

Profile:
Jr. Walker

MODERN RECORDING & MUSIC

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Vol. 7 No. 3
December 1981

recording with
JOHN ENTWISTLE

**STUDIO
NOTEBOOK #4**

LAB REPORTS:

Ramsa WP 9210
Amplifier

Sony TC-K777
Cassette Deck

Sunn SPL-4120 Dual
10-Band Equalizer

NOTES:

Hotrodding Your
Gibson Flying V

**PRODUCTS
REVIEWS**



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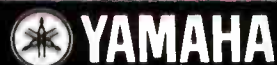
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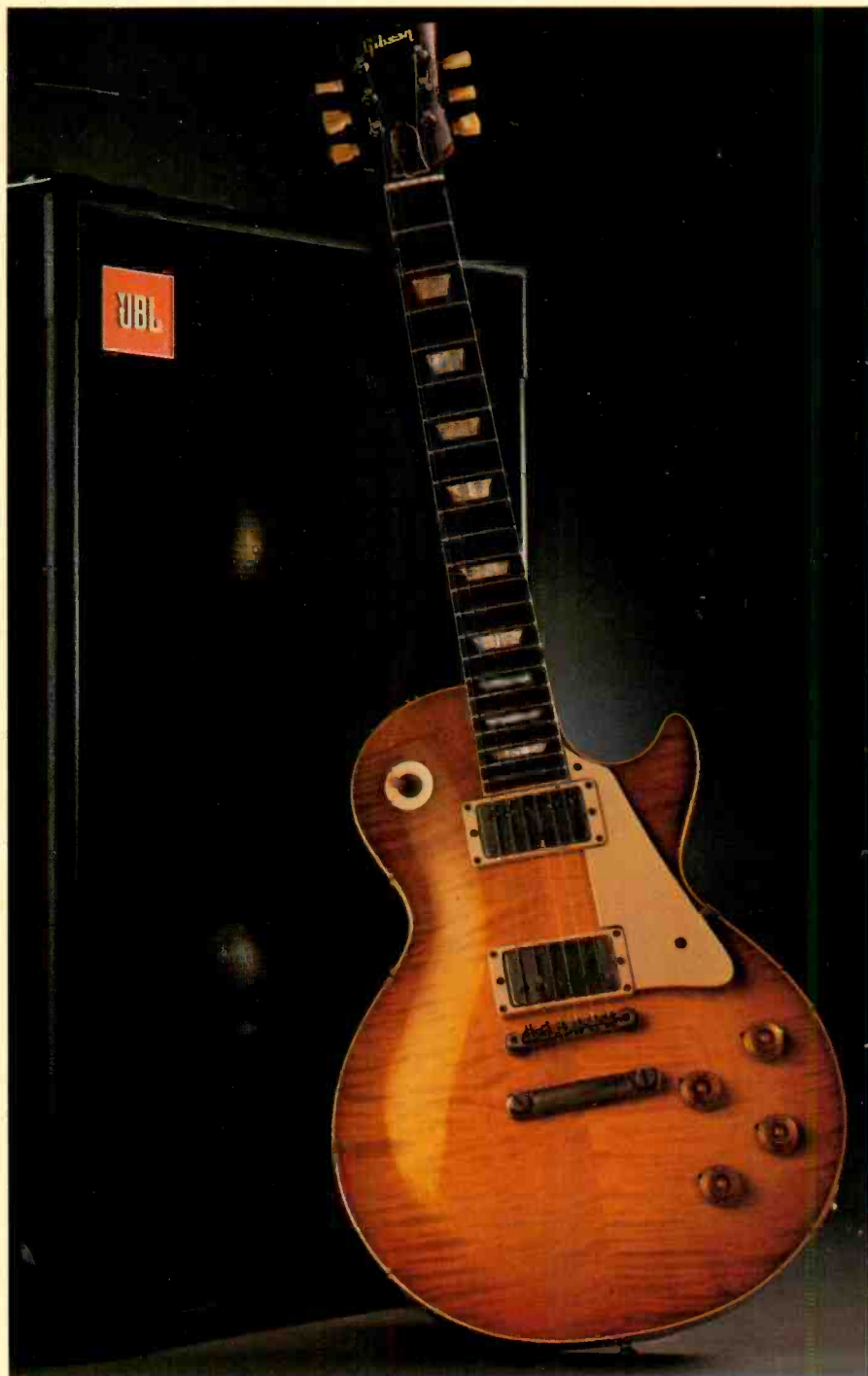


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Some people think our Cabaret Series is too expensive.

In 1959, some people thought this guitar was too.



In 1959, this Gibson Les Paul Standard carried a suggested list price of \$283. An amount that many considered outrageous for an electric guitar. Yet for those who could appreciate the value in the guitar's craftsmanship, tone, and playability, the price was more than justified.

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1959 Gibson Les Paul Standard "Sunburst" serial number 9 0823 courtesy of Norman's Rare Guitars, Reseda, California.

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If you're ready to move up to a specialized mixer, you're ready for Ramsa.

The Sound Reinforcement Specialist: Ramsa WR-8716

When your sound says you're professional but your mixer doesn't. When you're wasting your subtlety and style on "make-do" boards. When you're creating compromises instead of clear-cut distinctions. Then you're ready for Ramsa — the new mixers that are specialized so you won't have to compromise.

The WR-8716 is a fully modular sound reinforcement console with 16 input

modules, 4 group modules, and 2 masters. It features 16 input pre-fader solo buttons, 4 group modules with pre-fader insertion patch points, and lockable post-fader solo buttons. There are 6 illuminated VU meters with peak LED's for easy outdoor

reading and a separate stereo variable frequency EQ for monitor sends. Pan pot controls allow panning to the left or right masters while level controls permit 16 x 6 board operation. The left and right direct channel assign function lets you bypass the group modules for individual sources. Portable operation is a snap with easy access connectors.

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



RAMSA

The Recording Specialist: Ramsa WR-8816

The WR-8816 recording console includes the same modular construction, input modules, power supplies, and faders as the WR-8716 plus many important recording advantages. Like direct outputs for 4, 8, or 16 track recording and peak-reading LED meters that let you monitor any 4 out of 24 signals with clear, quick response.

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

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

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

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Performing and
Composing**

TR-808



The Roland TR-808 will undoubtedly become the standard for rhythm machines of the future because it does what no rhythm machine of the past has ever done. Not only does the TR-808 allow programming of individual rhythm patterns, it can also program the entire percussion track of a song from beginning to end, complete with breaks, rolls, literally anything you can think of.

Writing

Because the TR-808 is completely programmable, the rhythm selection is not limited to factory presets. Any rhythm pattern can be easily written into the TR-808 digital memory, even odd time signatures like 5/4 and 7/8.

The programming is done in real time using the step method we pioneered with our BOSS Dr. Rhythm. However, the number of steps is variable so that rhythms can be programmed with as small a division as 32nd notes.

Playing

A total of 32 different rhythm patterns can be written into the TR-808. Rhythms are played by selecting one of the 16 switches along the bottom of the front panel. These can be switched while a rhythm is playing to change from a straight beat to a fill, or another rhythm.

LEDs indicate which rhythm is playing, and a Prescale feature makes sure all rhythms are in time with each other, even while switching between odd and even time signatures.

Composing


A feature that sets the TR-808 apart from any other rhythm device is its ability to record an entire composition's percussion score, which we call Composing the Rhythm Track. This is accomplished in exactly the same way as the unit is played, by switching from one rhythm to another, only this is done while in a Compose Mode. When the song is over and you switch from Compose to Play, every change has been recorded, every fill, straight beat and break, up to 768 measures in length.

The Voices

The eleven instrument voices of the TR-808 include bass and snare drums, three toms, three cymbal voices, hand claps and more. Roland's exclusive programmable accents give additional life to any programmed rhythm.

Each voice has its own level control for total mix, and many of the voices have timbre, tuning and decay controls. If that's not enough control, each voice has its own output jack so it can be processed however you like.

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MODERN RECORDING & MUSIC

DECEMBER 1981

VOL. 7 NO. 3

THE FEATURES

STUDIO NOTEBOOK #4

By James F. Rupert

36

Quiz time, kiddies! Get out those old lead point pencils and find out if you've got what it takes to make a go of it in the big-time studio biz.

RECORDING WITH JOHN ENTWISTLE

By Jeff Tamarkin

40

After a six-year hiatus, John Entwistle is back with his fifth solo album, *Too Late The Hero* (Atco). Long-dubbed "the quiet one" or the "Ox," by the press—a convenient contrast to his more flamboyant stage mates in The Who—Entwistle firmly rejects that image in this conversation with *MR&M* and shares his thoughts on this latest album and his songwriting, as well.

PROFILE: JR. WALKER

By Ellen Zoe Golden and Rob Patterson

52

Renowned for his string of hits in the early '60s with the All-Stars, including "What Does It Take (To Win Your Love)," Jr. is still out on the road with a new band for the '80's which now includes his son on drums. Talking before a date in Roslyn, New York, Walker brings us up-to-date on the man with the sax.

COMING NEXT ISSUE!

A Session With John Cougar and the Zone
Profile: Producer Bones Howe
The Studio Business

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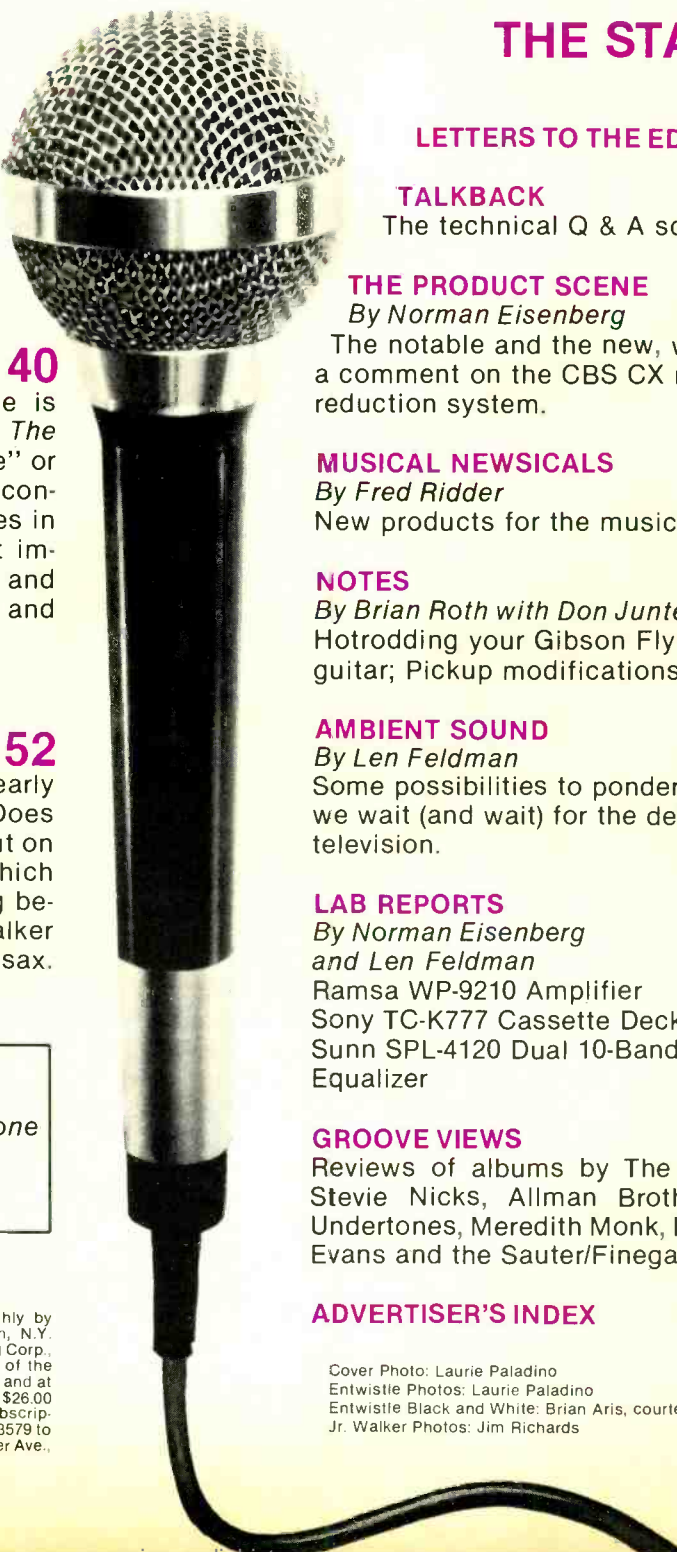
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LETTERS TO THE EDITOR

Teac's 22-4

Although I think your magazine is definitely #1 in its field, I read something in your September issue that disturbed me slightly. In your Lab Report on the Teac 22-4 4-channel open reel deck, Teac was scolded for not making the deck accommodate 10½" reels. The reviewer, Mr. Feldman, stated that the 15 ips deck wasn't professional because it didn't handle 10½" reels.

