.5	10.5	Low noise, also available as 7-in-1200 ft and 14-in-5000 ft.
207	yes	3600	1.0	10.5	Low noise, also available as 7-in-1700 ft.
226	yes	2500	1.5	10.5	High output, low noise, also available as 7-in-1200 and 12/14-in-3600/5000.

Model	Back-coated	Length ft.	Thickness-mil	Reel size-in.	Features
227	yes	3600	1.0	10.5	As 226 above, also available as 7-in-1800 ft.
250	yes	2500	1.5	10.5	As 226 above, for critical mastering.
Maxell					
XL150-120B	yes	2500	1.5	10.5	High output, heavy storage box. Also available on 7-in. reel-1200 ft.
XL135-180B	yes	3600	1.0	10.5	As above except 7-in reel has 1800 ft.
XL1135-180B	yes	3600	1.0	10.5	Wide dynamic range, 7-in. reel has 1800 ft.
Sony					
FeCr-11-1100 BL	yes	3600	1.42	10.5	Dual coating to maximize high and low frequency reproduction. Also available on 7-in. reel-1800 ft.
ULH-11-1100 BL	yes	3600	1.42	10.5	As above with ultra high output.
ULH-72-370 BL	yes	1200	1.42	7	As ULH above, only on 7-in. reels, Also available 1800 ft on 7-in. reel.
TDK					
GX-50	yes	2400	1.5	10.5	High output, low distortion, gamma ferric particles, also available as 7-in-1200 ft.
GX-35	yes	3600	1.0	10.5	High output, low distortion.
SA-35-180M	no	3600	1.0	10.5	Super Avilyn, EE compatible, also available as 7-in-1800 ft.
LX-50	yes	2400	1.5	10.5	Special binder maintains peak operation, also available as 7-in-1200 ft
LX-35-180BM	yes	3600	1.0	10.5	"
LX-35-180M	no	3600	1.0	10.5	"

Half-inch open reel tape

Model	Back-coated	Length ft.	Thickness-mil	Reel size-in.	Features
Agfa					
PEM 468	yes	2400	1.5	10.5	Super high output, low noise, extra strong tensilized base, also available on 12.5-in. metal reels.
PEM 469	yes	2500	1.5	10.5	"
PEM 366	yes	3600	1.0	10.5	As above but only available on NAB hub.
PEM 526	yes	2400	1.5	10.5	As PEM 366 above.
Ampex					
406	yes	2500	1.5	10.5	High output, low noise. Also available in 600-1200 ft lengths.
407	yes	3600	1.0	10.5	"
456	yes	2500	1.5	10.5	Grand Master. Also available as 1200 ft. on 7-in. reel and as 3750 or 5000 ft on 12½ or 14-in. NAB
3M					
206	yes	2500	1.5	10.5	Low noise, also available as 7-in-1200 ft and 14-in-5000 ft.
207	yes	3600	1.0	10.5	Low noise, also available as 7-in-1700 ft.
226	yes	2500	1.5	10.5	High output, low noise, also available as 7-in-1200 and 12/14-in-3600/5000.
227	yes	3600	1.0	10.5	As 226 above, also available as 7-in-1800 ft.
250	yes	2500	1.5	10.5	As 226 above, for critical mastering.

Tape Manufacturers

Ampex Corporation
401 Broadway
Redwood City, CA 94063

Agfa Gevaert Inc.
275 North Street
Teterboro, NJ 07608

BASF Systems Corp.
19 Crosby Drive
Bedford, MA 01730

Fuji Photo Film U.S.A. Inc.
350 Fifth Avenue
New York, NY 10018

3M Company
225-5N 3M Center
St. Paul, MN 55144

Memtec (Memorex) Products
P.O. Box 988
Santa Clara, CA 95052

Maxell Corp. of America
Professional/Industrial Div.
60 Oxford Drive
Moonachie, NJ 07074

Sony Corp. of America
Sony Drive
Park Ridge, NJ 07656

TDK Electronics
12 Harbor Park Drive
Port Washington, NY 11050

How Tape is Made

All photographs courtesy BASF Tape in Bedford, Massachusetts.

Raw tape is almost always made originally on wide sheets of plastic which are then coated with the appropriate recording material (usually an oxide of iron). This wide roll goes through ovens and other processes to bond the oxide to the plastic backing. Once this is accomplished, the wide roll goes to rotary slitters that slice the roll to the finished widths, soon to become open reel or cassette tapes.

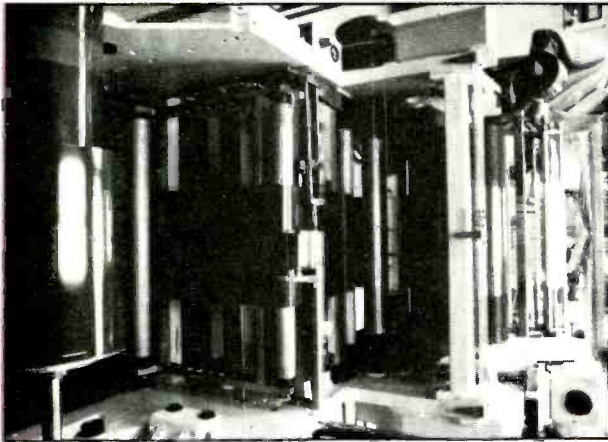


Figure 1. Looking like nothing much more than a printing press, the wide tape has just come from the coating process.

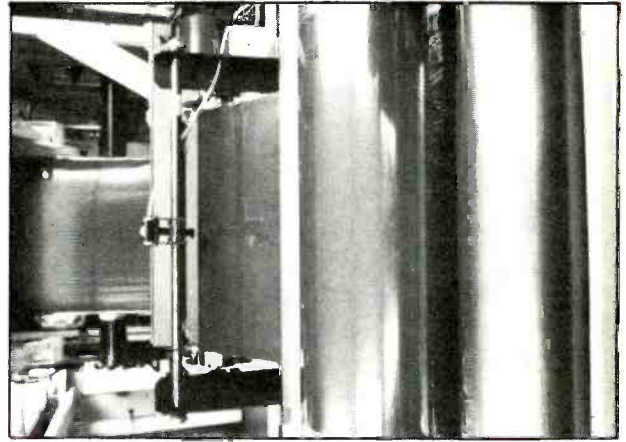


Figure 2. A closer view of the wide tape roll as it comes from the coater.



Figure 3. Still closer, this is finished tape, needing only slitting and packaging.

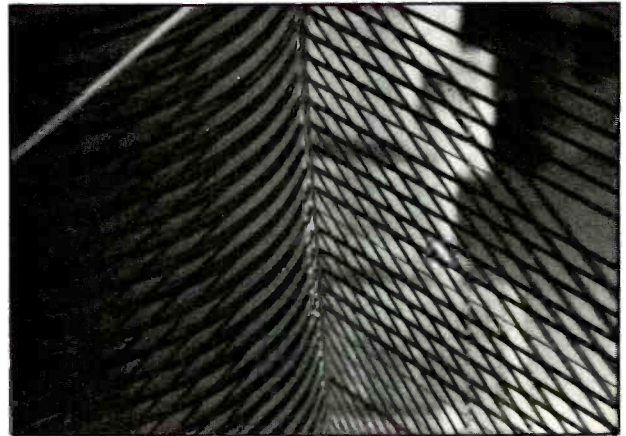


Figure 4. The wide roll coming through the slitter is heading for its final spools.

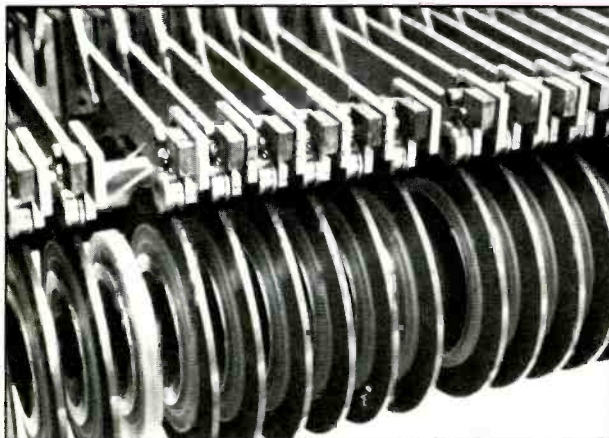


Figure 5. The newly-slitted tape is being automatically wound on NAB hubs. If needed, reel sides will be attached later.

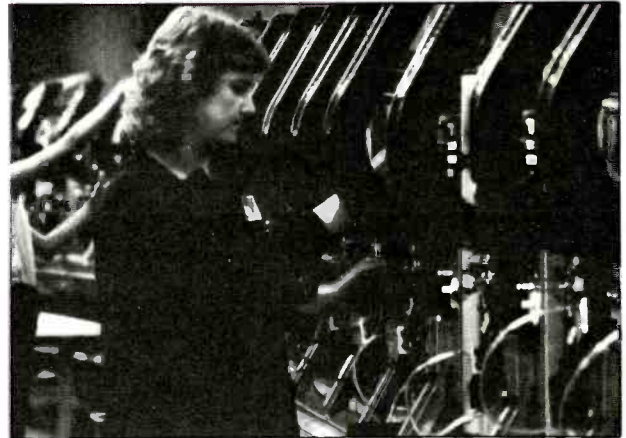
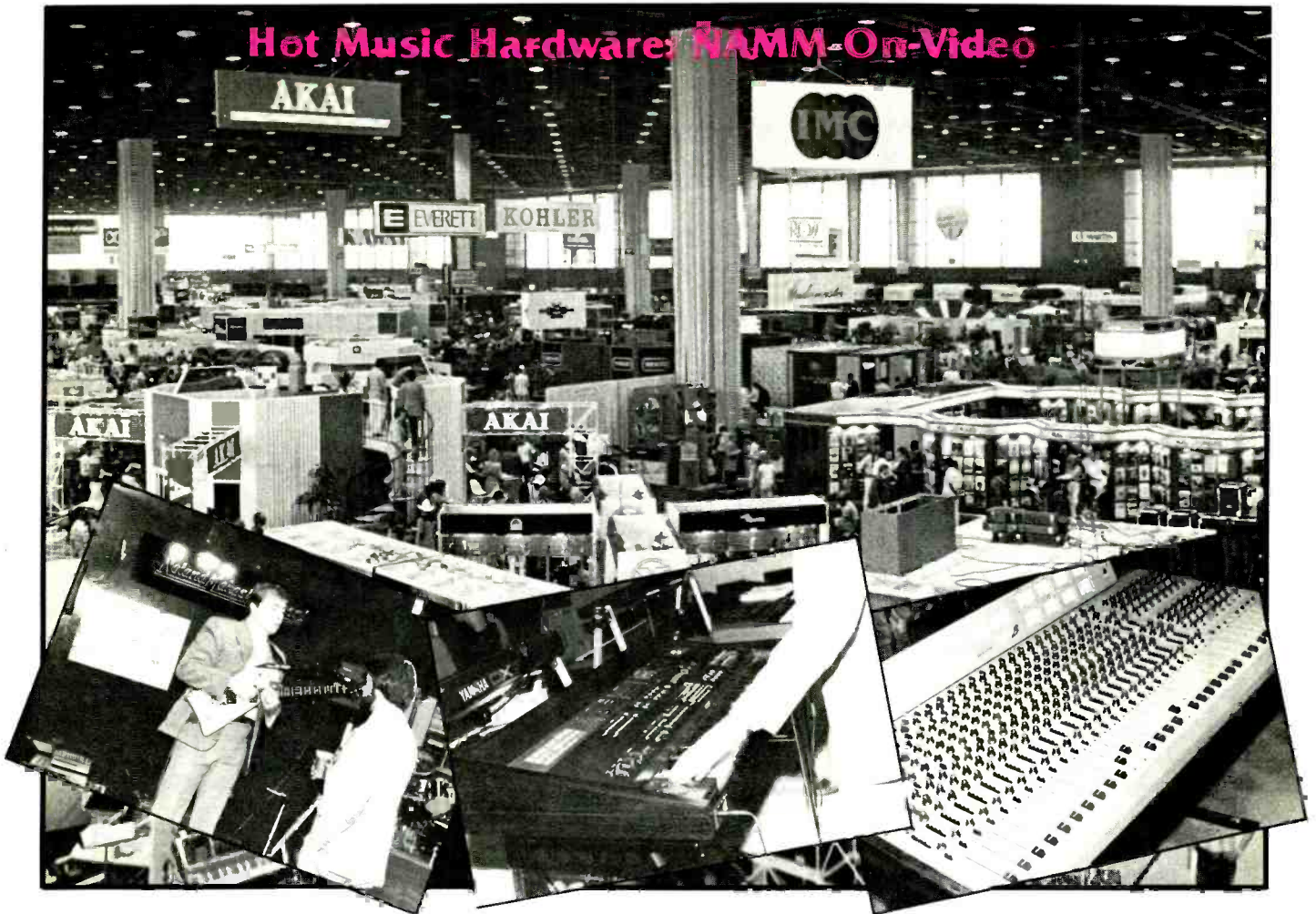


Figure 6. The young lady is a quality control inspector of these automated cassette loaders. They take huge reels and automatically put on leaders, and load them into cassettes.

Hot Music Hardware: NAMM-On-Video



MIDI, computers, digital sampling, synchronization, synthesizers, new stringed instruments! Although it was closed to the public, you can now go behind the scenes at the largest music industry trade show in the U.S., presented by the National Association of Music Merchants, with the **Summer '84 NAMM-On-Video**. Hosted by *Modern Recording & Music* columnist Craig Anderton, this one-hour VHS video includes demos of the latest gear, interviews, commentary, and background on changes in the industry and what they will mean to musicians. Send \$49.95 (plus \$2.50 shipping/handling).

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The expiration date is _____

My Signature (required for credit card orders) _____

Send to VIDEO, Modern Recording & Music,
1120 Old Country Road, Plainview, NY 11803

Special offer: Order the **Summer '84 NAMM—On-Video** (including demos of the Oberheim Xpander, Gittler guitar, Buchla 400, Akai Micro Studio, Simmons drums, SMPTE and MIDI sync boxes, and more!) and the **Winter '84 (January) NAMM-On-Video** (featuring the Emulator II, Kurzweil 250, Chapman "Stick", Yamaha DX7, and Tom Coster with the Moog Liberation) for a package price of \$79.95 (plus \$2.50 shipping/handling).

Produced by David Karr for Notch Productions.

Will Cassette Tapes Make Vinyl Obsolete?

susan borey

Neil Cooper's Cassette-Only "Record" Company Roars At Competition

Nestled in the same cluster of Greenwich Village offices that houses a new music management company and a progressive local newspaper, the small headquarters of Reach Out International Records seems perfectly situated upstream of mid-town Manhattan's record conglomerates. Despite its name the company (whose acronym is pronounced "roar") has never released a vinyl disc. ROIR was incorporated in 1980, a year before any product was released, and owner Neil Cooper, after investigating statistics that presented the increasing percentage of cassette sales over records, decided to switch horses mid-stream in an educated, yet adventurous gamble.

"At that time, cassettes accounted for one out of every six units sold, and cassette decks were outselling record changers," Cooper recalled. "I was, however, unaware of the tailspin that the record industry was going through. I was more inspired by reading the British music papers. *NME* and *Melody Maker*, and hearing about new independent labels like Stiff and ZE. ROIR was intended to be more of a commercially viable artistic statement than an industry move."

Compact, durable, lengthy, and suited for portable stereos, cassettes enjoy increasing popularity and continue to improve through upgraded tape quality and breakthroughs in noise reduction. They also offer an extra attraction to the consumer that records will never be able to provide.

"You can always record over a cassette if you don't like the music,"



Neil Cooper (right), president of ROIR, with BASF's Robert Piselli and Stan Ignasiak at BASF's research and development lab.

suggested Cooper. "Inherent in your \$6-8 purchase price is an additional \$2-3 value."

With an average sale of 4100 cassettes per each of 30 releases, Cooper doesn't see himself as a serious threat

to major record companies. However, his immersion in this facet of the music industry has afforded a panoramic view of the towering Goliath whose legs ROIR nimbly ran through three years ago.



Some of the many artists who have appeared on ROIR cassettes:

(clockwise from upper left): Nico, N.Y. Dolls, Shox Lumania, the Bad Brains, and (center) Television.

"The record industry did not want the boom in cassettes to happen, but they were almost completely un-knowledgeable about the statistics until their noses were rubbed in them," Cooper declared. "Most record men are totally into the heft of vinyl; they love to talk in terms of shifting tonnage. For years they tried to pretend that the advance of cassettes wasn't happening. It's only recently that they are trying to upgrade the packaging and tape quality, which is something we did right from the start."

After experimenting with various tapes, ROIR has chosen BASF LHD, a ferric tape with normal bias, for its products. "We feel it's superior to the much-touted chrome tape because aural perception tends to be misled by the highly articulate high end, and you don't hear as much bass presence," said Cooper.

Regarding the packaging of ROIR

cassettes, Cooper feels he's in a more progressive league than the majors who merely shrink the cover art and dispense with other details crucial to the appreciation of most listeners.

"We do extensive inserts with documentation and liner notes by top critics like Robert Christgau, Greil Marcus, and Robert Palmer. We include lyrics, pictures, and details about the recording."

A typical ROIR cassette insert is a three-color triple foldout covered with verbal and pictorial information; the cassette housing and case are often colored as well. "It's like an event to get a ROIR cassette, because they look so nice," Cooper declared.

Cooper is obviously pleased with the recent boom in personal cassette decks. "If it hadn't happened, I'd probably be out of business," he said. "I didn't realize that the move would be so dramatic, or that it would

revolutionize the business to the extent it has. Our first releases came out in May 1981, and the Walkman came out in the U.S. a month later."

Today, when cassettes outsell vinyl in America by 13 percent and account for 40 percent of units sold in the U.K., Cooper's initial side-step from vinyl appears to have been in the right direction.

Cooper is a charming fellow in his early 50s who seems genuinely enamored with contemporary music as well as having boundless enthusiasm for the mechanics of his business. Happy to discuss the historical details and musical nuances of a variety of major and obscure artists, Cooper's current penchant is for funk and dub reggae. Although a budding label mogul, he's no stranger to the music business. An artist rep and booking agent in the '50s, he brought such artists as

Charles Mingus, Guy Lombardo and Xavier Cugat into New York City hotspots like the Blue Angel and Village Vanguard. After a respite from the music business during which he published major visual artists, designed currency, and arranged minting contracts for newly independent African nations, Cooper returned to the scene as a club entrepreneur. Operating the Upper East Side's first new wave venue, The 80s, he booked, by his account, over 1,200 bands in a year and a half.

Cooper's contact with many up-and-coming forces in the new wave movement became a major source of talent for the incipient label. The bands that Cooper approached for the ROIR stable were attracted to the relative freedom and flexibility of the company's policies.

"Artists who viewed a vinyl commitment as a long-term contract were fearful of signing with a small, unknown label," Cooper said. "My first four releases—James Chance, Lydia Lunch, the Dictators, and Suicide—all had strong cult followings and had already had contracts with record companies. They were all looking for a big move to a large company, and I certainly wasn't that," Cooper admitted. "What I wanted to provide was an interim situation prior to their getting a major deal. They only had to make one commitment, no long-term deals. We enter into a one-off contract with all our artists. They only have one project with us. We have no continuing rights or investment in their careers. We don't have any re-recording restrictions, which means that if another label comes to them, they can take the same material and record it elsewhere. We have already segued some of our artists, such as the Bad Brains, the Fleshtones, and Prince Charles, into more major situations."

The current ROIR catalogue of 30 releases covers a spectrum of contemporary music, including historical documents from seminal rock groups (MC5, NY Dolls, Nico, Dictators), European discoveries (Lydia Lunch, Malaria, Raincoats), essential hardcore (Bad Brains, Flipper, Germs), experimental ventures (Glenn Branca, Shox Lumania), neo-funk (Alfonia Tims, Prince Charles), dub wizardry (Prince Far I, Dub Syndicate), and several compilations.

"We are oriented to the fan and collector," Cooper explained. "We try to fill holes in the marketplace

where there is a need for a certain product by a band or artist. This might be a very small hole, say, where three or four thousand cassettes will supply a cult need. I look at ROIR as a growing catalogue of influential bands that had an evolutionary impact within the rock 'n' roll industry."

The material on ROIR cassettes is produced from a variety of sources, most of which lean away from the technocratic rituals of the studio.

"I'm not too keen on being in the studio," Cooper confessed. "I find it rather boring. I look at the studio as a compositional tool, but I'm not interested in putting a group of musicians together and laying down one track at a time. It just seems to lose the excitement, impetus, and factor of random chance that occurs in a live performance."

Derived from live 4- and 2-track mixes, resurrected material previously recorded, and a few studio efforts, production is carefully monitored by the artists and producers.

"I tell the band that if the tape doesn't sound exactly the way they want it to, it's going to reflect on them, not me," said Cooper.

Some of ROIR's releases produced through simplified recording techniques yield tapes of admittedly less than sterling clarity. Cooper feels that an occasional sacrifice of quality doesn't detract from ROIR's intrinsic value.

"We've shown to the market that the immediacy and excitement of our product can replace the need for an extremely well-produced document," explained Cooper. "What we have can be more of a souvenir of a performance that preserves the way the band really sounds alive. If we were on vinyl we'd have to pay much closer attention to production values. We have proven that the rough recording has a place for a company dealing with fans. In fact, the only person who ever complained was Robert Christgau."

When an artist or band is satisfied with their presentation, it's ready for the cassette manufacturing process that Cooper says is "easier than making a record because you have fewer potential problems." The material is first transferred to a 15 ips ¼-inch master. Taking care to end up with a cassette with sides of nearly equal length, the material is then committed to a bin master which becomes the vehicle from

which all product is produced. A copy of the bin master is sent to artist and producer and, if necessary, changes are made. When a master is finally approved, it is duplicated on a series of slave machines. ROIR cassettes are duplicated at a speed ratio of 16-or 32-to-1, considerably faster than most commercial tapes.

"Most audiophile tapes are run 8-to-1," said Cooper, "but if the machines are perfectly aligned and intelligently monitored, the difference is imperceptible. Defects have been averaging 1 to 2 percent.

"With our first release, James Chance and the Contortions, a box of 30 tapes came through with Tchaikovsky's 'Swan Lake' on it," recalled Cooper. "Of those 30, though, many of which had gone to the press, only one was returned by a critic who wanted to know if James Chance had gotten into something new."

Interest in ROIR cassettes outside the U.S. accounts for a hefty 30 to 40 percent of sales. The company distributes in Canada, Australia, Norway, Sweden, Italy, Germany, France, Austria, Holland, Switzerland, and the U.K., utilizing one distributor exclusively in each country.

About 10 percent of ROIR tapes are moved through mail order, solicited through advertisements in at least a dozen music-oriented magazines. Ads are usually small and unobtrusive, and produce around 150 requests per week for catalogues.

The rise of cassettes has naturally produced an increased amount of home taping, a bane to artists and record companies. With machines that make copies of cassettes now available to the public for less than \$200, the practice of home taping can even touch companies like ROIR.

"There's no way of stopping it," shrugged Cooper, who maintains a good-natured attitude toward the pitfalls of a business that has kept him afloat in an industry constantly rocked by tempestuous changes. "It's like Prohibition. People wanted to drink and so they did. People want to tape, and so they will. People don't feel any more guilty about it than when they find a dime in a pay phone. It's a fact of life."

Information about ROIR can be obtained from:

Reach Out International Records
611 Broadway, Suite 214
New York, NY 10012
(212) 477-0563

A Studio Owner's Guide to Personal Computers

Unless you have been hiding in the vocal booth for the past few years, it should be obvious that the '80s is the era of the personal computer. Never before has such high technology been available at prices that most consumers and small businesses can easily afford. Yet, so many people have no idea what it is all about; they imagine that personal computers could only be interesting to techies, math majors, or other weird types. Well, using a computer and programming a computer are two entirely different things, and regardless of your bent, the right computer can be a useful addition to any recording business.