I would like to ask Mr. Feldman a few things about his statements.

1) How do 10½" reels make the music sound better on the tape?

2) I am no designer, but doesn't making a deck able to accommodate 10½" reels require bigger motors, bigger cabinet, bigger reel brakes and thus a bigger price tag?

3) Why would Teac make a 10½", 15 ips deck when they already have the A-3440 and why would they make a 7", 7½ ips deck when they have the A-2340?

4) An 1800' 7" reel of tape lasts over 22 minutes at 15 ips. How many songs do you know that last over 22 minutes?

5) Why do you reprimand Teac for bringing out a deck that gives high quality sound at the lowest price just because it doesn't "look professional" and satisfy the snob appeal in the minority of some people?

I applaud Teac for introducing the 22-4 and also the 7" reel, 15 ips, half-track stereo open reel deck 22-2. I know of no other company that makes tape decks in so many combinations and features. Apparently Teac was thinking of sound quality first, economics second, and "professional looks" last. And for these reasons, Teac has consistently brought out quality machines that are usually big hits with the consumer.

—James Tate
Wavelength Studio
Hermitage, PA

We received this response from Drew Daniels of Teac:

After speaking with Len Feldman about the review of the Tascam 22-4 that appeared in the September issue, primarily to discern the reason for a comment about the machine's lack of 10.5 inch reel capacity. I reminded him of the Tascam 40-4, and the Teac A3440—which is electronically identical to the 22-4 save the presence of microphone preamps—whereupon he suggested it would be a good idea to remind our readers as well.

The prime reason for our introduction of the 22-4 was the desire to keep supplying the needs of our customers whom our ten years of experience with this type of machine have shown, need a way to keep down the costs of multi-track recording. This puts multitrack capability in the greatest number of hands.

Two of the best ways to reduce the cost of a recorder are eliminating features that are rarely used, and reducing the size and weight of motors. When you don't need to swing big metal reels, you can use a lot less horsepower.

For the 11-minute difference in tape time (at 15 ips) between



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the 40-4 and the 22-4, you get a cost saving of \$675, and then an additional saving of from \$3 to \$10 per reel of tape.

You can put six, three and one-half minute tunes on a reel with the 22-4, or a 22-minute Multi-Image show, at 15 ips! Personally MI presentations longer than that tend to make me nod off!

If I were starting to assemble a multitrack setup on a budget, I would look at the \$675 saving as a means of acquiring one really good microphone, which could mean the difference between demo and album-quality sound. A little skimping is possible if you skimp in all the right places, and one of these is metal reels.

All in all, history shows very strong public approval of small reels by folks who make their statements on tape, not with tape.

—Drew Daniels

Tascam Applications Engineer
TEAC Corp. of America
Montebello, CA

A Different Drum

I would like to take this opportunity to let you know that I find your

publication to be one of fine quality. I have found it invaluable as a 4-track hobbyist. Your product tests are done utilizing state of the art techniques, and your writers' features are always on relevant and interesting topics. I would be interested in reading about some techniques to simulate drum and percussion sounds by using household items prepared in various ways. I don't own drums, but have come up with strange ways to simulate them. I think it is a growing need among serious hobbyists like myself.

—Joseph Vocino
Boca Raton, FL

We'll see what we can do about articles on simulated drum and percussion sounds. It sounds like a good idea.

What's So Bad About Four?

The story on Multi-Track Magic starting in the May issue of *Modern Recording and Music* was one of the best stories that I have ever read. I'm saying this because I own a 4-track studio and I'm very glad to see that there are people out there who take an interest in

4 tracks. The story went into depth on what you can do with 4 tracks which some people find hard to believe, but Multi-Track Magic said it all. I run into problems all the time with people in my studio about tracks. They come to see the studio and as soon as they find out that I only have 4 tracks, they tell me that they need 8 or 16 tracks to do what they want to do, which I find a big hassle. I do things in the studio with 4 tracks that people can't believe can be done on 4 tracks. I compare some of my recordings with recordings that were done on 16 and 24 tracks and they don't sound any better than what I do. I also listen to other 4 track recordings that are done in other studios and they don't come near mine. I have people tell me that whatever I'm doing to get the sound that I'm getting is just pure luck, but how can I have that luck nine out of ten times? People also tell me that if you are really getting this sound in your little 4 track studio why aren't people doing stories about you? It just seems to me that people today think that 4 track isn't good for them because they read all the stories about people doing things in 16

What's your EQ IQ?

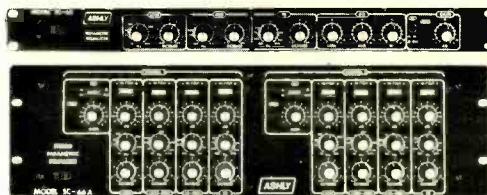
For years, most of the world has relied on Graphic Equalizers for control of frequency response. After all, you can create any response you need and then see exactly what you've done by the position on the sliders...right?

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track studios and about how good the sound is. Maybe your story will help to show them what the difference is.

—Keith A. Gutschwager, President
Kewall Productions
Recording Studio
Bay Shore, N.Y.

A Two-Way Speaker

In what situations would a two-way loudspeaker be the speaker of choice? I know 3 and 4-way systems are generally used in sound reproduction systems that are used for reproducing music, but I assumed that in small auditoriums the two-way system would be preferable.

—Max Trent
Fresh Meadows, NY

You are basically correct. The two-way system is best for small auditoriums because of its lower cost and its adequate frequency response. They generally are more adaptable to monitoring rooms, hi-fi installations and other short throw applications. A single horn and low frequency unit can sometimes be suitable for church sanc-

tuaries, school auditoriums, and auditoriums seating under 1,000 people. Different or unusual architectural shapes may require two or more horns to give sufficient vertical horizontal angular coverage. In some situations which are sound absorbent, more than one direct driver low frequency unit may be required. For more detailed information on the two-way loudspeaker, we recommend the book, The Complete Handbook of Public Address Sound Systems by F. Alton Everest. It is a TAB book, Number 966, and can be obtained by writing to TAB Books at Blue Ridge Summit, Pa. 17214. There is a section on the two-way loudspeaker and the coaxial two-way loudspeaker, among other sound reinforcement systems and techniques.

The Issue of Schools

I was disappointed to read in your September 1981 issue (*Letters*, your response to Graziano) that you are "disinclined to publish lists of (recording schools, as (you) cannot pass judgement on the relative merits of each." I think that you are doing your readers a

disservice here, and would like to make several comments, from my position as an educator and recording engineer, in this regard.

1. You publish an excellent list of hardware available in our industry each year (your *Buyer's Guide*). In it, you make no attempt to pass judgement on the relative merits of each piece, but rather content yourself with supplying manufacturers' information for your readers' use. I personally have found your guide to be very useful; it is a handy and comprehensive reference. I cannot imagine anyone expecting you to pass judgement on the relative merits of each piece you list. Why should a listing of schools be different in this regard? I believe that there is no difference.

2. Your readership is very likely to both desire and need educational listings, as you very accurately address the needs and interests of the beginning "creative audio" or "semi-pro" musician/engineer. The number of requests in your *Letters* column for information regarding formal training suggests that this is an area of concern for many of your readers.

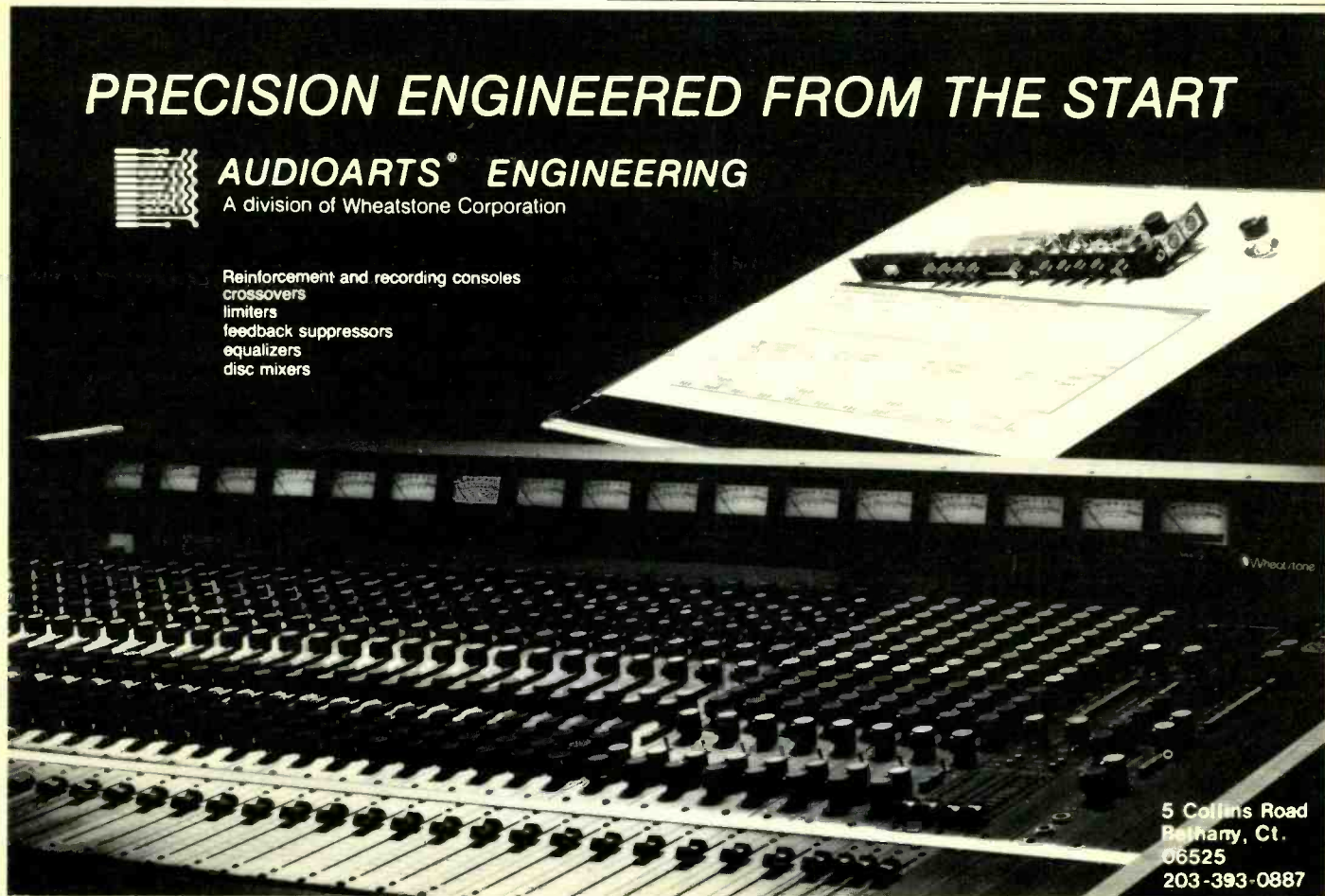
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3. You recently published a letter from Leo de Gar Kulka (of the College for Recording Arts) which called for you not to publish a list of schools, reasoning that schools differ greatly (they do), that not all schools are accredited (they aren't all), and that students might be enticed to a school that was not adequate for their needs by use of such a list (baloney!). Mr. de Gar Kulka concluded his letter by explaining why *his* school would be adequate for your readers' needs, which

struck me as a little self-serving. However, lists of schools are common. All high school guidance offices carry extensive lists of colleges (Barrons and Lovejoy's are two excellent examples), but ours is an obscure field and general *current* listings of educational options in audio are both rare and desirable. I call upon you to incorporate such a list in your next *Buyer's Guide*, and to update it annually.