In order to survive, most studios are required to accept at least some of their business on an invoice basis. For some reason, advertising agencies and record companies seem to have a hard time relating to cash, and in this capacity a computer can be a real time saver. Or perhaps you offer classes in recording and need to answer a dozen or so inquiries a week. With a word processing program you could compose a standard letter of reply, and only have to type in the name and address each time. If you've ever had to type a hundred cassettes or tape box labels by hand, you'll be interested to know that a computer just loves to do that kind of stuff for you.

But before we get into seeing what

kind of computer might be best for your studio, as well as a bunch of other things, let's first examine exactly what a computer is.

More Than Nuts and Bolts

If you know what a pocket calculator does, you're nearly halfway there. However, where a calculator can only deal with numbers, a computer can also manipulate words. For example, you could add "John" to "Smith" to get "John Smith." Or you could compare "Jones" to "Johnson" to determine which would come first in an alphabetical listing. But there is an even more important, more powerful aspect to a computer, and that is the concept of "deferred execution."

When you add two numbers on a calculator, you push the proper buttons in real time—that is, as you go. A computer, on the other hand, can be told ahead of time, "Look, later on I'm going to give you some numbers. When we get there, that's when I want you to add them." These instructions are called a program, though again, you don't have to be a programmer to use a computer to full advantage. (See the sidebar on programming in BASIC.)

Inside, a computer is mainly a well organized collection of "memory cells." Typical personal microcomputers have at least 16,000 of

these little silicon wonders, though some have many more than that. Arranged much like the rows of mailboxes at a hotel desk, each cell contains a number that can represent either a value like your hourly rate, a letter of the alphabet, or an instruction to do something useful (we hope!). Let's not get too technical, though; we'll just say that you use the keyboard to enter information into the computer's memory, and the CRT display (TV monitor) to read it out. The real action is in the software.

It's All In The Software

There's no doubt that what really determines whether a computer is going to help you or not is the software (program) you use with it. These days, there really is no such thing as a "bad" computer—I mean, it either works or it doesn't! But the software—now that's another story.

A computer program is nothing more than a series of instructions to the computer to perform a specific task. For example, a program to handle studio billing might begin by asking you to type in the name of your client. Then you would be asked to enter the date of the session, followed by the number of hours, reels of tape, etc. The computer keeps track of all the information you give it, and saves it on magnetic disks for a permanent record. At the end of the

Programming In BASIC

Most folks will probably never need to operate a computer at the programming level, although it really isn't that difficult. If you're the kind of person who likes to take things apart and tinker with them, then you'll probably find writing programs appealing. When I first bought my Apple, I had no intention of learning how to program, but after a few bad experiences trying to adapt standard accounting programs to my studio business, I realized it was inevitable, at least if I ever wanted to realize the full potential of my machine. Ultimately, I ended up writing a full-blown invoicing program that would print statements and mailing labels, as well as provide a complete accounting of all income, by category, for the IRS at the end of the year.

Clearly, the easiest programming language to learn is BASIC. It uses common English words to perform a wide variety of powerful functions, and is available on nearly every microcomputer being sold today. Again, we're not going to get too technical here, but just to show how straightforward it can be, let's look at a sample program to print multiple copies of a cassette label.

A computer program is simply a series of numbered instructions that will be performed in sequence when the program is run. It is a common practice to number these instructions by tens, to allow inserting additional statements in between as the program is being developed. Referring to the program listed in *Figure 1*, the command in line 10—CLS—Clears the CRT Screen of any previous text. Apple computers use "HOME" instead, although aside from a few small differences such as this one, almost all microcomputers use identical commands.

The next statement does exactly what you would think it does: it prints the words "Enter Line 1" on the CRT screen to let you know that you are expected to respond. INPUT A\$ tells the computer to stop and wait for input from the user; in this case, the first line of copy to be printed on each cassette label. As with math, where X might equal 9 one moment and, say, 237 another, words and sentences may also be assigned temporary

money. If it costs a lot, then the store

WordStar a popular program when

FIGURE 1

```
10 CLS
20 PRINT "ENTER LINE 1"
30 INPUT A$
40 PRINT "ENTER LINE 2"
50 INPUT B$
60 PRINT "ENTER LINE 3"
70 INPUT C$
80 PRINT "HOW MANY LABELS WOULD YOU LIKE?"
90 INPUT N
100 IF N = 0 THEN END
110 FOR X = 1 TO N
120 LPRINT A$
130 LPRINT B$
140 LPRINT C$
150 LPRINT : LPRINT : LPRINT : LPRINT
160 NEXT X
170 GOTO 80
```

FIGURE 1A

```
120 LPRINT TAB (16 - LEN (A$)/2); A$
130 LPRINT TAB (16 - LEN (B$)/2); B$
140 LPRINT TAB (16 - LEN (C$)/2); C$
```

labels. In this case, whatever you type for Line 1 will be known as "A\$" (pronounced "A string"); that is, until you run the program again to print a different batch of labels.

This "prompt/answer" exchange continues until all three lines have been entered. Then you are asked how many labels are to be printed, which the computer keeps track of as "N." Notice that "A\$," "B\$," "N," etc., are purely arbitrary and could have been any letters. The dollar sign is used to indicate a string of letters or other characters, as opposed to a number or a quantity.

Line 110 sets us what is called a "FOR/NEXT" loop. Any commands that occur between the words FOR and NEXT will be repeated by the number of times specified. Though this is a slightly more advanced concept, the reasoning goes something like this: FOR every value that X equals in the range from 1 TO N, do the following stuff. In this case, N is the number of labels you entered in line 90. If it still sounds foreign, trust me—it works.

Lines 120 to 150 contain the "stuff" to be done; in this case, print A\$, B\$, etc., onto the labels. Notice that this time we use LPRINT instead of PRINT. Where PRINT is used to print things to the CRT screen, LPRINT (for LinePrint) sends the output to the printer instead. Once the first label has been printed, we will need to skip over the remain-

ing portion of the cassette label. Five LPRINTs will do the job nicely; that is, print five lines of nothing. Line 160 increments the value of X by one. After X is equal to N, the job is considered done; otherwise the statements in lines 120 through 150 are done again, and so on.

When the printing is done, the next instruction—GOTO 80—is performed. As you might imagine, the program "branches" to line 80 where you are once again offered the opportunity to print more labels. (The idea is that the first time through, you ask for one or two labels, just to be sure they are lined up correctly. Then after a few trials, you can type in the number you actually need, confident that they will come out as intended.) Once the labels have been printed, and the program again asks how many you want, type 0. Line 100 is a "test" specifically for that purpose, and if true, causes the program to end.

As shown, all lines on the label will be printed flush left. If you would like each line centered on the label, use the alternate lines in *Figure 1A*. Here, the LEN command (which determines the length of a string) is used in a simple formula to determine how far to "tab" in before printing. Note also that Apple computers do not use LPRINT to output text to a printer. With an Apple, the printer is activated independently, and the normal PRINT statement is used.

E. W.

Lab Report

Tascam 42 2-Track Recorder/Reproducer

General Description: The Tascam 42 is a versatile 2-track, 2-channel tape recorder/reproducer that uses ¼-inch tape and operates at 15 and 7½ ips tape speeds. Its head configuration consists of an erase head and two record/reproduce heads, one of which is used for recording and sync playback, and the other for playback only. As a result of this arrangement, sync response is equal to full reproduce response.

The electronics of this recorder are mounted on plug-in printed circuit boards. "Extension" plug-in circuit boards aid in servicing and aligning the unit should that become necessary. The Model 42 incorporates a variety of functions and features that are deemed essential in high-speed professional audio production. The basics of synchronous recording are provided, of course, with separate Output Select and Channels 1 and 2 Function switches for each track. A digital fluorescent tape counter is tachometer-driven and displays elapsed time in minutes and seconds, even providing "negative time" indication if you are at a point prior to the "zero" point. A built-in auto-locator function utilizes the digital tape counter and microprocessor to memorize any specific point on the tape, and a single button then instructs the transport to search (in either direction) for that cue. Another touch button causes the transport to search for counter "zero." Record and play speed is adjustable over a ±12 percent range using a pitch control when the speed mode is in the unlocked or variable mode. Manual and dump editing are possible, and a splicing block is mounted on the front panel.

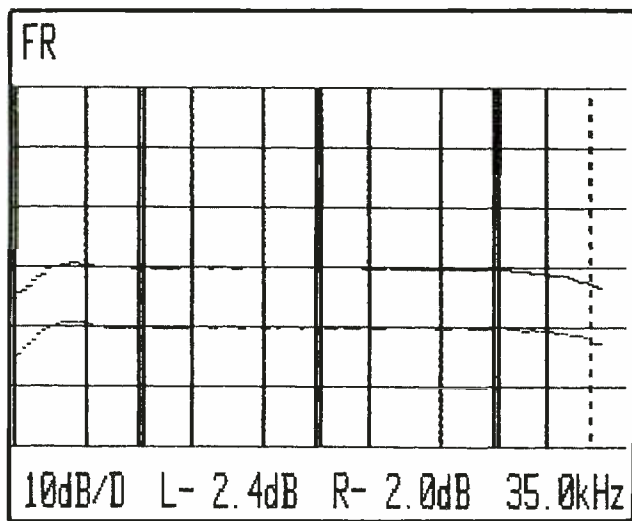
The machine includes +4 dBm balanced XLR connectors for line inputs and outputs, and the nominal level can be changed from +4 dBm to +8 dBm by resetting a switch located on one of the amplifier circuit boards. The 42 is also equipped with microphone preamplifiers and pads, headphone amps, a remote connector for use with the optional RC-71 transport remote control unit, a punch in/out remote connector for connecting an optional punch in/out remote pedal (Teac's Model RC-30P), a sync-lock connector with the necessary input and output lines for plug-in compatibility with proper SMPTE controller/synchronizers, and a dbx unit control signal connector for plug-in compatibility with a TEAC-built dbx noise reduction system. The dbx noise reduction system was not included for the unit we tested.

Control Layout: NAB hub adaptors are supplied with the unit and come mounted on the reel tables which will support either 7-inch or 10½-inch reels of tape. The pinch roller, head assembly, and other ele-

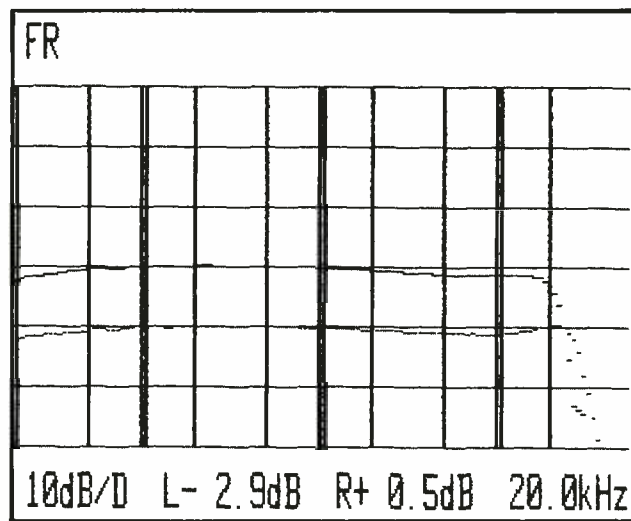


ments in the tape-threading path are fairly conventional. A Tape Lifter slider disables audio muting and progressively brings the tape closer to the heads when in the fast wind modes, allowing the user to cue to the end of a program during high speed winding. POWER ON/OFF, REEL SIZE, SPEED and SPEED MODE switches are located at the left of the unit, below the tape head and tape reel area of the deck. The SPEED MODE switch offers three types of speed control: *Fix*, which sets speed at exactly 15 or 7½ ips, *Vari*, which allows use of the pitch control adjacent to it, and *Ext*, which allows external SMPTE synchronization (or other external synchronization) of tape speed.

The splicing block is conveniently located below the head assembly, and immediately to its right are the main transport control buttons. These include EDIT, REWIND, FAST FORWARD, PLAY, RECORD, and STOP. When the machine is in the EDIT mode, a yellow LED lights up to indicate that fact. In that mode, if the machine is also in STOP, reel motor brakes are dis-



(A)



(B)

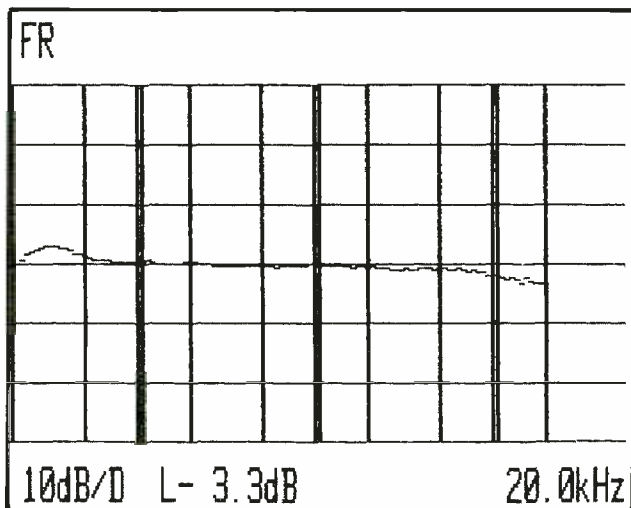
Figure 1. Frequency response (record/play) of the Tascam 42, at 0 dB (upper trace) and -10 dB (lower trace) at 15 ips (A); and 7½ ips (B).

engaged, allowing the user to manually move the reels without creating slack. If the EDIT button is pressed together with the PLAY button, the transport enters the "dump" mode while continuing to maintain proper tape speed from the supply reel to the tape heads. The fast-wind buttons cause fast-wind to occur at different speeds, depending upon the number of times the buttons are depressed. Approximate tape fast wind speeds are 240 ips for rewinding and 80 ips for spooling. In the spooling mode, a green LED lights to indicate that this mode is in use. A red LED lights when the RECORD button is activated, providing one or both of the FUNCTION switches has been depressed to initiate recording. These function switches, labeled CH 1 and CH 2, are located beneath the REWIND switch. Three OUTPUT SELECT switches near the FUNCTION switches determine which signal is to be fed to the VU meters and Output jacks. The switches are labeled INPUT, SYNC, and REPRO. INPUT selects the input to the track (for alignment). SYNC selects the record/sync head signal for synchronous reproduction of the INPUT signal, depending upon the setting of the FUNCTION switch. REPRO selects signals from the "repro" head. This setting is used during alignment and can be used for mixdown.

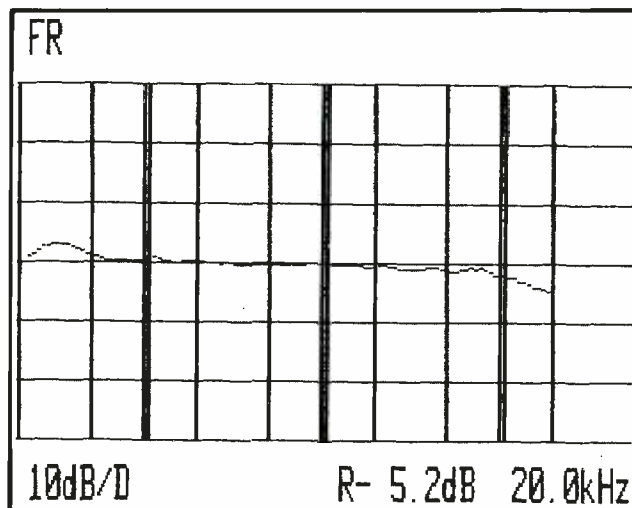
Two large, easy-to-read VU meters, equipped with peak indicators, are located at the lower right section of the front panel of this deck. Below the Channel 1 VU meter is a headphone jack and its Output Level control. Dual Concentric Mic Input, Line Input, and Line Output Level controls are located at the lower right section of the front panel, and each pair can be operated together, thanks to their friction-clutch mounting, or they can be adjusted individually by holding one control steady while rotating the other concentrically-mounted control.

The four-digit real-time tape counter is located above the previously described tape transport controls, and to the right of the counter are four more small pushbuttons. The first of these is a CUE button. Touching this button sets a cue point via the tape counter (nothing is recorded onto the tape). Pressing the adjacent STC (Search to Cue) button activates fast search to the cue point. This operation may be initiated from any tape motion status, even from the STOP or FAST WIND modes. Pressing the third button, labeled RTZ (Return to Zero), causes the transport to fast wind to the 00.00 counter point. Finally, pressing the RESET button resets the digital counter to 00.00.

The rear panel of the Tascam 42 is equipped with

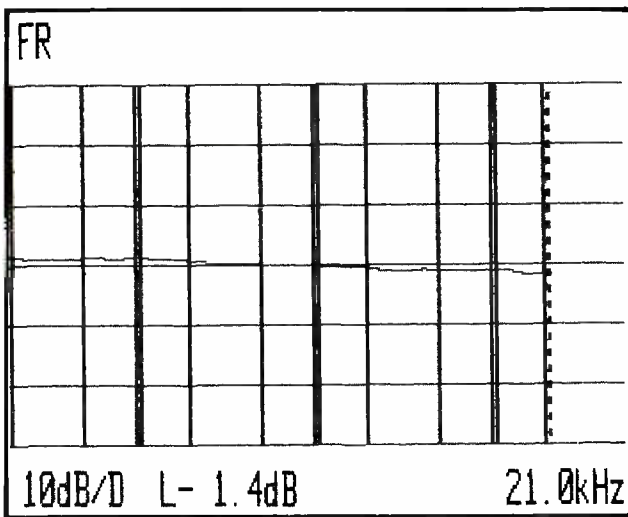


(A)

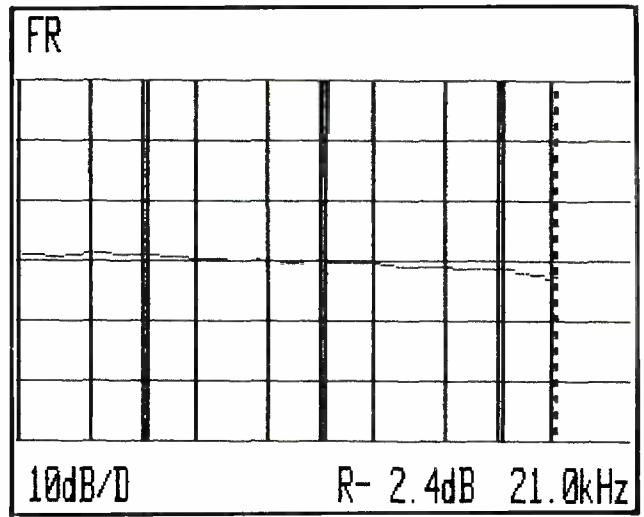


(B)

Figure 2. Playback only response at 15 ips using "repro" head output (A) and "sync" head output (B).

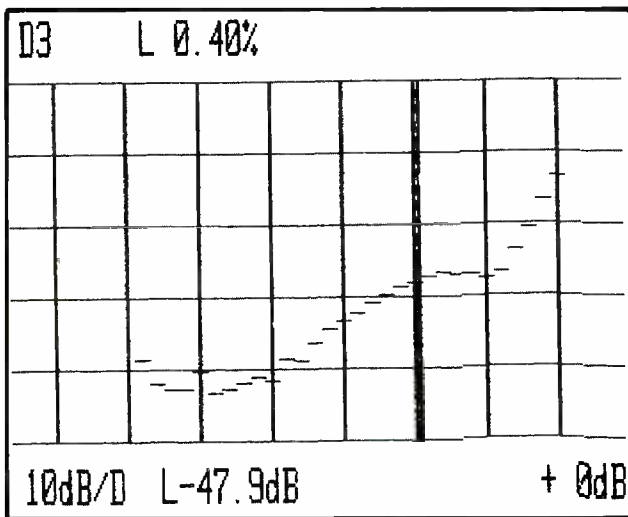


(A)

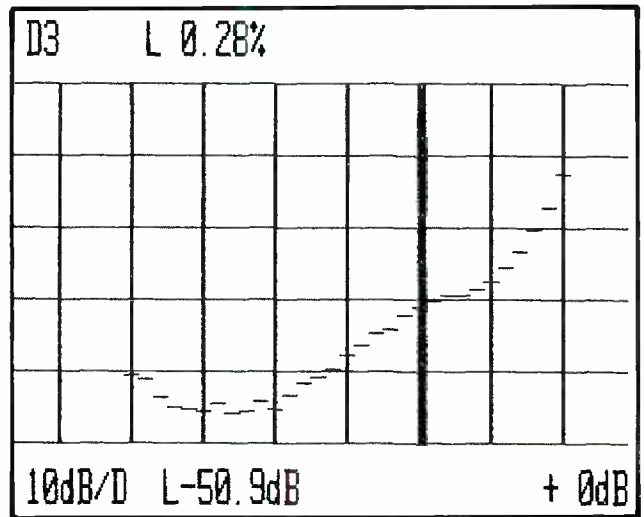


(B)

Figure 3. Playback only response at 7½ ips using "repro" head output (A) and sync head output (B).



(A)



(B)

Figure 4. Third-order harmonic distortion vs. record level at 15 ips (A) and 7½ ips (B).

RCA-type Line Input and Output jacks, in addition to Line In and Line Out XLR connectors. Microphone Inputs are of the XLR-type only. MICROPHONE ATTENUATOR switches located below the Mic Inputs can be set to provide 20 dB of attenuation if required. Additional multipin and single-receptacle connectors found on the rear panel handle such accessories as Tascam's dbx noise reduction unit, a SMPTE time-code synchronizer, the remote control transport activator, and Tascam's Punch In/Out remote pedal.

Test Results: Results of our laboratory measurements are tabulated in the VITAL STATISTICS chart found at the end of this report. Tests were conducted for all of the relevant parameters listed at both operating speeds. Record/Play frequency response at 15 ips was flat to well beyond 20 kHz, both at 0 dB recording level and at -10 dB levels. In fact, at 35 kHz, response was down only 2.4 dB for the tests conducted at 0 dB record level and -2.0 dB for the -10 dB record level. At the slower 7½ ips tape speed, response was flat to within 0.5 dB all the way out to 20 kHz at a -10 dB record level, and was down only 2.9 dB when recordings were made at the 0 dB reference level. Results for both speeds are shown in *Figures 1A* and *1B*.

Playback-only response was also measured, using our calibrated test tapes. In this test, we wanted to verify TASCAM's claims concerning the equality of results obtained via the Sync head and the Repro head. The results shown in *Figures 2* and *3* confirm the fact that response was excellent, and almost identical using one head or the other.

Figure 4 illustrates the third-harmonic distortion in a recording made at 0 dB recording level, for both operating speeds. At that record level, 3rd order HD was 0.4 percent at the 15 ips speed; 0.28 percent at the slower, 7½ ips speed. Using the same plots of level versus distortion, we moved the cursor over to determine that at ±10 dB (the limit of our test equipment when it is referenced to 0 dB record level) we had still not reached the 3 percent distortion level at either operating speed. By interpolation, we arrived at an approximate headroom level of +12 to +13 dB for this deck (see *Figure 5*.)

Weighted signal-to-noise ratio, plotted in *Figure 6*, measured 60.7 dB at the 15 ips speed and 62.7 dB at the 7½ ips speed. To these figures must be added the available headroom of approximately 13 dB, which results in a net signal-to-noise ratio of 73.7 dB at 15 ips and 75.5 dB at 7½ ips. The fact that the higher S/N was observed for the slower tape speed is probably

the result of narrower bandwidth at the slower speed. In any case, results at either speed are considered to be excellent for a unit of this type. Unweighted S/N figures were, of course, somewhat lower, with readings of 66.2 dB at 15 ips (53.2 +13 dB of headroom) and 68.3 dB at 7½ ips (55.3 dB +13 dB of headroom) as plotted in *Figure 7*.