Specifications might include: faculty/student ratio, nature of studio

facilities, total instructional hours in program, aim of program, existence of placement services, degrees/diplomas/certificates awarded, accreditation, availability of housing, years in existence, tuition and fees, etc. These items, combined, provide a pretty clear picture of a school, and would provide an excellent reference source for your readers considering training in audio. None of the above information calls upon you to judge merits, and all is readily available from the schools themselves.

I am director of what I believe is the finest audio training program in the country. I believe that such a listing would be in our best interests, because it would clearly indicate the relative merits of our program. However, that is not my point in writing. Instead, I am expressing my very strong feeling that publications such as *MR&M* are the *best* way for readers to find out things (in this field) like: what is available? what is best? what is best for me?

I hope that you will reconsider your editorial stance on this. Just so your readers know that I am not plugging my school, please withhold my address and institutional affiliation. Thank you.

—David Moulton, Director
Sound Recording Technology

I'm afraid we cannot compare recommending equipment to recommending colleges. The business of learning is of quite a different order than that of utilizing a piece of machinery, no matter how delicate and complicated. There are personal factors and variables that a student must consider, and the room for "impression" or distortion when describing or interpreting the merits or "specs" of a school are far greater than in hearing specs about a piece of machinery. This everyone knows. We feel that since there are other, more complete means of gaining information about educational institutions, people should utilize those instead of depending on our admittedly limited knowledge of the various educational institutions and their current courses and programs.

Pleased

Craig Anderton's Hot Spring reverb has proved to be an excellent solution to the high performance-low cost

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Now the PL88 is ready to be a star. Every vocalist deserves a top-quality microphone if his or her potential is to be realized. This is specially true if you or your group is just starting out. The PL88 is a dynamic cardioid mike with Electro-Voice quality and reliability at an affordable price.

The PL88 offers many of the outstanding features developed for the other PL vocal microphones — features like superior resistance to handling noise, voice-tailored frequency

response and outstanding gain-before-feedback. The PL88 is definitely star quality.

The PL88 from Electro-Voice — for under \$70 it's a competitively priced mike that won't compromise your standards of quality. Try it at your Electro-Voice Pro-Line microphone dealer.



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IBANEZ UE-405



Includes:

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- Parametric EQ
- Analog Delay
- External Effects Loop
- Remote Footswitch

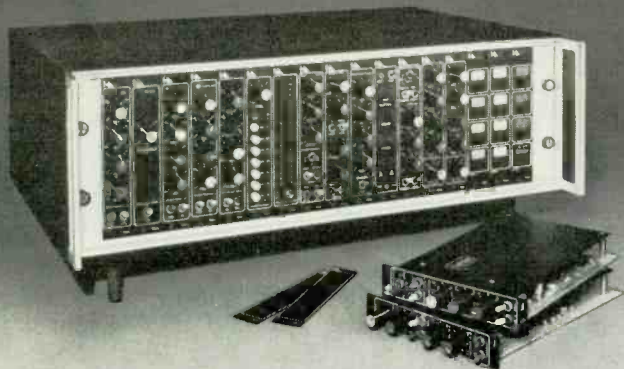
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Modules To Date Include:	RA204 Parametric Equalizer	RA208 Modulator	RA212 Mic/Line Amp
RA201 Noise Gate	RA205 ADT/Delay	RA209 Mixer	RA213 Mono MDA.
RA202 De-esser	RA206 Oscillator	RA210 RIAA Preamp	RA214 Stereo MDA.
RA203 Compressor-Limiter	RA207 LED Meter	RA211 Timer	RA200J Patch Panel

CIRCLE 195 ON READER SERVICE CARD

reverb problem. I own a Tangent 1202 mixer which I modified to include the HS reverb. The modification was easy to perform, requiring less than one hour's time. This was in addition to the hour needed to mount the components on the circuit card and wire the springs.

The existing spring was unbolted and removed from the bottom cover of the 1202. Five wires were unsoldered from the Tangent reverb circuit card (+15 v, -15 v, ground, reverb signal in, and signal out). Holes were drilled through the bottom of the 1202 for mounting the HS springs and circuit card, and a hole was drilled in the 1202's faceplate at a convenient location for the reverb overload LED. The wires were then reconnected at the appropriate locations on the HS circuit card, the springs and the circuit card bolted in place, the overload LED mounted, and that was it.

The modification caused no problems, worked great the first time, and cost only \$60. Thanks, Craig, for a great project.

—Bill Tress
Jupiter, Fl.

Studio Information

Just a note to say that the "Studio Notebook" is really great. We have a recording business. It is now in its second year. We have completed one album and it has been a great success. In fact, a gentleman in Colorado heard it and said it had superb quality and he wants to send a copy of it to Johnny Cash, Johnny may promote him. The "Studio Notebooks" have really helped my husband and me, however, we were wondering if by chance there is a book that we could purchase to help me in the way of governmental requirements and bookkeeping requirements. I am taking care of the books but as for knowing everything required for the studio, I am lost.

Please help us by referring us to a book or someone who may know. Your cooperation would greatly be appreciated.

—Carol Albrecht
Albrecht Recording
Mansfield, Ohio

We recommend that you refer to the *Music Almanac, 1980-81*. In it there are chapters on "How to Raise Money,"

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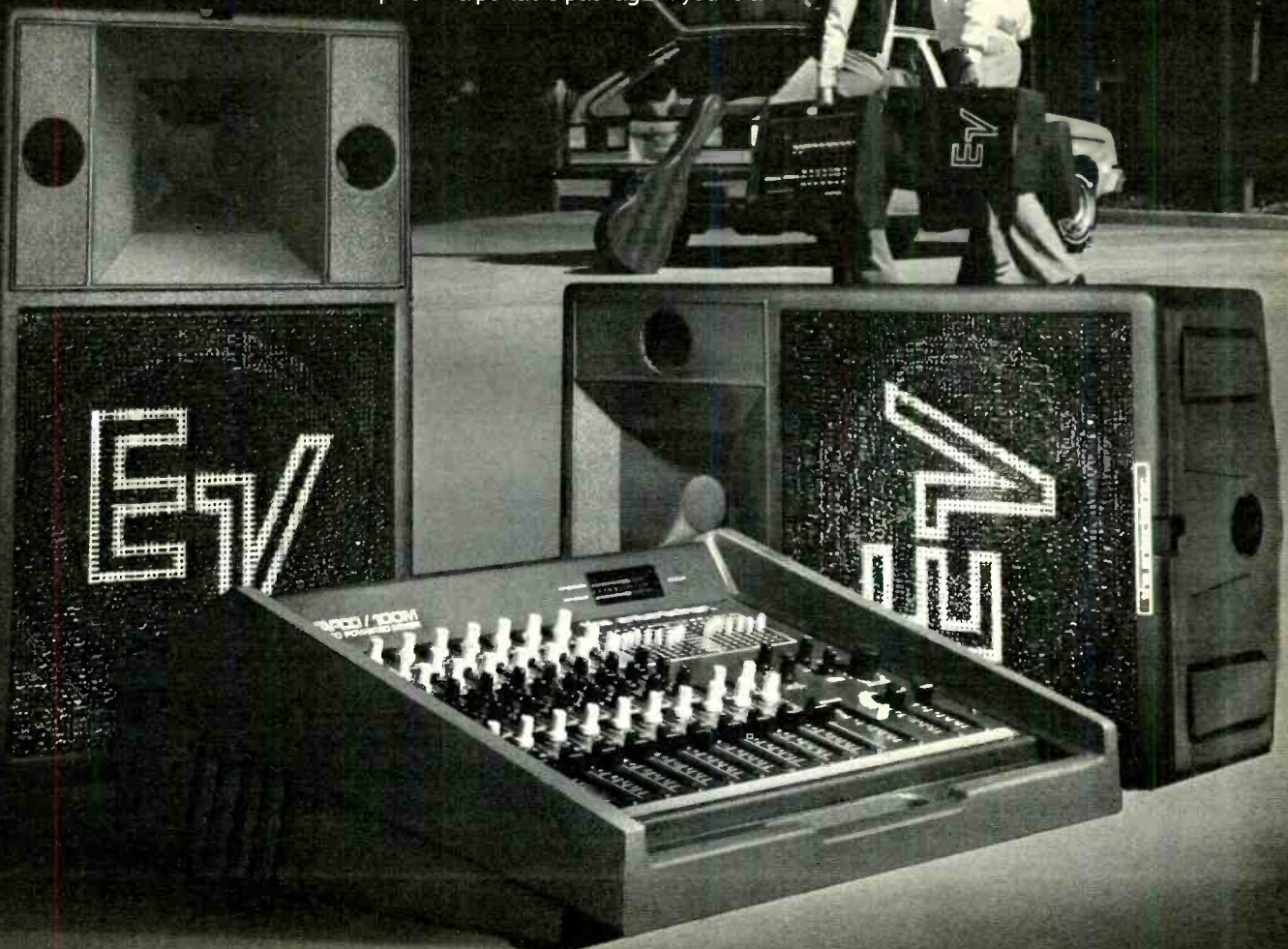
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6F No. 2 Taro Building
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Tokyo, Japan 162



CIRCLE 189 ON READER SERVICE CARD

"How to Organize Your Business: Sole Proprietorship, Partnership, or Corporation," among other subjects that you might find quite helpful. The book is written by Ronald Zalkind, and is published by Schirmer Books, a division of MacMillan Publishing Co., Inc.

More Trademarks

You recently printed a letter pertaining to trademarks. I was wondering if there was a difference in trademark rights applying to record labels and song titles.

—Marion White
Trenton, NJ

The same rules do apply to record labels. As with group names, new record label names should be checked. Annual lists are printed by the music business trade magazines, and these should be looked at. The trademark of a record sometimes attracts customers when that label has managed to attain a reputation.

Song titles are generally more difficult to protect. Composers should not

use titles which are similar to already existing titles—they run the risk of losing performance credits with ASCAP or BMI because of logging mistakes. If a title is already well known, the music publisher can then protect it or use it. The music publisher usually has a contractual obligation to pay a portion of the net proceeds over to the composer. Song titles can be used as movie titles, or for commercials, sometimes with a change in lyrics.

Help From Hicksville

We received the following letter from a helpful source:

We're writing in response to Mr. Nick Cutts' letter in your October 1981 Talkback column (see "Necessity the Mother of Invention?" page 22) regarding his inability to get speaker hardware.

The Technikit Unlimited Company is a new company that specializes in hardware for the recording industry. We can be reached at Post Office Box 500, Hicksville, New York 11801 for our free catalog, which lists all of our pro sound hardware. This includes:

speaker mounting kits, rack mounting kits, XLR hardware kits, console hardware, and many other types that have been impossible for the average studio to find.

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—Matt Goldberg
Vice President
Technikit Unlimited Inc.
Hicksville, N.Y.

What's Out There?

First off I'd like to say that your publication is one of the few magazines still worth buying. I love it! Excellent reading, excellent information, and excellent reviews! Keep up the good work! But I will get to the point of my letter:

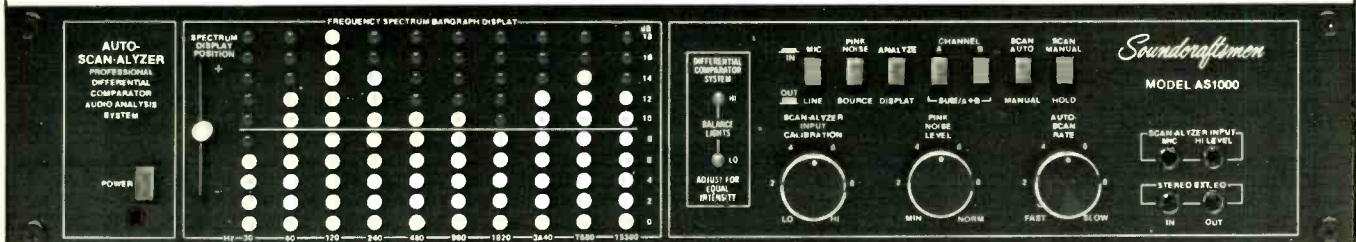
I am planning on entering the world of recording engineering in the not too distant future (hopefully), and I would

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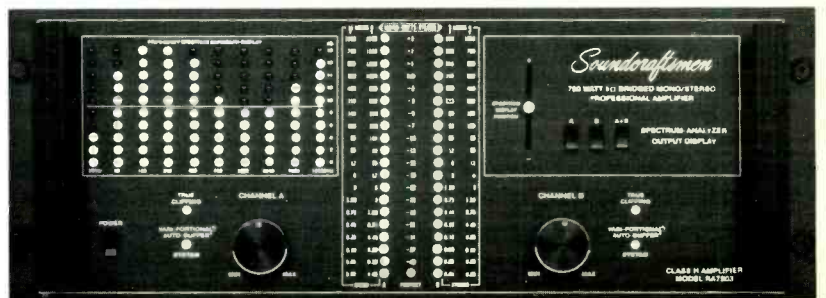


Soundcraftsmen's new Patent Pending Differential/Comparator circuitry approaches EQ analysis with a revolutionary technological concept to provide precise readout with simplified field-usable instrumentation. It enables an accurate analysis of audio imperfections and at the same time compensates for all direct measurement imperfections. As in any high quality measurement system, the end result is directly related to the capabilities of the measuring equipment, and in Soundcraftsmen's case, that measurement readout capability is

1/10th of 1dB—(0.1dB). Until now, every available method of EQ analysis has included errors of 1 to 4dB, due to the response time, the direct measurement circuitry and the actual readability errors inherent in SPL meters, bar-graphs, LED lights, or other graphic displays. Results obtained with these direct measurement methods cannot be precise, because their accuracy is limited by their cumulative tolerances. All of the foregoing EQ analysis inaccuracies are completely bypassed and eliminated by the Differential/Comparator method of measurement.

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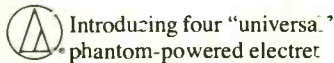
ATM11R

ATM10R

ATM51R

AT8501

ATM91R



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Before you add another microphone, compare our sound, our convenience, our reliability, and our cost. Write for literature and list of nearby ATM microphone specialists. Get great sound...right from the start! AUDIO-TECHNICA U.S., INC., 1221 Commerce Drive, Stow, Ohio 44224. (216) 886-2600.

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CIRCLE 102 ON READER SERVICE CARD

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like to know if you feel this field holds good job opportunities for the "Junior Engineers," the beginners. I've written to many recording studios around my area (without much response yet) asking them the same question. What do you think? Are there *actually* nation-wide listings that can help you find a job—or the job find you, whatever the case might be? Do they really work for you?

As you can see I am wondering what the outcome of my classes will be. Incidentally, the classes that I will be attending will be the Full Sail Recording Workshop in Orlando, Florida, if that helps at all.

Thanks for all your trouble.

—Alfonzo Boschetti
Oneonta, NY

We are optimistic about your future as a "junior engineer." Though job prospects are never completely predictable, we feel confident that once you are enrolled in classes, you will make contacts and learn about job opportunities in the field. About the nationwide listings—don't rely on them solely. As in any other profession, there are

going to be jobs that are not publicized, and a little digging can't hurt. Inquire into different studies yourself, and ask people you work and learn with. Information still travels by word of mouth, and connections and contacts, unfair as it seems, are often the route to a position. Good luck.

Old Tunes

Is there a search service for old recordings as there is for out-of-print books? Over the years many readers have asked us to obtain recordings which may or may not have been cut from the catalog. How do you advise readers with similar questions?

—Raymond Lowery
News and Observer
Special Projects Editor
Raleigh, NC

Music reviewer Jeff Tamarkin advised obtaining an issue of, or subscribing to, Gold Mine magazine, where you can find hundreds of ads for old records. Gold Mine is a record collector's magazine, and if they can't provide you with what you're looking for through

their ads, someone there may have more specific information for you. Write to them at: Gold Mine, P.O. Box 187, Fraser, Michigan, 48026. Good luck. You might also try the Record Collector's Handbook—Official Price Guide for Collectible Records, 1945-1978, distributed by O'Sullivan & Company, and written by Osborne and Hamilton.

Address Omitted

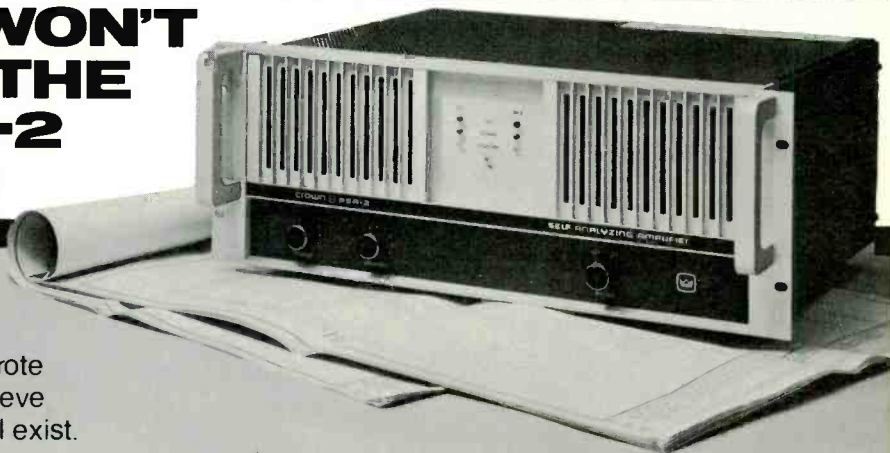
The day I received my September issue of *Modern Recording & Music*, my girlfriend picked it up to look at it and she couldn't help but notice the letter written by Janice Jones asking about Music Therapy. However, there was no address given for the National Association for Music Therapy. It would be appreciated if you could print the address. Thanks a lot.

—Joe Summers
Rockford, IL

Another omission. Sorry about that. The National Association for Music Therapy is located at: P.O. Box 15, Lawrence, Kansas, 66044.



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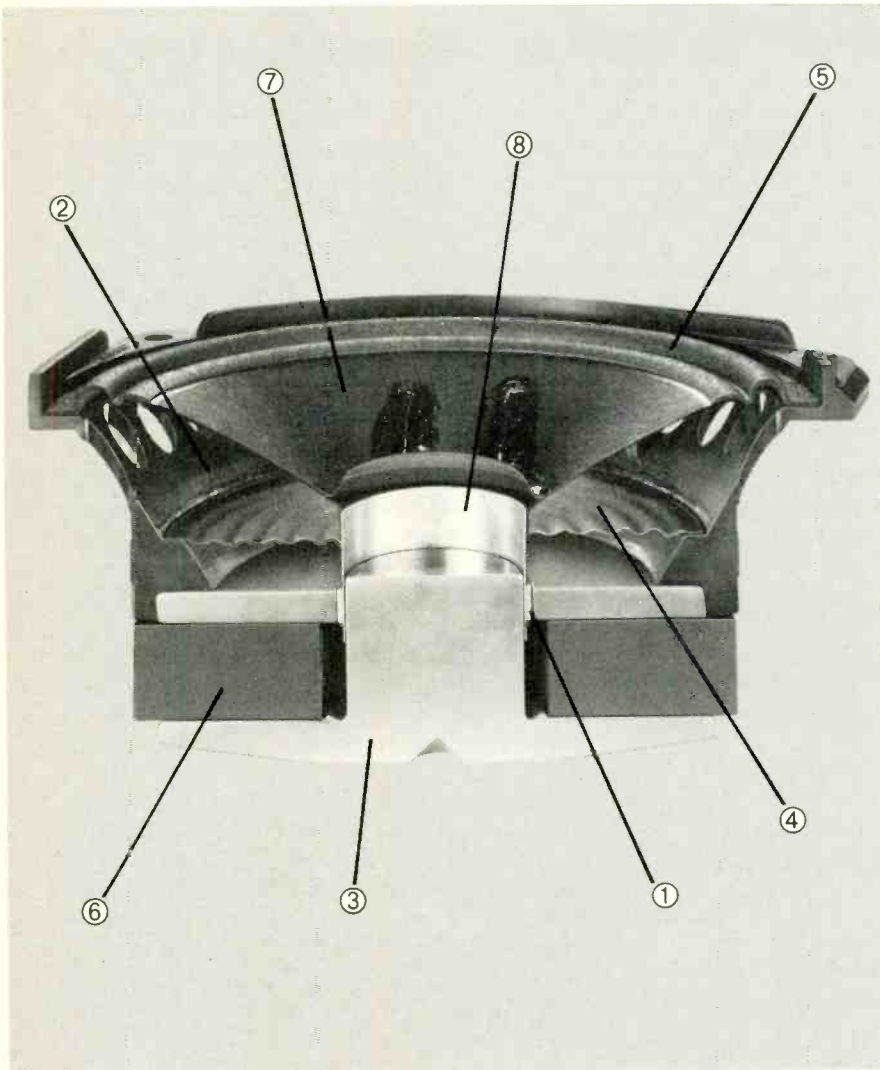


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TALK BACK

"Talkback" questions are answered by professional engineers, many of whose names you have probably seen listed on the credits of major pop albums. Their techniques are their own and might very well differ from another's. Thus, an answer in "Talkback" is certainly not necessarily the last word.

We welcome all questions on the subject of recording, although the large volume of questions received precludes our being able to answer them all. If you feel that we are skirting any issues, fire a letter off to the editor right away. "Talkback" is the Modern Recording & Music reader's technical forum.

The Flux is the Crux

I have heard that Nakamichi uses a different type of equalization for recording than other deck manufacturers, and therefore tapes made on their machines are not entirely compatible with other machines. To the best of your knowledge, is this true?

—Steve Riley
Pocatello, Idaho

Thank you for this opportunity to clarify a common misconception regarding Nakamichi's adherence to standards. The question of what constitutes "standard equalization" is really quite simple—one carefully reads and adheres to published standards. The IEC (International Electrotechnical Commission) publications are the accepted standards throughout the world; the one that applies to cassette recording is Publication 94.

Publication 94 specifies the standard recording curve in terms of the short-circuit flux on tape as a function of frequency. In theory, the short-circuit flux can be determined by measuring the voltage developed across the terminals of an ideal playback head. Please note that it is

the recorded flux level that is specified—not the playback equalization—for here is the crux of the misunderstanding.

If the ideal playback head existed, it would only be necessary to provide electrical equalization with a low-frequency break point of 3180 μs and a high-frequency break point of 120 μs (for Type-I tape) and 70 μs (for Type-II, III, or IV tape). Unfortunately, the ideal playback head does not exist. The main differences between a "real" and an "ideal" playback head stem from the finite polepiece length and the finite gap length of the real head, the magnetic losses in the core and the electrical ones in the windings, and the less-than-perfect contact between polepiece and tape.

Polepiece length affects response primarily at very low frequencies; it produces the so-called "contour effect" otherwise known as "head bumps." The other differences between the real and the ideal affect the high-frequency portion of the spectrum. The head's surface finish has a major impact on "spacing loss" which is most severe at short wavelengths (high frequencies). "Gap loss" comes into play as the recorded wavelength begins to approach the effective magnetic length of the gap. Similarly, the losses caused by the head's finite electrical inductance are most severe at high frequencies, and, in general, magnetic losses in the core also increase with frequency. Fortunately, it is possible to either calculate or empirically determine many of these losses. For example, core and winding losses are easily determined by forcing an appropriate current through the windings with the head connected to the playback amplifier. The difference between the ideal response and the measured response establishes the losses involved. Gap and spacing losses are readily calculated if one knows the true

magnetic gap length and the actual tape-to-head separation. Since "work hardening" of the magnetic material prevents the true magnetic pole from being actually at the surface of the head, it is imperative that the head be fabricated in such a way as to minimize damaging the magnetic material and thus losing control over where the effective magnetic pole is located.