Figures 8A and 8B illustrate the output-versus-input linearity of the recorder operating at 15 ips. In *Figure 8A*, a 1 kHz signal is recorded at a steadily increasing amplitude. The 0 dB record level is represented by the double vertical line. At +10 dB, that signal is reproduced at a level of +9.8 dB (an overall deviation from perfect linearity of only 0.2 dB. A second recording, this time using a frequency of 10 kHz, is made in the same way, and at +10 dB the linearity is off by 0.9 dB (output is +9.1 dB for a +10 dB input). The departure from linearity signals the beginning of tape saturation at this high frequency. As might be expected, at the slower tape speed (*Figure 8B*) high frequency saturation takes its toll a bit earlier. Now, while the 1 kHz signal is still linear at +10 dB to within 0.3 dB (+9.7 dB output for +10 dB input), the 10 kHz recorded signal is reproduced at a level of +4.4 dB instead of +10 dB. Still, even at this speed, the reproduced 10 kHz signal at 0 dB record

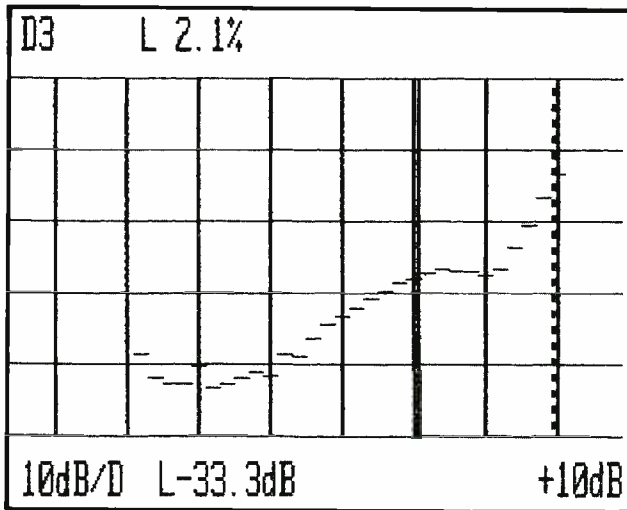
level is almost equal in amplitude to the 1 kHz recorded signal.

Unweighted wow-and-flutter measured 0.086 percent at 15 ips and 0.083 percent at the slower 7½ ips speed (See *Figure 9*). Weighted wow-and-flutter figures were, of course, lower, with readings of 0.057 at 15 ips and 0.079 at 7½ ips, as shown in *Figure 10*.

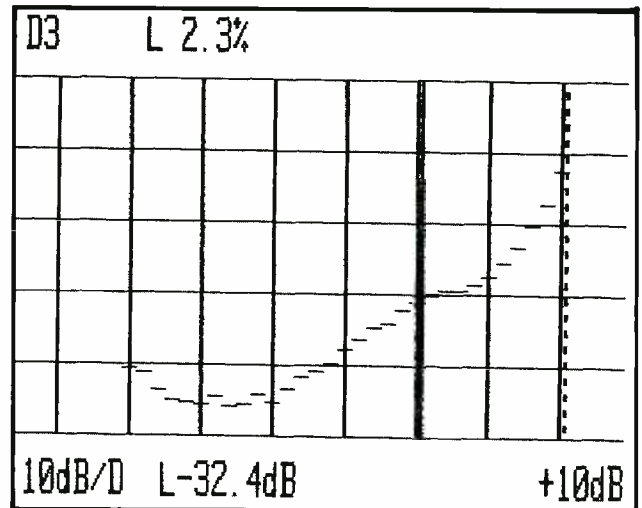
All input and output levels, as well as other specified electrical characteristics, conformed almost perfectly with published specification and claims. Speed accuracy was found to be within 0.1 percent when the unit was operated in its "fixed" speed mode, and in the variable mode, we were able to alter speed by almost exactly the 12 percent specified by TASCAM.

Comments: The Tascam 42 is, in our opinion, a professional recorder/producer in every sense of the word. Small studios might well find this to be the ideal deck for final mix-down from multitrack machines that they already own. In our tests, all of the features of this machine worked perfectly.

While everyone seems to be concentrating on digital mastering these days, it's important to remember that analog tape recording, with its simple editing capabilities, its punch-in and sound-on-sound capa-

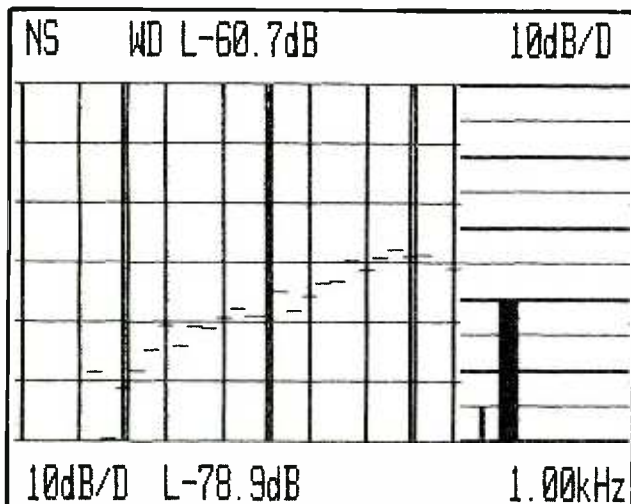


(A)

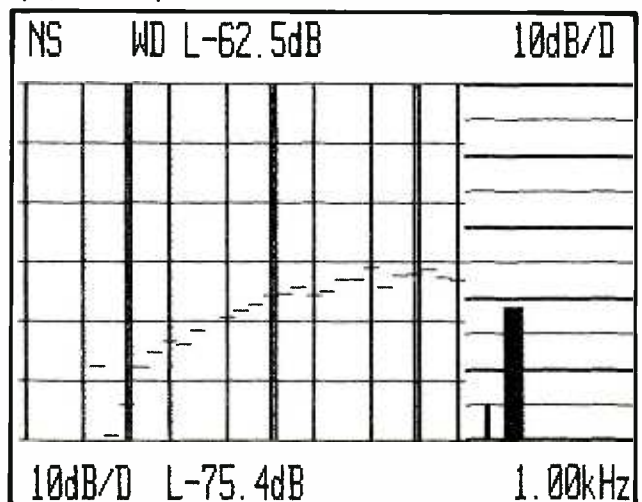


(B)

Figure 5. Same as Figure 4 except dotted line cursor has been moved to +10 dB level to show third-order distortion at that level. A = 15 ips; B = 7½ ips.

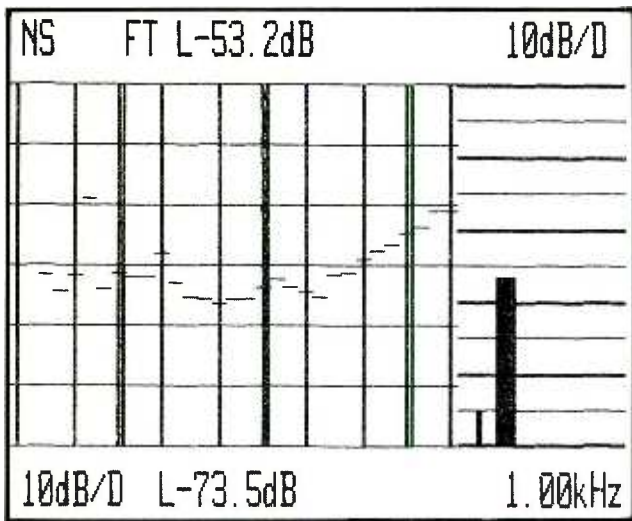


(A)

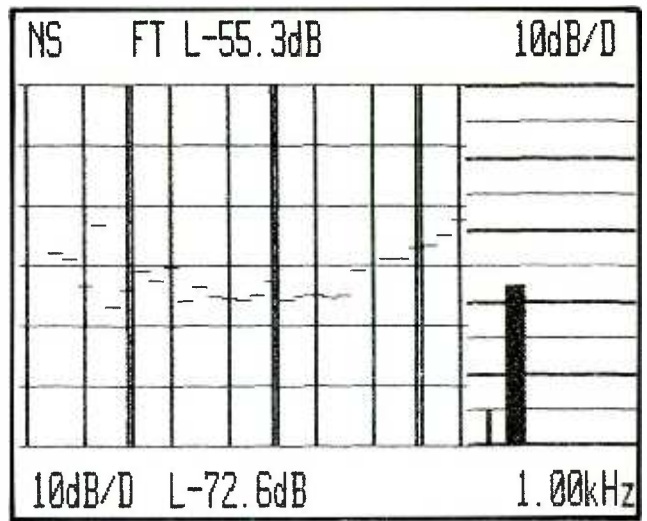


(B)

Figure 6. A-weighted signal-to-noise analysis at 15-ips (A) and 7½ ips (B) tape speeds.



(A)



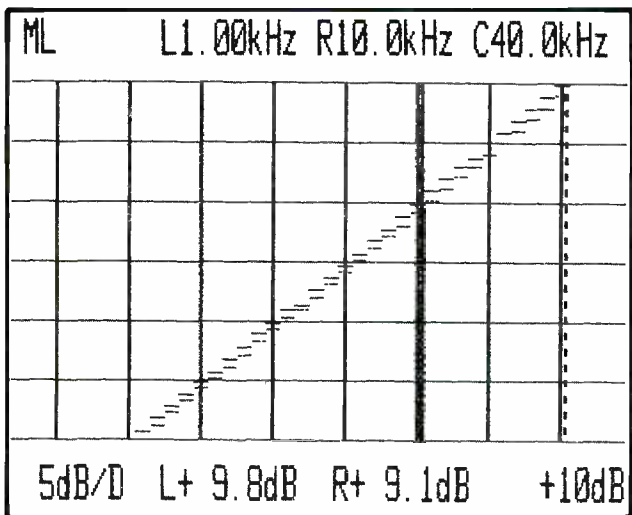
(B)

Figure 7. Same as Figure 6, except S/N measurements were made directly without using a weighting curve.

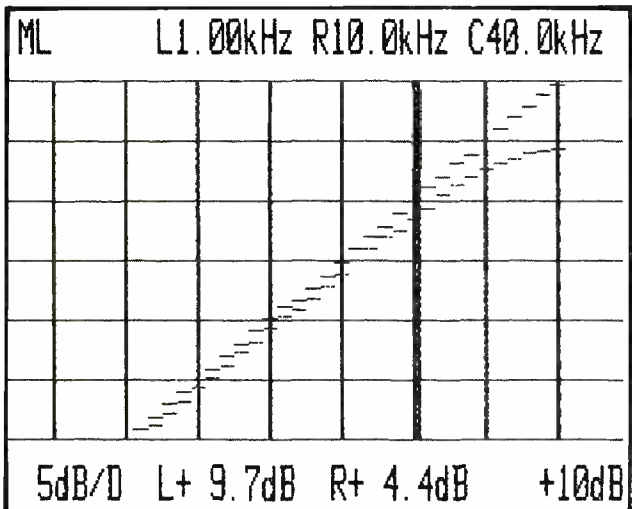
bilities and so much more, has been evolving for nearly 50 years and should not be abandoned simply because "digital is here." For many small (and not so small) studios, the TASCAM 42 might well prove to

be just the mastering deck they have been looking for. It would also serve as an ideal 2-channel recording deck "in the field," for live concert recording using the "purist" two-microphone approach or, with the aid of a mic mixer, feeding a mixed-down version "live" into the line inputs of the 42.

Spooling and fast-winding were both extremely smooth. There was none of that feeling that the unit was about to tear itself apart during fast rewind. Microprocessor control kept all transport operations smooth and noise-free.



(A) Figure 8. Results of linearity (input vs. output) tests conducted at 15 ips (A) and 7 1/2 ips (B).



(B)

'The sound is dry, rhythm is lifeless, and a thin vocal is swimming in muddy bass'.

That persistent, very basic mixer controls are simply not in a unit to save on the cost of delivery performance.

Over the years effects units have been prized for providing extra help and control. They were costly because only a handful of people had studios, but they happened—and sound systems that needed to sound like they

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from casual or difficult instrument. The late acts of your third hand should be an up-sucker. The best recording special effects.

These two-way equalizers, per channel, eliminate unwanted noises. And a minimum of 10 dB of gain is available for stereo mix.