Play-head losses can be determined quite accurately if proper care is taken in the fabrication of the head. Knowing the losses, one can compensate for them in the playback electronics and so produce the same effect as if one had started with the ideal head specified by the standard. In fact, to be in compliance with the standard, one must compensate for the playback head losses for the standard specifies recorded flux as seen by an ideal playback head. It does not specify playback equalization. If you think about it, this makes a great deal of sense. It is the magnetic recording that is taken from machine to machine, and therefore it is the recording that must be standardized. Playback equalizers do not hop from deck to deck and it would be rather foolish to standardize them independently from the playback head with which they are used.

Compensating for play-head losses requires substantial additional circuitry; it also requires carefully controlled head fabrication so that the compensation works. Thus it is not surprising that many less expensive decks avoid this complexity. It is not difficult to convince oneself that one is in compliance with standards merely by adopting a 70 or 120 microsecond electrical playback equalization, and one can find test tapes whose high frequencies are boosted beyond standard level to confirm one's delusion. On such tapes, a properly equalized deck such as a Nakamichi will appear to have too hot a high end. On a tape recorded in

accordance with IEC standards, a Nakamichi will have a flat response.

We are very sensitive to this point because some have suggested that Nakamichi recorders are "non-standard" and implied that we have in some way "cheated" in order to achieve the response for which we are famous. Quite the contrary; we have always adhered to the letter of the standard. Actually, as play-head technology improves, we find several competitive decks meet IEC standards at least to as high a frequency as typical test tapes extend.

—Ken Ohba
Marketing Manager
Nakamichi Research (U.S.A.), Inc.
Santa Monica, Ca.

[Mr. Ohba also included a copy of Nakamichi Technical Bulletin, No. 2, which deals with the topic of Playback Equalization in detail. We, of course, were unable to reprint it here, but copies of the Technical Bulletin are available free of charge from Nakamichi. Write for Bulletin No. 2 to Nakamichi, 1101 Colorado Ave., Santa Monica, California 90401, or call 213-451-5901.]

Mirror Image

In the past few years I have learned an awful lot from your answers to readers' questions. Many were similar to problems I was having. Now it's my turn. My band once recorded a demo tape in a small local studio. For reverb, the owner patched into the spring reverb unit in a Fender Twin Reverb amp.

Since then, I've acquired a Teac 3340S, a Teac Model 2 mixer, an MB-20 meter bridge as well as a Fender Twin. As the engineer that recorded our demo tape has since moved away, I can't ask him how he patched into the amp. From what I've told you of my equipment, can you tell me if it's possible to utilize the reverb in my "Twin" to achieve an acceptable reverb sound?

—Willie Shaible
Williamsport, Penn.

I can suggest a simple way to get reverb from your Twin. Patch your effects or echo send into the number 2 input of the amp. The reverb control should be on 10. You should put the amp in a separate room to avoid acoustic leakage into your control room. Then mic the amp and

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route the mic into your final mix via an unused channel. This becomes the Echo Return.

Keep the board's echo send controls at around 11:00 max and adjust the amp's volume and tone controls for the best reverb sound. Keep the volume up enough to overcome amp noise.

A slight disadvantage of this method is that there will be some direct signal coming out of the amp. You might have to readjust your main signal's fader when adding reverb.

—Richard P. Robinson
Technical Secretary
Trode Nossel Recording Studios, Inc.
Wallingford, Conn.

Dr. Dokorder

I have a Dokorder 1140 open-reel 4-channel tape deck. The problem that I have with the machine is that whenever I try to do some sound on sound recording (recording on one of the other channels after the first channel or first two channels have been used; I sometimes use two channels on my initial recording because I have a stereo mixer), I begin to get a static type of noise. The closest I can come to

describing it is to say that it sounds like the type of static you'd get from an old radio when changing from one station to another. Another example might be that it sounds like white noise, but unstable; not as consistent as white noise would sound. The problem is intermittent (it stops and starts at different times) and it will occur on any of the channels which I am overdubbing. Once the noise is on the tape the machine will not erase it.

I was originally using Maxell tape but for the last two years I have been using Ampex 456. The noise occurred with both brands of tape, however. The mixer that I am using is a Tapco 6200B stereo balanced mixer. Again, the noise only occurs on sound on sound recording, not on regular recording or playback.

I took the machine to Audio Projectronics, a repair shop in Baltimore which was an authorized Dokorder service center before Dokorder went out of business. They have a shop manual for the machine. The machine has been there approximately one month now. During my last conversation with one of the repairmen working there, I was told that they were unable to locate the

source of the problem. He said that he had tried several things and thought he had solved the problem each time, but that the noise continued to occur. He also said that because Dokorder is out of business, there is no one that he can call for additional advice.

Can you put me in touch with someone who might be able to resolve my problem with the information I have provided?

—James M. Lindsay, Jr.
Baltimore, Md.

While Dokorder is "out of business," as you say, there still exists, however, a higher authority in the person of Mr. Hirozo Kambe, director of the Dokorder Service Center, Inc., in Lawndale, California. Mr. Kambe has informed us that you can send your machine to him, along with the description of the problem, for repair. He has advised us that repairs might take anywhere from 4 to 6 weeks, but all work carries a 30-day warranty. You should send your machine to his attention at Dokorder Service Center, Inc., 2720 S. Harbor, Santa Ana, California 92704. Mr. Kambe can be reached by phone at 714-966-0787. For parts or

SIX SIMULTANEOUS DELAYS



The A/DA Stereo Tapped Delay (STD-1) is the only voltage controlled analog delay capable of producing six different delays simultaneously, making it the most powerful time processor available for "stereo" flanging, doubling, and multi-voice chorus effects.

Conventional delays take one input signal and produce one output signal at one delay length. When a signal enters the STD-1, it is delayed, then tapped at six different non-harmonically related points ranging from 1.3 to 55.5 ms. This produces six variations of the signal, each capable of being assigned and mixed into two output channels. The non-harmonically related taps create a natural sounding time delay, while other units at best, are multiples of some fixed delay time, creating predictable sounding effects.

The extensive delay section produces a 1-5x continuously variable delay range from each tap. The delay time can be swept at rates varying from .1 to 25 seconds. As the Sweep rate is increased, the Sweep range automatically tapers so you perceive a change in rate only, without an accompanying change in

range as is common with other units. (You're not forced to compensate by backing off the C.V. Mix when you increase the Sweep speed). Further, the Sweep Modulation control superimposes a higher frequency sweep pattern over the regular sweep. This allows effects like a vibrato sweep to sweeps which appear to move randomly like sample and hold on synthesizers.

The regeneration section has been carefully tailored to achieve mechanical to natural sounding ambiances by providing separate Level, High Cut equalization, and Tap select controls that can be switched in or out from the front panel or remotely via the rear panel jack. The Level control determines the decay time at long delays (up to 15 seconds), and the amount of resonance at short delays (up to +12 dB). Since a reverberant signal primarily consists of bass and lower midrange frequencies, the High Cut feature in the STD-1 reduces the high-frequency content in the program material as it recirculates through the system for a more natural sounding echo. At longer delay

times, echoes can be textured from a hard reverb to a soft spacious drone. At short delay times, the resonance can be shaped from a sharp "metallic ringing" sound to "boomy" bass peaking.

All these features working independently and in conjunction, allow such effects as high flanging, low flanging, voice doubling, multi-voice chorus, echo, reverberation, machine gun reverb, singular to multiple "doppler" effects, vibrato, and highly resonant flanging. Never before has such an unlimited number of delay combinations been available to the musician, engineer, or concert sound technician.



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CIRCLE 187 ON READER SERVICE CARD

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other information, write directly to P.O. Box 8, Lawndale, California 90260.

For those others among our readers who have had experience with the Dokorder 1140, Mr. Lindsay has supplied us with both his address and that of Audio Projectronics. If anyone feels that he can supply information that would prove helpful, please write to James, care of our Editorial Offices, and we'll see that the information gets passed along.

Are You Reeling in the Years?

I purchased a reel-to-reel tape duplicator, and I am unable to find a service manual for the record/playback electronics. The electronics were manufactured by Expert Electronics and the tape transports by Ampex (they are Ampex AG-500 units). I cannot find a model number. Can you help?

—Thomas James Slivka, Sr.
Munster Recording Co.
Munster, Ind.

Well, to be honest, we couldn't, but Vern Sauer of the Ampex Regional Service Department in Elk Grove Village, Illinois, sure was. While Mr. Sauer wasn't familiar with "Expert Electronics" (optimistic name, though), he did go on to tell us that the AG-500 transports were marketed in several different versions, including some government issues. However, he also recalled that the AG-500's were usually sold complete with their own electronics. He estimates that the unit you have now is probably about 10 years old. Happily for you, the manual for the AG-500 transports and electronics is still available from Ampex. Write for Manual Number 4890169, enclosing your pre-payment of \$15.00, to Ampex, 719 W. Algonquin Rd., Arlington Heights, Illinois 60005. If you have additional questions, call the Service Department at 312-593-6000.

Man with a Horn

I've been hearing about, and on two occasions have heard for myself, a rather rare low-frequency bin called the "Martin Horn." I believe the inventor is an English engineer by the name of Dave Martin and that the horn is quite popular in Europe, although it's also used here in the U.S. by Tasco Sound Ltd. It was mentioned by author Don Ket-

teler, albeit briefly, in his description of Tasco's 4-way stage P.A. in the "Meat Loaf 'Live' and Recorded" cover piece in the January 1979 issue of MR (see page 52).

I'd like to learn more about its background, where it can be purchased, and the basic specs of the horn.

—Stewart Percy
Watertown, Mass.

Getting in touch with the tech staff of one of the busiest sound companies in the country isn't easy (going on the road has a way of emptying shops rather rapidly!), and Tasco in Newbury Park, California, certainly qualifies as a member of that club. Tasco, whose personnel are among the most knowledgeable and obliging as a rule, wasn't able to answer all your questions at this time. They did, however, very kindly supply us with an address and phone number for Mr. Dave Martin, who is indeed the creator of the Horn. You can write for additional information on specs and U.S. distribution to Martin Audio, attention Dave Martin, 56 Stanhope St., London NW1, England, or phone (01) 388-7164. Stay tuned here, as well, for if we get any more information on the Martin Horn, we'll be sure to pass it along.

Pilot to Co-Pilot

What are the major differences between a Tascam 40-4 and the higher-priced 4-tracks, such as those made by Ampex, Otari, MCI, etc.?

Is it possible to duplicate the sound of the higher-priced layouts using, for instance, the 40-4, a Teac A-3300 SX 2-track, a Tapco 6000, an Orban 111-B spring reverb, JBL 4313 monitor speakers and Shure SM81 and SM58 microphones and produce professional sounding tapes?

—John A. Marsiglio
Irwin, Penn.

John, the major difference is price. The difference in level of professionalism that you seem to be hinting at rests as much with the person behind the controls as it does with what the controls themselves are. Your desire to "duplicate" the sound of high-priced equipment for "professional sounding" results is rather nebulous: Do you want to make good sounding, respectable demos? Yes, that's more than possible. But masters to sell to a record com-

pany? Probably not. Our gut feeling has always been that anything is possible depending upon who's flying the plane (also known as the "Modern Recording & Music Aviation Theory"). Above and beyond any physical limitations that your equipment presents soar creativity, inventiveness and desire. Read Craig Anderton's "Multi-Track Magic: Creative Multi-Track Recording (Parts I-III)" in the May, July and August 1981 issues of MR&M. Talk about making a silk purse out of a sow's ear...Never underestimate your equipment because in this case it's what you hear—not what you see—that you get!