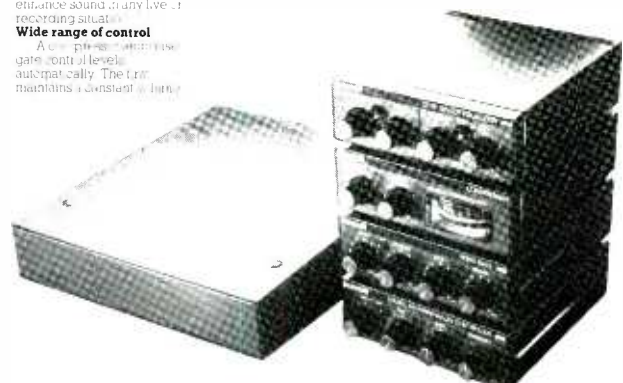
Easy to connect and use
Accessit's easy to use, in-line, automatic phaser and reverb have the luxury of stereo processing. A built-in auto level control and auto on/off are also available.

time-saving work and when you're ready to listen to the results.

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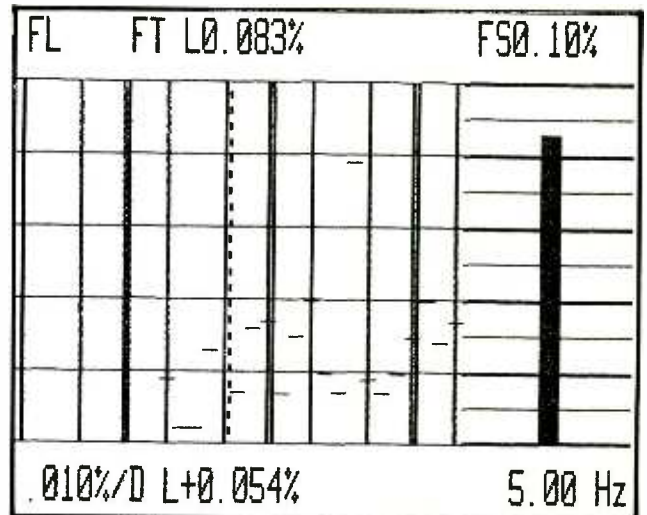
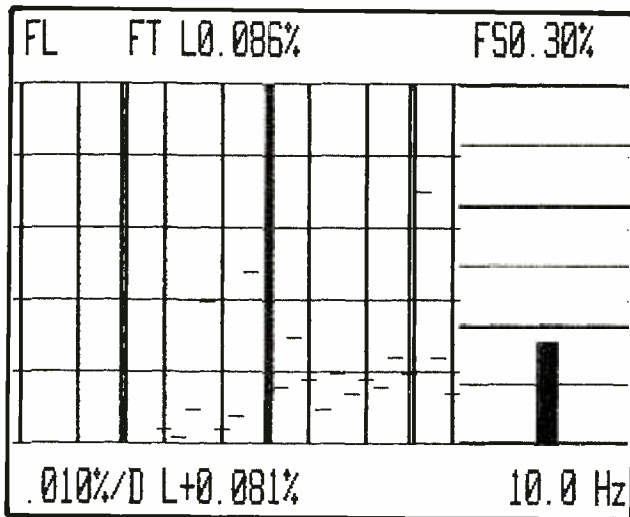
Accessit



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652 Glenbrook Road, Stamford, CT 06906 U.S.A.
Telephone (203) 324-2889 Telex 643678

The owner's manual is well written and covers every single thing you would ever want to know about this deck, from theory of operation to maintenance. Complete schematics, exploded views, PC board layouts, parts lists, and schematic diagrams are

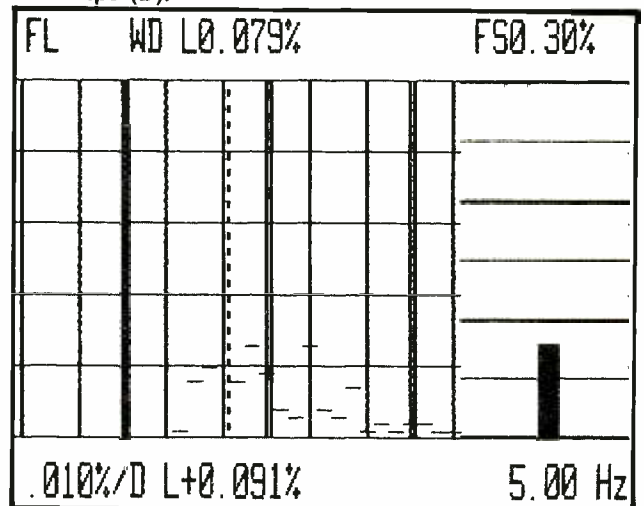
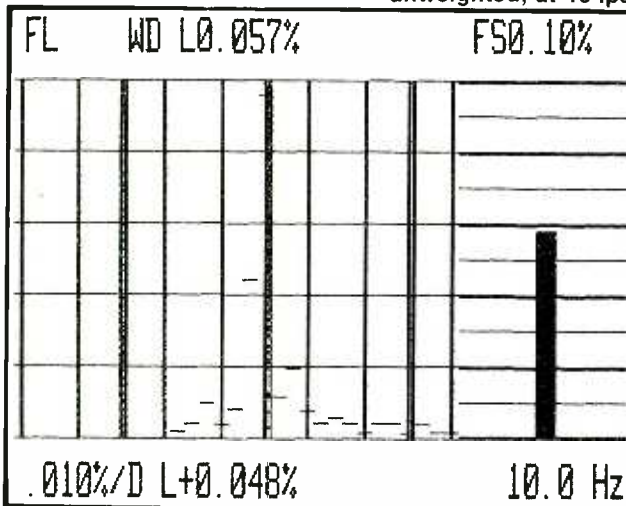
provided as well. The TASCAM 42 is one of those decks that you have to work with personally to appreciate. Given a few hours with it, we believe that you would become as familiar with, and as attached to this deck, as we did.



(A)

Figure 9. Wow-and-flutter analysis of Tascam 42, unweighted, at 15 ips (A) and at 7 1/2 ips (B).

(B)



(A)

Figure 10. Same as Figure 9, except using weighting network for wow-and-flutter measurements.

(B)

TASCAM 42 2-TRACK RECORDER/PRODUCER: Vital Statistics

SPECIFICATIONS

Tape Speeds
 Reel Capacity
 Wow/Flutter 15 ips (%)
 Wow/Flutter 7 1/2 ips (%)
 THD at +0 VU (%)
 Level for 3% THD (dB)
 Frequency Response at 0 VU, 15 ips
 Frequency Response at 0 VU, 7 1/2 ips
 Best S/N (Standard Tape) (dB)
 Rewind Time (2400' Tape)
 Mic Input Sensitivity
 Line Input Sensitivity
 Line Output Level
 Phone Output Level
 Bias Frequency
 Erase Ratio
 Speed Accuracy (7 1/2 ips)
 Mic/Lin Mixing
 Sound-on-Sound
 Reverse Playback
 Number of Heads
 Number of Motors

MANUFACTURER'S CLAIM

15 ips/7 1/2 ips
 10 1/2 ips
 0.05/0.07
 0.06/0.08
 0.8
 +13
 30 Hz to 22 kHz
 30 Hz to 16 kHz
 70
 120 seconds
 0.195 mV
 1.23 V
 1.23 V
 100 mW
 150 kHz
 N/A
 0.2%
 Yes
 Yes
 No
 3
 3

LAB MEASUREMENT

Confirmed
 Confirmed
 .057/.081 (wtd./unwtd. (NAB))
 .079/.083 (wtd./unwtd. (NAB))
 0.4/0.28 (15/7 1/2 ips)
 +13/+13 (15/7 1/2 ips)
 25 Hz to 33 kHz, ±2dB
 25 Hz to 18 kHz, ±2dB
 75.5 (A-weighted)
 115 seconds
 0.2 mV
 1.23 V (For +4 dBm)
 1.23 V (For +4 dBm)
 Confirmed (8-ohm loads)
 Confirmed
 N/A
 +0.1%
 Confirmed
 Confirmed
 No
 Confirmed
 Confirmed

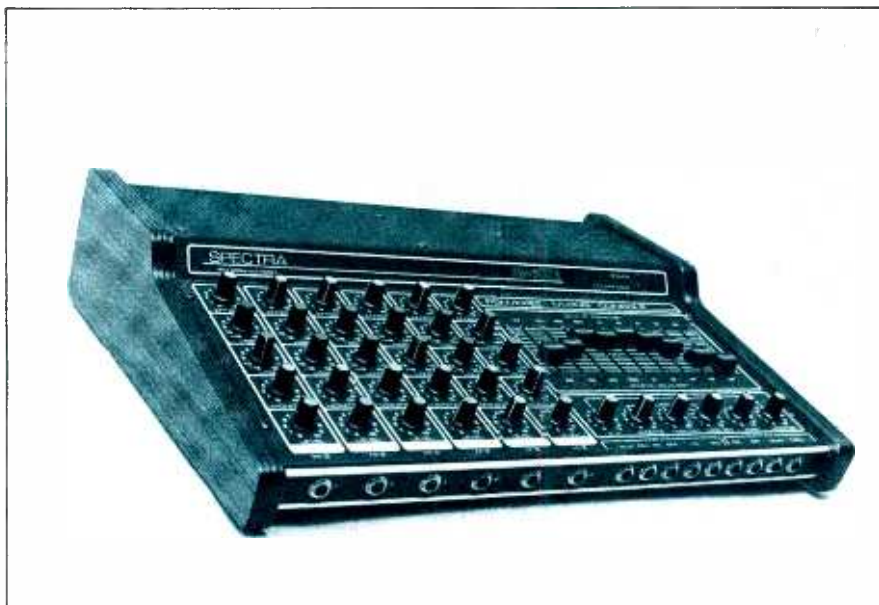


The Market Place

what's new in sound and music

DEAN MARKLEY 6-CHANNEL MIXER

Dean Markley's new Spectra Series PM-600A audio console is a lightweight, 6-channel mixer outfitted with its own 160-watt power amp, a 9-band graphic equalizer, and a compressor/limiter. Constructed with metal front, top, and bottom panels, the unit is handsomely appointed with black vinyl trim and wood-grain sides. Each of the six channels contains one hi-impedance input, one transformerless balanced lo-impedance input, input level, monitor and effects send, and low and high equalization with a maximum boost or cut of 15 dB. In the graphic equalization section, frequency output can be contoured from 63 Hz to 16,000, with a maximum boost or cut of 15 dB. Phone jacks for a reverb switch control, additional power amps, an auxiliary mic, effects, and an outboard equalizer allow several other electronic components to be wired directly into the



PM-600A. Separate volume controls in the master output section have been provided for auxiliary inputs, effects, monitor return levels, the main program, and monitor signals; an LED indicator automatically

illuminates when the compressor circuit engages. The Spectra Series PM-600A audio console has a suggested retail price of \$649.

Circle 1 on Reader Service Card

RAAD ELECTRIC VIOLIN

Raad Instruments' new professional electric violin is designed and built to meet the highest standards of music production. The Raad maintains the characteristics found in quality acoustic instruments such as dynamic, transient, and frequency response required by the most demanding players and listeners. The patented invention integrates a novel tone-producing element with an advanced transducer system, resulting in a sound quality free of the anomalies associated with previous attempts to bring the bowed instrument into the contemporary musical environment. Technical achieve-

ments anticipate its use in the digital recording studio as well as on stage with other high sound pressure level instruments without loss of identity. Each instrument is individually voiced and spectrally balanced for complete integrity at its output. Volume and tone controls are available by skillful manipulation of the bow. In the studio only a direct box is required, thereby rendering outboard equipment strictly optional. On stage, choice of equipment should be for a unique voice of extremely wide dynamic range, one capable of reproducing high frequencies well above 16 kHz.

Circle 2 on Reader Service Card



CALREC MINIMIXERS

Audio + Design/Calrec, Inc.'s new 'M' Series Minimixers have been designed for professional broadcasting and recording where a small, compact mixer of between 8 and 16 channels is required. Facilities include: two frame sizes to cover between 8 and 16 channels plus optional twin compressor/limiters (with stereo link switch); 30mm modules for the ultimate in space-saving and operator comfort; Mic/Line Input selection with 10 dB-per-step switching; Phase Reversal, hi- and low-pass filters, plus 3-band equalizer per-channel; four Auxiliary outputs, each switchable Pre/Post Fader; Pan to Stereo Output; Channel PFL and AFL; Group or Stereo A and B Faders with PFL; Mono Master Fader, which takes a mix of the A and B Faders; plus other facilities such as full-throw P&G faders, Talkback Mic, Oscillator, Headphone Monitoring, and 48-volt phantom power. Options include external circuit controls (e.g., tape machine remotes), PPM or VU meters, and an insert system from either Pre- or Post-channel fader and Master fader wired to a multi-



way connector which may also be configured as separate channel outputs. Five different Minimixer styles are available, including a table-top design with control surfaces at a shallow angle mounted in a rugged flight case or in a 19-inch rack-mount version (up to seven channels with compressor/limiter, or eight without). The Calrec 'M' Series Minimixer is

powered from either a 240 or 120 VAC source or from an externally supplied 16 VDC source, in which case the phantom power is fed with 16 volts automatically, to power low voltage condenser microphones (such as the Calrec 2100 series).

Circle 3 on Reader Service Card

ELECTRO-VOICE DIGITAL SAMPLER



The Electro-Harmonix Super Replay 4-second Digital Sampler lets you digitize and store any sound you invent, and then instantly play it

under the control of your keyboard or Roland guitar synthesizer with C.V. and Gate Out. Your sound can also be triggered by any output from an electronic drum machine, or by drum pad sensors like the Simmons Drums or the electronic pad included with the unit. The Super Replay accepts audio signals from any source—microphone, electronic guitar, bass, keyboard, tape deck, sound effects device, mixing console, etc. A built-in click-track helps you play in tempo when using the longer time settings, and a unique Sound-On-Sound feature lets you add more sounds to the one originally recorded. Just use the patch cable supplied to connect the 5-pin DIN plug on the side of the Super Replay to the control voltage (1V/octave) and the Gate Out of a synthesizer, and you can "play" any sound you record. It's just as easy to replace one of the pre-programmed sounds in your electronic drums with anything from standard percussion to abstract or non-musical sounds using the Super

Replay. An ordinary guitar cord connects the Drum Pad jack on the Super Replay to any output of a drum machine such as the LinnDrum, Drumulator or Oberheim DMX, or directly to the pad of a Simmons drum kit. You may also add new unusual sounds to your acoustic drum set. The characteristics of the replayed sound can be dramatically altered by using the Decay Time control to shorten the amount of time the sound lasts and you can change the frequency by using the Pitch control. 12-bit sampling ensures hi-fidelity reproduction of sampled sounds across the whole spectrum, and High Speed Actance Circuits preserve the feeling and presence of the attack—with no time loss in the sample in either record or playback! The Super Replay, complete with external trigger drum pad and mounting hardware, and has a suggested retail price of \$675.

Circle 4 on Reader Service Card

RAMSA WIRELESS MICROPHONE SYSTEM

RAMSA's new wireless microphone/receiver system frees the stage artist from the restrictions of cables while maintaining high standards of acoustic excellence. The RAMSA WX-8050 receiver uses a unique space diversity system that ensures a reception stability at least two times greater than comparable single-station reception systems. The WX-8050 space diversity system resolves the problems of dead points on stage, points where sound transmission would be otherwise disrupted. Two reception antennas on stage receive the transmitted sound from the microphone, and the control section of the WX-8350 receiver unit automatically selects and receives the stronger transmission only. The receive circuit uses a crystal-controlled oscillator, fixed-frequency design that selects and receives up to three wavelengths designated in the UHF 400 MHz band. This ensures crystal-clear reception despite such environmental factors as vibration, temperature, and moisture. The receive unit features a reception level meter with LED display for easier adjustments in dimly lit places or from relatively distant points. Each of the twin receivers in the space diversity system has a green LED to show



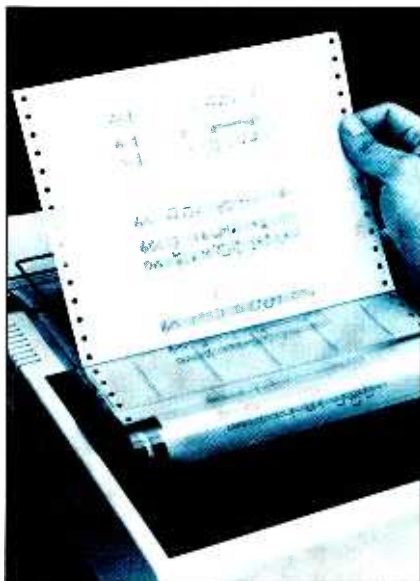
when it is active and a red LED to show when it is inactive. The WX-8350 also features a built-in squelch circuit that suppresses electromagnetic interference such as car ignition, electric appliance emissions, and fringe radio frequencies. Up to three output levels can be specified on the WX-8350; +4 dBm, -20 dBm, or -60 dBm. The RAMSA WX-8050 wireless microphone has the tonal characteristics of a quality conventional cable microphone. Frequency characteristics are well-balanced, covering both high and low frequencies. It also features excellent

selective polar response that cuts out unwanted sound sources while preserving accurate imaging and rich tonal reproduction. The microphone uses a 24mm-diameter diaphragm but with a thickness of only 16 μ . The oft-sought combination of low weight and durability is now available in a single microphone. The RAMSA WX-8050 microphone derives continuous power for at least four hours from a single economical SUM-5 battery.

Circle 5 on Reader Service Card

PASSPORT'S POLYWRITER

Passport Designs has announced that its popular Polywriter Music Printing System is now available for



MIDI instruments. According to the company, any instrument with a MIDI Out jack can run Polywriter. The product is a computer program that takes whatever is played on the synthesizer keyboard and turns it into standard printed music. Features of the program include eight different score formats ranging from solo instrument to full orchestra, automatic transpositions for brass and reed instruments, a humanizing factor that automatically fixes small rhythm mistakes, and full capability to edit and change the music once it's notated. Plus, lyrics and chord symbols can be "typed in" with Polywriter. The equipment requirements for using Polywriter are: an Apple II-type computer with one disk drive, any instrument with MIDI jacks, the Passport MIDI interface, and a dot-matrix printer. The program retails for \$299.

Circle 6 on Reader Service Card

PEAVEY'S DECA POWER AMPS

Peavey's second range of products developed at its recently completed



AMR research facility: the new Digital Energy Conversion Amplification (DECA) power amps. According to a company spokesman, previous Class A/B power amps operated in a 35 to 40 percent efficiency range, and the new Peavey DECA units will exceed 90 percent efficiency. Because of this efficiency, large transformers and associated circuitry are eliminated. The amplifier operates in such a manner which largely eliminates the need for heat sinks, bulky power supplies, and other parts traditionally associated with high power amplifiers. The initial DECA-600 lists for \$699.95.

Circle 7 on Reader Service Card

MAKING TRACKS

Mick Jagger has finished his first solo LP at Island's Compass Point Studios. The album features the famed rhythm section of **Sly Dunbar** and **Robbie Shakespeare**. **Jan Hammer** and **Jeff Beck** make guest appearances as well... **David Bowie** has completed his latest album for **EMI Records** at Le Studio in Montreal... **Gary U.S. Bonds** recently helped out **Joan Jett** on background vocals for the song "New Orleans" (an early '60s hit for Bonds) at Long Island's **Kingdom Sound**... Former Doobie Brother **Tom Johnston's** new band, **Border Patrol**, has recently finished mixing an LP at San Francisco's Hyde Street Studios. Paul Broucek produced and engineered with Leslie Stuck assisting. The Rubinoos were also at Hyde Street recording vocals. Mark Wallner produced... Mixdown for **Lou Rawls'** new single "Forever I Do" was recently done at Kayem Recording with Dexter Wansel producing and Mitch Goldfarb engineering... **Soft Cell's Marc Almond** and his new band, the Sinners, recently recorded a new album in Bavaria with Mike Hedges, who has also worked with The Alarm. A British tour is scheduled for the fall... Double Entente was in recording a 12-inch EP for CBS at The Automatt with **Randy Jackson** producing and Maureen Droney engineering... **James Cotton** has completed recording his new LP at Streeterville Studios in Chicago for Alligator Records. The album was produced by Bruce Iglauer... The newly re-formed **Bachman Turner Overdrive** has signed with Compleat Records. BTO now consists of all of the original members, with the exception of a new drummer, Garry Peterson, former drummer for the Guess Who... Criteria Recording Studios in Miami recently hosted **Stephen Stills** and John Parr. Stills finished mixing his album *Right By You*. **Ron and Howard Albert** produced and engineered the album. John Parr has been working on his debut album with Peter Solley producing... Producer Rick Chertoff was in mixing tracks at Atlantic Studio for the **Red Rockers'** second album. The album was recorded at The Record Plant... At Soundcastle Studio: **Barbra Streisand** was in recording her new album for Columbia Records. **Maurice White** produced with Jeremy Smith engineering and Mitch Gibson assisting. **Gladys Knight** was in mixing her latest LP with producer Sam Dees, engineer Bob Hughes and assistant Paul Ericksen. **Teena Marie** has been producing her new Epic album with Bobby Brooks engineering and David Marquette and Paul Ericksen assisting... **Ronnie Montrose** has been producing several projects at Music Annex Recording, including an album by Gary Hull and Marc Bonilla, a demo for **Toto's** saxophonist John Smith, as well as his own album... Members of the **Bar-Kays** were at Cotton Row in Memphis producing an album for Starfleet... At Celestial Sounds, the **Manhattans** were laying down tracks for a new Columbia LP. Producers were: John "Skip" Anderson, Morrie Brown and Steve Williams. Steve Goldman was at the board... Also at Celestial Sounds, **Philip Glass** has been producing his **CBS** album, *Glasspieces*, with **Kurt Munkaschi**... **Julian Lennon** has recorded his debut album at Bear Tracks in New York. The LP was produced by **Phil Ramone**... **Stevie Wonder** received the first production model of the Kurzweil 250 digital keyboard. The 250 has been cited as the first computer device to authentically duplicate the sound quality of a grand piano as well as numerous other conventional musical instruments... Columbia recording group **Journey** is scheduled to begin recording their 11th album this fall. The LP is due to be released in early 1985... **Philip Bailey** has recently recorded his second solo album under the management of producer/musician **Phil Collins** at the Townhouse Studios in London. The album is due to be released this month... **Diana Ross** was at New York's Unique Studios mixing her new single with **Arthur Baker** producing.

ON THE ROAD

Rick Springfield embarked on a world tour August 16 in Bismark, North Dakota. In mid-October he'll be playing a few cities in Japan and then move on to Germany, France, the United Kingdom, and Scandinavia... The **Eurythmics** are finishing up their summer tour, which took them coast to coast and into Canada... Westwood One has signed recording group Journey to an exclusive agreement for radio concert broadcasts through 1986. The 30-month pact provides that Westwood One's mobile studios will record a live concert performance by Journey during the band's soon-to-be scheduled 1985 tour.



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35

Irving accomplishes the same neat trick on the title cut, another of his compositions. The steady groove is created by Mino Cinelu's percussion, Al Foster's drums, Irving's electric drums and Darryl Munch Jones' funky thumb-thumping bass. Over this thick, funky tapestry Miles does his thing, trading lines with guest soprano saxist Branford Marsalis. It's jazz, for sure, but a Prince fan could dig it too.

"Robot 415" is a duet with Miles against the machine—Irving's various synthesizers and drum programs. This brief encounter could've been culled from Bill Laswell or David Van Tieghem outtakes, but the trumpet playing, again, is unmistakably Miles.

"Freaky Deaky," the lone Miles composition on the album, is an ethereal, spacious vehicle for some synthesizer playing by Davis himself.

"What It Is," a blazing rock-funk workout, features Miles protege Bill Evans on some floating soprano sax over a hyper groove, providing a nice contrast. This tune and the two others on side two, "That's Right" and "That's What Happened," were co-written by Miles and guitarist John Scofield. Scofield skips over a catchy melodic figure in the uptempo "What It Is," then gets to settle down to some serious blues in the moody "That's Right." Miles blows elegantly and regally on this stirring 11-minute dirge, which was arranged by Gil Evans.