Hello, Mr. Chips

I cannot locate a chip, an LF356 to be precise. Can you help me to find a supplier who sells it?

—Bruce E. McElyea
Wichita Falls, Texas

The LF351 is an op amp made by National Semiconductor, and is designed to be a high-performance replacement for the 741 op amp. It uses bifet technology, thereby giving improved noise characteristics (and better high frequency performance) than a standard 741. The LF351 is available from many mail-order electronics houses; refer to the ads in a recent issue of *Popular Electronics* or *Radio-Electronics* for prices and terms.

Texas Instruments also makes an improved 741 op amp that is very similar to the LF351 called the TL081. It is available at Radio Shack stores. I also suggest you check out *Electronic Projects for Musicians*, since Chapter 2 has everything you need to know about finding and buying electronic components.

—Craig Anderton
Contributing Editor
Modern Recording & Music

[Thanks also to Michael Beigel of Beigel Sound Lab in Warwick, New York for his input on this question as well. National Semiconductor is located at 2900 Semiconductor Drive, Santa Clara, California 95051 and can be reached at 408-737-5000. Their Customer Service Department should be able to tell you where to get their chip locally, if you cannot find that information in the publications listed by Craig Anderton above.

—Ed.]


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112 C

Thanks to T. Roth & Another Pretty Face for their pretty faces! Photographed at Minot Studios, White Plains, NY

THE **PRODUCT** SCENE

By Norman Eisenberg

NEW ALTEC EQUALIZERS

Altec has added three graphic equalizers. The model 1651A is a single-channel unit with ten sliders providing ± 12 dB boost or cut at ISO one-octave frequencies from 31.5 Hz to 16 kHz. Filter sections are described as active-band rejection types with minimum phase shift.

The model 1652A is a stereo version of the above, with the same features on each of its two channels. Both these equalizers also incorporate a continuously variable high-pass filter (18 dB/octave rolloff), and a selectable low-pass filter (6 dB rolloff at 12.5 kHz).

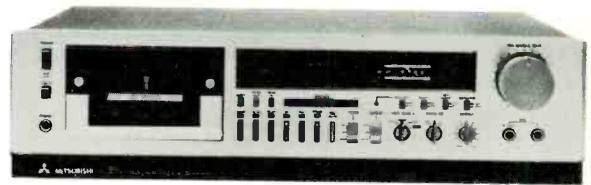


For maximum detail in response modification work, Altec offers the model 1653A, a mono one-third octave equalizer with twenty-nine sliders on frequency centers from 25 Hz to 16 kHz. A fourth-generation device, the 1653A also includes continuously variable high-pass and low-pass filters which provide rolloff at 18 dB/octave from "off" position to 20 through 160 Hz (high pass), and from "off" position to 5 kHz through 20 kHz (low-pass).

Filters in all three equalizers are parallel-summed, so that failure of one section will not affect the remaining filter sections operations.

CIRCLE 18 ON READER SERVICE CARD

DOLBY C IN THREE-HEAD DECK



Three heads and Dolby-C noise reduction are highlights of a new cassette deck from Mitsubishi. The model DT-35 also includes Dolby-B, and a switch selects between this and the new Dolby system which improves signal-to-noise by up to 20 dB and provides wider dynamic range for high frequencies. Also featured in the DT-35 is a two-motor transport controlled by IC logic circuitry with feather-touch controls. The deck has a fine-tune bias control, and its four-position tape selector includes a metal-tape position. Signal levels are displayed on a nineteen-segment fluorescent peak-reading meter. Full specs have not yet been released, but wow-and-flutter is said to be 0.04 percent (WRMS). Expected price is \$490.

CIRCLE 19 ON READER SERVICE CARD

WESTLAKE'S IN AND OUT BOX

Westlake Audio of Newbury Park, Ca. is showing its model CMB-2 which functions as interface adapter box, signal multing box, signal switching box and a trouble-shooting aid. Completely passive in design, the CMB-2 accepts male and female XLR, phone (TRS), TT (tiny telephone patchcord), phono, BNC, banana and terminal strip connections. By means of switch selection, the connectors can be isolated into a maximum of four sections, or they can function as one continuous twenty-six connector, three-conductor mult. The unit measures 4.5 by 2.5 by 7.5 inches and weighs under 2 pounds.

CIRCLE 20 ON READER SERVICE CARD

CABLE TESTER

Neutrik Products (a North American Philips company) has introduced its K-Check cable tester which consists basically of a test finger, battery compartment with a 5.6 V mercury battery, an LED display and a female XLR-type connector. A connection between the test finger and any contact in the female



connector will light up a corresponding red LED. A connection between the test finger and the shell (housing) of the female connector, or any connector plugged into it, will light up a green (for ground) LED. If connections are made to two or more contacts in the female connector, LEDs will light up for each contact involved. An accessory test lead permits using the device with cables that do not have a male XLR termination. And for cables with female XLR connectors on both ends, or ¼-inch phone plugs on both ends, other adapters (NAM-8 and NAM-9, respectively) can be used. With K-Check, Neutrik explains, cable testing can be speedy and accurate in regard to telling how a cable is wired, and whether inputs to audio devices are balanced or unbalanced, and whether they are of high or low impedance.

CIRCLE 21 ON READER SERVICE CARD

AUDIO PROCESSING TOOL

Capable of being rack-mounted or remaining portable, the "DynaMite" (TM) from Valley People, Inc., is described as a powerful, self-contained, self-powered processing tool. In the mono version (\$295) the device offers limiting, expansion, de-essing, noise gating, "Kepexing" and "voice-over ducking." The stereo version (\$495), to which the mono version may be converted, offers intercoupling capability via a switch, allowing any number of processing combinations such as an expander followed by a limiter or a dual threshold peak and average limiter with independent release timer or perhaps even a ducking de-esser. The device plugs in via ring/tip/sleeve jacks to -10 or +4 lines, and it can drive 600-ohm loads. Battery pack is optional.

CIRCLE 22 ON READER SERVICE CARD

EXPANDED RAMSA LINE

Panasonic has introduced new units in its Ramsa Localization Processor Series. The WZ-9500 consists of a processor (WZ-9501) and control (WZ-9502) which enable the recording engineer to creatively control sound source location within the frontal half of the listening space during the recording mixdown. The effects of this processing then may be reproduced via an ordinary two-speaker stereo system. The localization effects can be applied to six channels or tracks of a master recording. Continuous control of localization is made possible by the use of a joy stick. In contrast to conventional sound localization, the Ramsa technique is said to provide control outside the conventional sound field so that the sound is not "restricted within the space between two loudspeakers."



The 9510 system is known as a Localization Processor Distance/Space Effector. It consists of a WZ-9511 processing unit and a WZ-9512 controller. This system accepts six inputs, and the sound distance beyond the loudspeakers and "spaciousness" can be controlled separately by two independent faders. To achieve a precise feeling of sound distance and space, as many as six early reflections and later reverberation can be separately controlled. Each direction and sound-reflection SPL can be pre-adjusted. This Ramsa system, explains a company spokesman, "has been developed to give the recording engineer and artist dynamic possibilities when creating a recording. Aside from giving a piece more feeling and depth, the artist's communication with his audience through that piece can be more exact, more personal than conventional techniques have provided."

CIRCLE 23 ON READER SERVICE CARD

COST CUT ON POWERED FRAME

The price of the dbx F-900 powered frame has been reduced from \$800 to \$695. The F-900 provides power, input and output connections, and it serves to mount up to eight signal processing modules in the dbx 900 series. These include the 902 De-esser; the 903 Over-Easy compressor/limiter; the 904 noise gate; the 905 parametric equalizer; the 906 flanger; the 411 Type I noise reduction module; and the new dbx 941 and 942 Type II broadcast noise reduction modules. The rack mount is 5¼ inches high, and standard connectors permit easy wiring into any system. Interchangeable modules slip in and out in seconds, and the frame provides sufficient power for four additional external modules via a back-panel connector. A spare bay handles module storage.

CIRCLE 24 ON READER SERVICE CARD

PRO MIXING CONSOLE

Offered for use in smaller sound reinforcement jobs, submixers, keyboard mixers, as well as in theatrical, church and broadcasting applications is the Series 1000 console from Audy Instruments of Salem, Mass. Available in 8-, 12- and 16-channel versions, each console is built into its own Anvil flight case. In addition, the 8-channel model is available in a 19-inch rack-mount version. Series 1000 consoles have balanced transformerless inputs and outputs; the former accept high- and low-impedance sources. Input attenuators allow precise and repeatable selection of input gain from +50 dB to -10 dB in 10 dB steps. Each channel shows headroom level via LED, and has a three-band EQ facility. Other standard features include output patch points for inserting sound processing devices; 10-segment LED bar-graph displays; headphone monitoring; and work-lamp socket. The stereo sends may be converted into subgroups via a sum-switch. A built-in reverb system may be patched for external effects. The 1000 series consoles also offer Audy's "bidirectional full function stacking" feature, which allows the user to stack any of the 8-, 12- and 16-channel consoles with themselves or with the company's Series 2000 mixing consoles. Explains Audy, this feature allows expansion without imposing a "slave/master" relationship on the console because duplicate sets of outputs are available.

CIRCLE 25 ON READER SERVICE CARD

ALTEC SHOWS POWER AMP

New in Altec Lansing's amplifier line is the model 1270 power amp. Its two channels may be operated independently or in bridged configuration. Rated power output, at less than 0.05 percent THD, is over 250 watts per channel into 8-ohm loads, or over 400 watts per channel into 4-ohm loads. The built-in protection system on each channel includes an error computer that monitors and compares input and output signals, detecting output anomalies such as excessive voltage or current levels, excessive slew rate, etc. When needed, output is limited. The amp also is protected against overheating through logic circuitry in conjunction with a two-speed fan. A time-delay relay system protects the load against transients during startup and shutdown. The load also is protected from amp failure, such as DC voltage at the output. An optional plug-in line bridging transformer module is available for balanced line operation.



CIRCLE 26 ON READER SERVICE CARD

PATCH BAY FOR UNBALANCED LINES

Designed for economical and reliable interconnection of unbalanced audio devices is the new PATCH-32 from Symetrix, Inc. of Seattle, Washington. Its rear panel accepts up to 32 unbalanced audio signals via ¼-inch phone jacks (or optional RCA jacks), and routes them to thirty-two ¼-inch jacks on the front panel. For convenience in use, the top row jacks on the front panel are "normalized" to the front panel bottom row jacks, so that automatic connections between two devices may be made without a patchcord between upper and lower rows. All the jacks in the PATCH-32 are isolated from the unit's chassis to prevent possible ground loops. Prices are \$149 for the PATCH-32A (¼-inch jacks front and rear); \$129 for the PATCH-32B (RCA jacks rear panel to ¼-inch jacks front panel).

CIRCLE 27 ON READER SERVICE CARD

FOUR DOLBY SYSTEMS IN CASSETTE DECK

The first (and so far only) cassette deck that includes all four Dolby noise-reduction systems—B, C, FM and HX—is the VCX-800 from Vector Research of Chatsworth, Ca. A three-head, two-motor, dual-capstan deck, the VCX-800 has built-in provisions for bias adjustment and recording calibration via a sweep oscillator that covers the entire audio range. Also incorporated in the deck is a microprocessor that controls the unit's "Compucounter™" which automatically selects tape length, shows remaining time in minutes and seconds, and can search to any prescribed minute and second on the tape. Transport controls are feather-touch. Metering is via segmented bar-graph with peak-hold option. A three-position tape selector provides for ferric, chrome and metal. Price is \$1,000.



CIRCLE 28 ON READER SERVICE CARD

PROTECH COMPRESSOR-LIMITER

Intended for professional use in broadcast production, recording studios and engineered sound systems is ProTech Audio's model 663CL compressor-limiter. The compact 1¾ inches of rack-mount space, self-powered unit features plug-in PC "motherboard" construction, which allows the entire electronics section to be removed or replaced from the front. Front-panel controls include compression threshold; output level; attack and release times (screwdriver adjustments); in-out switch; VU meter switchable to output or compression; and power on-off switch/circuit breaker. Input and output are 600 ohms, transformer coupled, balanced, floating and capable of handling up to +27 dBm before clipping. Compression is 20 dB maximum, with a ratio of approximately 2.5 to 1. The compression control circuits are accessible externally, allowing two or more units to be interconnected for stereo or multi channel operation. Price is \$495.

CIRCLE 29 ON READER SERVICE CARD

NOISE IN THE NEWS

In this column in our September 1981 issue, we reported that CBS had announced its CX noise-reduction system and that some audio manufacturers would be offering decoders for playing the new CX records that were to be released by CBS, RCA and Warner. According to the word from CBS at the time we wrote that report, while the "full benefits" of CX (extension of dynamic range by 20 dB and the virtual elimination of surface noise) would require the use of a decoder, the CX-processed discs also could be played "as is" on conventional equipment, "will sound the same as standard records." And the CX-processed discs would most likely wind up costing the same amount of money.

Since then there has been more noise than noise-reduction surrounding this development. So far, only CBS has released a dozen or so pop albums in CX, and a classical "sleeper" that was not identified as CX and was reviewed that way (without decoding). This was the *Violante* by Korngold described as "artificial sounding" in *Stereo Review*, July 1981. Ourselves, we have received no CX discs although the other day we did receive a decoder, the model SX-80 from Sound Concepts. If and when CBS, RCA, or Warner decides to send albums we will of course listen and then make our comments. Those comments, you can be sure, will then appear in these pages.

In the meantime, all we can do is wonder, and our present attitude is all the more skeptical because of the rising adverse criticism of CX which has been reported among recording engineers and mastering personnel. Much of this criticism has to do with the "compatibility" claim for CX (when played without the decoder it is alleged to sound as good as a standard disc, something that no one seems to believe), and there also is criticism of the whole process generally including the need by the user to calibrate it, and its actual contribution to dynamic range and lower noise which is, in sum, less than that of the dbx system (which makes no claims of "compatibility" but which has done quite an excellent job of managing to prove itself to the satisfaction of a lot of extremely critical listeners).

At this stage, it seems as if CX, instead of being "an end run around digital" as suggested by *Stereo Review's* cover line, may be more of a fumbled ball than anything else. Anyway, let's wait for the next play (pun intended).



MUSICAL

NEWSICALS

MUSICAL INSTRUMENT AMPLIFIERS

Peavey has announced a new line of compact, high performance, combo amps known as the Solo™ Series. A new feature included in each of the Solo Series amps is Peavey's Saturation™ circuit (patent applied for), which is described as a circuit having gain compression similar to a tube amplifier stage driven into saturation rather than simply another fuzz effect; the amount of saturation is continuously variable with a front panel knob, and the effect is selectable via footswitch. All three Solo Series amps are two channel amps with Automix switching via footswitch. Another innovation common to these new models is the new Scorpion speaker they use; these new speakers were designed from the ground up, using Peavey's technology from their Black Widow loudspeakers. The simplest model in the line is the Bandit, which delivers 50 watts RMS into a 12-inch Scorpion speaker. Controls on the Bandit include Pre Gain (with bright switch), Saturation, Post Gain for the lead channel, Gain with bright switch) for the normal channel, three-band passive tone controls with a pull switch for "Thick" (an upper midrange harmonic boost), an active Presence control and a Reverb control. The Special has an identical set of controls to the Bandit, but adds a ground reverse switch, an impedance matching output transformer and external speaker jack and additional power, delivering 120 watts RMS into 4 or 8 ohms. At the top of the line is the Renown, a 2 x 12" amp with 160 watts of power (into 2 or 4 ohms, thanks to its output transformer), and a more comprehensive Normal channel. Controls for the lead channel are identical to the gain, Saturation and EQ of the Special and Bandit, while the normal channel

has Pre and Post Gain controls and three band active EQ with Paramid frequency-sweepable midrange section.

CIRCLE 1 ON READER SERVICE CARD

Also new from Peavey is the Mark IV Standard, a medium-powered amp head which incorporates many of the same features as the Solo Series amps. The Standard is a two channel amp with the controls laid out in two horizontal rows for clarity, Automix switching via footswitch and LED indicators to show the active channel. The Lead channel has push buttons for Bright and Thick, Pre Gain, Saturation, Post Gain and three-band passive EQ with an active presence control, while the Normal channel has push buttons for Bright and Low Cut, Pre and Post Gain and three-band active EQ with Paramid midrange. Other features include reverb, effects patching loop and 130 watts RMS into 4 ohms.

CIRCLE 2 ON READER SERVICE CARD

Marshall is, of course, one of the most familiar names in instrument amplification, and Unicord has announced the latest generation of Marshall amplifiers: the Jim Marshall Signature Series. The new Signature Series will all carry a JCM800 designation and will include the familiar 50- and 100-watt lead amplifiers, both in their original format and in new versions featuring a master volume control. New to the Marshall lineup are the models 2000 and 2001 which are 200-watt lead and 300-watt bass models, respectively. Both these new models are two-channel designs with facilities for channel switching and effects send/return, plus a 600-ohm direct output on an XLR-type connector for connection to mixing boards. Other changes to the Marshall line in-



clude the addition of slope and midsweep controls to the 50- and 100-watt bass amps for a punchier sound, and the introduction of two 2x12" speaker cabinets and a heavy-duty 8x10" bass speaker cabinet.

CIRCLE 3 ON READER SERVICE CARD

Guild has introduced several new, small guitar amps, plus a new contender for the title of smallest micro-mini amp. The Guild Tweedy Bird is a tiny, self-contained amp designed to plug directly into the jack of a guitar. Not including the protruding ¼ inch guitar plug, the Tweedy Bird measures only 2 7/8" x 2 3/4" x 1 5/8", and contains a 2-inch speaker, a 500 milliwatt amplifier and the two 9-volt batteries which power it. The guitar's volume control is used to control the output level and the amount of distortion from the tiny amp which has only an on/off switch for controls. The smallest of



Guild's four small amps is the Model 4, a 6-watt RMS amp driving a 4-inch speaker, housed in a cabinet measuring only 10" x 9" x 5½". This amp, like the other three in the line, has high and low gain inputs, volume, master volume, bass and treble controls and line level and headphone outputs. The Models 5 and 6 each have 10 watts RMS of power, driving a 6¼-inch speaker; the Model 5 is a basic amp while the Model 6 has reverb built in. At the "big" end of the line is the Model 7 bass amp, with 12 watts RMS driving an 8-inch speaker in a bass reflex cabinet measuring 11½" x 12½" x 6"; the Model 7 substitutes a midrange control for the master volume control.

CIRCLE 4 ON READER SERVICE CARD

GUITARS AND BASSES

One of the best-known names in guitar hardware and replacement/improvement parts is Schecter Guitar Research, which has been making so complete a range of parts that it has seemed possible to assemble a complete guitar from Schecter components. Logically enough, Schecter has now announced that it is building complete guitars from its own components. The designs are familiar, based as they are on the Strat, the Tele and the P-bass, but the details are more variable thanks to the range of

custom components Schecter makes. All Schecter guitars carry a lifetime warranty to the original owner.

CIRCLE 5 ON READER SERVICE CARD

From the depths of Brooklyn comes the expanded line-up of guitars and basses carrying the Veillette-Citron name from Sundown Music, Inc. The Veillette-Citron line comprises five different models of guitar and basses which are available in three different levels of cosmetics and trim. The five models are: electric guitar, single and double pickup electric basses, single and double pickup 8-string basses. Features common to all Veillette-Citron guitars include one-piece neck/body construction, fully adjustable bridges and Schaller tuning machines. The Standard series models use dual-coil, hum-cancelling Veillette-Citron pickups and feature chrome-plated hardware and tuning machines and rosewood fingerboards, and are available in sunburst lacquer or solid, gloss black finishes. The Classic series models are constructed with laminated necks and select flame maple body wings (koa wood available as an option) with natural, sunburst or black finish. Other Classic series features include two-stage humbuckers with push/pull phase reversal switch in the potentiometers, lacquered brass hardware, gold-plated tuning machines and ebony fingerboards. The Limited Edi-



tion series are identical to the Classic series except that the body wings are faced with a ¼-inch thick slab of exotic hardwood, with the center lamination of the neck and the headpiece veneer in matching wood. The hardwood used may be rosewood, ebony, walnut or koa wood depending on availability and customer preference. Finish for Limited Edition models is natural only to show off the beauty of the exotic woods.

CIRCLE 6 ON READER SERVICE CARD

MICROPHONES

Electro-Voice has announced a new addition to its Pro-Line series of performer-oriented mics. The new model is the PL88, a low-cost vocal mic designed with tailored frequency



response and excellent resistance to handling noise. The PL88 features an on/off switch and is available in both low- and high-impedance versions, and is very attractive cosmetically with its non-reflective snow gray body and charcoal grille.

CIRCLE 7 ON READER SERVICE CARD

Also new from Electro-Voice is the CO94, a professional quality miniature electret condenser mic. The capsule housing of the CO94 is less than ½" in diameter and less than ⅞" in length and is finished in E-V's usual fawn-beige micomatte. Fifteen feet of cable is provided between capsule and power supply/buffer amp housing. The mic may be powered by a 9-volt transistor radio battery or any phantom power source from 9 to 50 volts. The pattern of the mic is omnidirectional and fre-

quency response is 80 Hz to 15 kHz with a presence peak at approximately 7 kHz. The output of the CO94 is low impedance via an XLR-type connector. In their specification sheet, E-V makes several recommendations for using the mic for "barrier recording," which involves mounting the capsule on a room barrier (floor, wall, ceiling) to improve sensitivity and reduce interference patterns or frequency cancellations caused by reflections, in addition to the conventional lavalier use of this type of microphone.

CIRCLE 8 ON READER SERVICE CARD

MUSICAL INSTRUMENT ACCESSORIES

Quartz crystal accuracy is now becoming available in musical instrument products as well as wristwatches, and two of the first of these products were announced by JTG of Nashville. The first is the Justina quartz guitar tuner, a pocket-sized, battery powered tuner with accuracy to 1/100 of a semitone. The Justina has a 1/4-inch input jack plus a built-in microphone for tuning acoustic guitars. The user selects the appropriate note with a six-position slide switch, plays the note and tunes until he gets a midscale indication on the large, stable meter. The meter has calibration marks for non-concert tunings ranging from 430 Hz to 450 Hz rather than the normal A-440 Hz concert tuning. The other quartz-controlled product from JTG is the Metrina quartz metronome, made in Japan by Zen-On Music Co. The Metrina is also a battery-powered, pocket size box with extraordinary accuracy, in this case $\pm 0.02\%$ of the indicated tempo. A large, circular, selector dial allows precise setting of any of thirty-nine tempos from 40 to 208 beats per minute. Indication of tempo may be audible via built-in speaker or external earphone (speaker disconnected) or flashing LED. An additional feature of the Metrina is a 440 Hz pitch reference to substitute for a tuning fork.

CIRCLE 9 ON READER SERVICE CARD

MXR has long been an industry leader in electronic sound modifiers with their high quality, rugged boxes. MXR announced the introduction of a new line of lower-priced sound modifiers known as the Commande Series. Initially the Commande Series

comprises four products, all housed in compact polycarbonate cases for light weight, durability and low cost. All are battery operated and were designed for maximum battery life and easy battery replacement thanks to their snap-off bottom plate, yet they also include universal mini-plug power jacks and special filtering circuitry to reduce hum when operated from a battery eliminator power supply. The four products currently available in the Commande Series are the Preamp, the Sustain, the Overdrive and the Phaser. The Preamp is a low-noise preamplifier designed to boost and/or buffer low-level signals with minimum change in tonal characteristics except as desired; controls are Gain and Tone. The Sustain is a compressor/limiter designed to increase sustain or control signal levels without distortion; controls are provided for Sensitivity and Output to allow adjustment to individual instruments and playing styles. The Overdrive box has a Distortion control to vary the sound from a warm, tube-like sound to controlled harmonic sustain and an output control to allow level matching or a preset level change when the device is switched in. The Phaser is a digitally-based phaser effect with Speed and Regeneration controls, boasting low noise and high signal handling capability. All four devices have a large MXR pad which is actually the in/out switch actuator and an indicator LED to show when the effect is on.