The closer is more raucous, upbeat funk propelled by Scofield's jarring chords and Munch's relentless, snapping bass. Miles and Evans make a tight tandem, blowing unison lines over the pulse—Evans on soprano and Miles on synthesizer. From the sound of things, Miles is having fun these days, picking up on the energy being emitted from all the imaginative, hungry youngbloods around him. Miles has been heading in this direction ever since he made his heralded comeback three years ago, and this album is the culmination of all those efforts to date.

bill milkowski

HUMAN LEAGUE: *Hysteria*. [Produced by Chris Thomas, Hugh Padgham and Human League; mixed by Hugh Padgham; engineered by Bill Price, Renate Blauel, Hugh Padgham, and Gavin McKillop; re-

corded at Air and Townhouse Studios.] A & M FP 4923.

Performance: **Cultivated nonchalance**

Recording: **Cultured cleanliness**

One of the earliest purveyors of commercially viable synth pop, the Human League sproinked their way onto the crest of the wave scene in 1980 with a revised line-up and renewed vows of a pristine marriage between man and machine.

On *Hysteria*, co-producers Chris Thomas (Pretenders) and Hugh Padgham (Police) add their own sheen to the keyboard formula that once again juxtaposes nattily enveloped sixteenth notes and smooth surging waves, translating Philip Oakey's programming into a precisely quilted panoramic structure that preserves an airiness that prevents the maximum use of synthesizers from becoming swampy.

Ever present and up front in the mix, the keyboards add color within the clean lines of simple pop chord structures and ensure the pulsing danceability of the band, but they still leave an antiseptic aftertaste. What keeps the Human League's music from slipping into an admirably constructed industrial exercise is, in the end, a substantial dose of human sentiment. Projected through fingers on wire and wood of guitar and bass, something more sentient than the physics of a printed circuit surfaces in the urgent strumming that gives credibility to "Lebanon's dim view or war, and sweats up through the funkily popped bass line in "The Sign." Most of the humanizing elements aspire to funkiness, including Oakey's soulful shouts on "Rock Me Again..." his only departure from a usually deadpan delivery.

Whether it's coercive syncopation, bantered percussion or Sulley and Catherall's unaffected supporting vocals, the ornaments work best where they don't obscure the point of a song or its emotional impact. The liabilities of solitude are accentuated in "Life On Your Own" by a wistful, sparse guitar lick administered the way the omni-influential Nile Rodgers would punctuate a passage.

Even when they're not buoyed into remarkability, the lesser songs on *Hysteria* only sink into mere danceability, and still will endure a cut above most efforts in this school.

susan borey

Swee' Pea And The Duke

nat hentoff

There never has been a closer relationship in jazz than that between Duke Ellington and Billy Strayhorn. They often worked together on compositions and arrangements, and the men in the Ellington band found it very difficult to tell which parts had been written by Duke and which parts were created by Swee' Pea (as Strayhorn was called). For that matter, originals which were entirely composed by Strayhorn sound so Ellingtonian that many listeners think that such Strayhorn pieces as "Take The "A" Train," "Rain Check," and "Chelsea Bridge" were written by Duke.

Soon after Billy Strayhorn died in 1967, Ellington and his orchestra recorded a tribute to Swee' Pea, "and his mother called him Bill." Issued on RCA Victor, the set has been unavailable for years; but now Harmonia Mundi USA has released the French RCA edition here. All the pieces are by Strayhorn (three in collaboration with Duke), and the playing abounds with love and respect for the lost member of the band. There are magnificent solos by, among others, Johnny Hodges, Clark Terry, Lawrence Brown, and Cootie Williams. The album ends with Duke, alone, playing Strayhorn's graceful, poignant waltz, "Lotus Blossom." As Duke used to explain, "That is what Swee' Pea most liked to hear me play."

The recorded sound has the immediacy and warmth that Duke always demanded in a recording. Whoever was in the control booth, Duke was his own recording director because he knew where each note belonged in the sonic mosaic.

Ellington and Strayhorn used to play duets at parties, but their collaboration as pianists on recordings was rare. There was one track on RCA Victor and then, in 1950, a dozen tunes on the short-lived Mercer label (run by Duke's son, Mercer Ellington).

Some time later, Riverside Records asked Mercer Ellington

to do what he could to assemble a reissue set of these historic performances. Most of the metal parts had been destroyed in a fire, but with the help of collectors who lent copies of the original 10" LP, it was possible to restore to musical life *Great Times!/Duke Ellington and Billy Strayhorn Piano Duets*. Alas, that reissue set also went out of print, but now, Fantasy—which owns the Riverside label—has issued it again as part of its invaluable series of Riverside reissues.

As was the case when Ellington and Strayhorn collaborated on a composition, it is very hard to tell, on this mono session, which of the two is playing any particular passage. But in any case, the buoyant, celebratory air of the occasion makes this one of the most perennially attractive jazz piano sets in the history of the music. Also, without the orchestra, the duets illuminate with particular clarity how Duke and Swee' Pea shaped jazz time. They swung differently than most, but they sure swung!

The recorded sound is hardly equal to 1984 state-of-the-art engineering, but the music is all there, and I rather doubt listeners would object to less-than-optimum engineering if someone were to discover an album of piano duets with Clara Schumann and Johannes Brahms.

DUKE ELLINGTON: "...and his mother called him Bill." [No information on producer and engineer.] French RCA NL 89166. Distributed in the United States by Harmonia Mundi USA, 2351 Westwood Boulevard, Los Angeles, California 90064).

DUKE ELLINGTON, BILLY STRAYHORN: *Great Times!* [Mercer Ellington and Leonard Feather, producers; no information on engineer.] Riverside OJC-108 (RLP-475).

TOM TEELEY: *Tales Of Glamour And Distress*. [Neil Kernon and Tom Teeley, producers; Neil Kernon, engineer; mixed by Dave Thoener; recorded with LeMobile at Irving Plaza; Clifford Bonnell, assistant engineer; additional recording by Bullet Creative Group, Nashville; Danny Mundhenk, assistant engineer additional recording and re-mixes at Record Plant, N.Y.C.; Dave Thoener, engineer; Jim Ball, assistant engineer; "Long Way To Heaven" produced by Tom Teeley at Bearsville Studios, Bearsville, N.Y.; Ray Niznik, engineer; mastered by George Marino at Sterling Sound, N.Y.; production assistant to Neil Kernon, Laura Lonceteaux.] A&M SP-6-4991.

Performance: **Polished**

Recording: **Portably deluxe**

The latest entry in the "do-it-yourself" recording game is Manhattan native Tom Teeley, whose debut album, *Tales Of Glamour And Distress*, was recorded on the streets of the island that shaped his musical growth. Renting LeMobile, a portable control room and studio on wheels, Teeley and co-producer Kernon parked the rolling facility in front of Manhattan rock emporium Irving Plaza, where they made use of the ballroom's electricity and reportedly remarkable varieties of echo. Drums were recorded in the "unique ambience" of the men's restroom, while the live sound of the main ballroom provided the perfect forum for lead guitar. Keyboards, rhythm guitar and other parts were recorded in the truck.

Teeley's a fine lead guitarist and multi-dimensional vocalist, and the 10 songs on *Tales* congeal without the discontinuity that often pervades the track-at-a-time approach necessary with recording the one-man-band.

Much of Teeley's work pays homage structurally to rock 'n' roll but lacks its pushy heaviness, leaning more on the lighter weight theatrics and catchiness of pop or even show tunes. This latter genre is not a surprising influence; Teeley is no stranger to the boards, having played George Harrison in *Beatlemania* as well as 12 different rock stars in another Broadway production. Teeley's pop, its instrumental backdrops for often syrupy lyric gestures pumped by mute-edged sax and squeaky clean guitar solos, at times sounds more like it hails from Southern California

than an East Coast urban jungle. However, his pop is consistently buoyed by a springy, optimistic momentum, through the travelogue of "Shangri-La," the lusty paean "A Rocket And A Roman Candle," the romantic fish story "She Got Away," and other fare. Strangely unsuitable with its street punk theme, "Long Way To Heaven," with its streetwise sentiments weakened by a singsong melody is like a dulled switchblade and would barely be credible in *West Side Story*.

The rest of the arrangements adequately fit their subjects, especially "Bobalu," which best demonstrates Teeley's assimilation and recharged update of '60s pop. With the vocal pushed out front in the mix, the song's striking melody dips and dives through the peppy accompaniment without a bit of wobble.

Two attempts at R & B find workable grooves: The computer funk of "Victoria" sports the album's most energetic vocal, and "Remember Gina," a dive into smoother white soul a la Hall and Oates, even uses H & O sideman Charlie DeChant to certify the intention. Teeley also proffers a neo-Baroque ditty, "Woman In Love," complete with false ending and dainty reprise.

"Heartland," lacking the derivativeness that stands out in most of the other songs, is the album's strongest cut. Moodier, seemingly more heartfelt, this song offers Teeley the greatest chance for longevity beyond the pan's flash.

susan borey

THE KLEZMER CONSERVATORY BAND: *Yiddishe Renaissance*. [Charles H. Berg, producer; Paul Mufson and John Nagy, engineers; recorded in May, 1981 at Dimension Studios, Jamaica Plain, MA.] VANGUARD VSD 79450.

Performance: **Not totally authentic, but close enough for folk music**

Recording: **Comfy, cozy and cool**

Klezmer music may be a lost art. Those I've spoken with who remember the good old days when Naftalie Brandwein used to play clarinet with his back to the audience so the competition couldn't steal his stuff (and also wore a string of orna-

mental electric lights around his neck from time to time) assure me that nobody today quite comes up to the combined gaiety and tragedy of the genuine Klezmer of the old days. But then my sources have not yet heard this recording and they are likely to be prejudiced by their advancing age and their relationship to the Klezmer players of yore.

As for myself, I've heard a few records of the authentic stuff and a lot more of the derivative Klezmer music that followed from the pure Klezmer, much the way orchestrated big band followed totally improvised traditional jazz. The early Klezmer band, whether their music was improvised or arranged—a fact I neither know nor care to—had an improvised spirit...a way of playing the notes whether they were written out, learned from memory or divinely inspired on the spot that separated the Klezmer from the rest of the musical world and put him closer to what King Oliver's Creole Jazz Band or Louis Armstrong's Hot Five were playing then to the sophisticated dance units of Paul Whiteman or Meyer Davis.

As often happens with a popular music, particularly an ethnic popular music, it runs the course of its fad and falls into disfavor. Nobody dances the tango anymore, very few ballrooms feature Waltz night, and only at the more traditional Jewish weddings are you likely to find music of this kind. Remnants of the music do linger. The Klezmer had its influence on the musical theatre through the Yiddish musical theatre and wound up on Broadway in vehicles like *Fiddler On The Roof*. Many Jazz players, especially those from Jewish backgrounds, incorporated much of the Klezmer sound into their playing...most notably trumpeter Ziggy Elman and clarinetist Mezz Mezzrow. Saxophone-Clarinet virtuoso Bob Wilber, who worked in one of Mezzrow's bands, refers to this quality as "The Jewish Wail." The reference is appropriate, and those who listen to radio station WEVD (New York's ethnic music station) on Sunday mornings cannot help but notice the similarity between the Cantorial music which precedes Art Raymond's Sunday Simcha and the secular Jewish music that Raymond features on his show.

The next step is the younger generation seeking to recover the roots that their parents buried in a des-

perate attempt to assimilate and be an American just like everybody else. That's why we find groups of youngsters who never knew the old country playing the music of their ancestral past...be it Jewish, Irish, Scandinavian or Polish. This is what the Klezmer Conservatory band represents. Clarinetist Don Byron is not Naftalie Brandwein, but he has heard him and absorbed much of the Klezmer style and the Jewish wail, while annotator Charles Berg notes trombonist Davis Harris' affinity for New Orleans Jazz great Kid Ory (to which I would add the names of Charlie "Plug" Irvis and the late J. C. Higgenbotham). The music goes from the familiar "Rozhinkes Mit Mandlen" to "Der Nayer Sher," a hit from the '40s.

The recording is not digital, but it is good, comfortable clean-sounding stereo. I personally am glad that engineers Mufson and Nagy have opted for the cooler sound rather than the "Hot Sound" of recent pop recordings in the contemporary idiom. It's the kind of record that one can live with comfortably for some time to come.

joe klee

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