CIRCLE 10 ON READER SERVICE CARD

A new line of eight effects boxes has been introduced by Morley, whose previous products were all pedal-actuated. All the new Morley boxes are housed in rugged, die-cast metal enclosures, and feature non-skid feet, top quality footswitches, controls, and knobs, and two LED indicators to show when the effect is engaged and when the unit is powered but not engaged. All the units are normally battery-powered, but all have jacks to accept optional AC adapters. The lineup from Morley includes the Compressor, the Phaser One (a basic phaser with rate and regeneration controls), the Deluxe Phaser (with 1080° of phase shift and a "travel" control as well as rate and regeneration), the Noise Gate/Line Driver, the Flanger, Distortion One (a basic fuzz), Deluxe Distortion (includes tone control), and the ABY Switcher, which selects either the



A or B channel or both simultaneously and which can be used at any signal level including between power amps and speakers.

CIRCLE 11 ON READER SERVICE CARD

Also new from Morley are two mini-box products small enough to fit in a shirt pocket or clip to a guitar strap. The Sync-Attack is an envelope modifier which allows the musician to control the character of the attack of his notes to simulate bowed strings or even simulate the sound of woodwind instruments. The other mini-sync product is the Sync-A-Wah, an envelope controlled wah-wah effect which will wah notes as fast as the musician can play them. The Sync-A-Wah is also said to eliminate the level sensitivity problems often associated with this type of effect.

CIRCLE 12 ON READER SERVICE CARD

KEYBOARD INSTRUMENTS

Moog Music has announced the introduction of its latest synthesizer, the Moog Liberation. The most unusual aspect of the Liberation's design is that it is a mobile, self-contained (except for a small power supply/interface unit which attaches via an umbilical cable) unit made to be worn much like a guitar. The 14-pound unit features a 44-note touch-sensitive keyboard for the right hand and a group of controllers mounted on a probe arm which rather resembles a guitar neck without tuning head for the left hand. The unit has both a polyphonic oscillator bank and a separate, two-oscillator lead synthesizer with full synth controls. The

force sensitivity of the keyboard can be used to control either the modulation or pitch bend, and the left-hand controllers include a ribbon pitch controller with a range of more than \pm a fifth, as well as two wheels and several switches to control filter emphasis, modulation, force sensor, glide and volume. The lead synth section of the Liberation has two VCOs which are tuned simultaneously by a master tune control; the interval between the two oscillators is also variable via an interval control for oscillator 2, and there are three-position octave selectors for each VCO. VCO 1 has sawtooth, triangle and 10% rectangular pulse waveforms available, and tunes down to a low F of 43.65 Hz, while oscillator 2 has sawtooth, triangle and square waves and is ranged an octave higher than oscillator 1. The interface box of the Liberation system connects to the keyboard unit via a 40-foot cable with reliable XLR-type connectors, and houses the AC power supply, the audio output stage and connectors and controls for interface to external synthesizers.

CIRCLE 13 ON READER SERVICE CARD

Kustom/Gretsch has been a division of the Baldwin Piano and Organ Company for some time now, so it is only natural that the latest new product from Kustom is an electronic piano. The Kustom 88 is this new unit and is the result of a large amount of development by Baldwin. Among the design criteria for the new instrument were that it should both sound and feel like a conventional piano. To insure the correct feel, Baldwin designed the keyboard itself around weighted wooden piano keys rather than the organ-like keys used in most electronic pianos. The Kustom 88 has dynamic keyboard response, both in amplitude (the harder the key is struck, the louder the note) and in timbre, as the unit produces more harmonics as the notes are struck harder. The unit uses a master oscillator for the entire keyboard and derives the various notes by frequency division using digital CMOS circuitry for perfect interval tuning and one-knob master tuning for the whole instrument. To achieve a more realistic sound, Baldwin designers used conventional waveshaping techniques in combination with inharmonic overtone addition. The top 21 notes of the 88-note instrument are undamped just like a

real piano to carry the resemblance further. The front panel of the unit has slider-type controls for volume, bass, treble, tremolo speed and tremolo intensity; two illuminated push-buttons are provided to switch the tone controls and tremolo circuit in and out of operation. Outputs from the unit include a high-impedance mic level output, a balanced, low-impedance line output via XLR connector and a headphone output. The Kustom 88 is housed in its own flight case for maximum protection, and uses the top of its own case as the base for the instrument when set up.

CIRCLE 14 ON READER SERVICE CARD

New from Korg is that company's first ever electronic piano, the LP-10. This new instrument is a compact, lightweight (only 22 pounds) 61-note keyboard which produces electric piano and "clavi" tone colors in addition to acoustic piano sounds. The LP-10 was designed to recreate the characteristic attack of piano hammers striking strings and to have longer sustain characteristics for the low notes than the high notes for a more accurate acoustic piano sound. An unusual feature of the LP-10 is its transpose lever, which, as the name suggests, transposes the entire keyboard in semitone steps over a full octave range in much the same way that a guitar capo does; in addition to the transpose lever is a knob for continuous fine tuning. The decay rate of the notes is variable via a front-panel knob, and there is a three-position switch selecting normal piano or dampered piano characteristics or a non-decaying, organ-like response. Other features include on/off switches for the three tone colors, a built-in chorus effect, a six-band graphic equalizer with octave-tuned filters and a built-in 2x2 watt power amplifier with two speakers in addition to a headphone output and high- and low-level line outputs.

CIRCLE 15 ON READER SERVICE CARD

PERCUSSION ITEMS

St. Louis Music Supply Co. has announced the availability of a device known as the Deadringer, which is a specially designed drum head dampener. The Deadringer is a ring of special density polyester foam with 3M pressure sensitive transfer tape ad-

hesive to attach it to the head of a drum where it will damp out upper harmonic ringing to allow a more even tone decay. The center of each drum head is left open so that the drum will not lose an undue amount of stick sound and crispness. The Deadringer is available in twelve sizes ranging from 6 inches to 24 inches.

CIRCLE 16 ON READER SERVICE CARD

Another new idea in drumsticks comes from Duraline/Syndrum, the manufacturer of the popular synthesized drum equipment. Duraline's better idea is to use Kevlar—a very strong, durable synthetic fiber made by DuPont—rather than wood. Kevlar is used extensively in the aerospace industry for fuselages because of its high tensile strength and light weight; it is also used in bulletproof vests, crash helmets and race car bodies for the same reasons. Duraline has invested four years of product development to come up with a stick that has the feel of wood but doesn't have wood's limitations. Duraline's Supersticks are said to have several significant advantages over wooden sticks, not the least of which is that they last longer. In addition to longer life, the Kevlar sticks will not warp, and they are weight matched to within $\frac{1}{2}$ gram. The company also claims that the porous surface of its Supersticks gives many drummers a better grip as their hands become damp. Also new from Duraline are the company's woven Kevlar Superhead drum heads, which offer advantages over the mylar or polyester material used in conventional drumheads. Since Kevlar is several times stronger than mylar, Duraline's Superheads are much less subject to stretching and denting, resulting in much longer life and freedom from retuning. And in the unlikely event that a Superhead becomes damaged, a puncture or tear will not "run" due to the woven construction and the drum will remain playable, unlike plastic heads which are totally ruined by holes or tears. Also, Duraline's Superheads are said to have an exceptionally musical tone over a full octave tuning range. Duraline has developed a process which minimizes high overtone ringing, making them ideal for studio applications. A wide range of sizes are available in both concert and studio tone versions.

CIRCLE 17 ON READER SERVICE CARD



Studio Notebook #4

By James F. Rupert

As promised, this installment is comprised mainly of a quick quiz to try and determine whether a career as a self-employed independent businessman lies in the fortunate stars for you. The object of this test is not to gauge the degree of technical expertise possessed or how much bread you've got socked away to properly launch your studio. The object is only to provide some clues for you to judge whether or not you have what it personally takes to make a go of your own recording business. Most of the questions are generalized for any type of enterprise and are taken from pamphlets (available free I might add, Harvey) that can be obtained by writing to your local office of the United States Small Business Administration. Some of the questions escaped from the brain of the author, and before anyone could do anything about it, ended up in the test. These questions will apply specifically to the task of starting and maintaining a recording studio regardless of the size and format.

All questions are multiple choice, so there will be

at least a 33 $\frac{1}{3}$ % chance of getting the question right. (I tried to arrange for a 45% or 78% chance, but my typewriter would not play that speed!) It is important for each answer to be listed truthfully, according to your genuine response to the question. Nobody but you will test you on your answers. You won't get any gold stars for listing the answers that sound the most goody two-shoes. If you can't be honest with yourself, your future in this business is about as rosy as that of a june bug in a duck pond. (As a further warning, we have commissioned Ms. Gladys Butterbaugh, a third grade teacher at Atilla the Hun High School in Seat Cramps Corner, Wisconsin, to cruise the county looking for cheaters on this test. Anyone caught not answering honestly will risk the penalty of repeated knuckle raps from Ms. Butterbaugh's combination slide rule/extension ladder.)

Enough introduction already. As usual, there is no time limit to the quiz, and the only limitations are your evaluations of yourself. So, everyone keep his eyes on his own paper and let's begin.

QUIZ

- 1) Are you a self starter?
 - A) I can do things on my own. I don't need anybody standing over me to get me going.
 - B) Once somebody gets me going, I can roll like a greased wheel.
 - C) Can I take this test tomorrow?
- 2) How do you feel about other people?
 - A) I like people fine. I pretty much get along with everybody.
 - B) I've got enough friends for me. I don't need anybody else.
 - C) Hey, get this test out of my face, you jerk!
- 3) Can you lead others?
 - A) When I start something, I can get most folks to go along.
- 4) Can you take responsibility?
 - A) I kind of like to take charge of things and see them through to the finish.
 - B) I guess I don't mind taking over, but I'd much rather have somebody else take the final responsibility.
 - C) If some brown nose wants to show off and make a fool out of himself, why should I care?
- 5) How good an organizer are you?
 - A) Before I start something, I like to have a plan of how to go about it. In the band, I'm the one who has to get everything lined up right.
- B) If somebody else tells me what to do, I can be a fairly good order-giver.
- C) Let somebody else put his head on the block. Then, when the heat hits, it's no skin off my nose!

B) I can do alright except when stuff gets screwed up and confused. Then somebody smarter than me is going to have to figure it out.

C) Just a minute, I lost my pencil. Now, where am I? Hold on I think I lost my place...which question is this anyhow?

6) How good a worker are you?

A) If I want something, I'll work as hard as it takes to finally get it.

B) I can work pretty hard for a while, but when I poop out I melt into my shoes.

C) Can I finish this test after my nappy?

7) How are you at making decisions?

A) If somebody has to decide on something in a hurry, I can usually make a decision that I can stand by afterwards.

B) If I have enough time to think things out, I can decide what to do. Otherwise it nags at me that maybe I didn't handle it right. Sometimes it still bothers me anyway.

C) Yes I can make decisions...well, not really, but pretty well...I think maybe sometimes anyhow...but on the other hand...

8) Can people trust what you say?

A) I'd like to think so. I don't say things I don't mean.

B) I try to be a straight shooter, but sometimes it's easier to come up with some story to smooth things out.

C) Oh sure! It's like I was telling my personal friend Ronald Reagan last week after I got back from my heroic mission to the moon to try and bring about world peace.

9) Can you stick with it?

A) Once my mind is set to a task, I won't let anything stop me.

B) If things go smoothly enough, I generally finish up with projects.

C) I'm not answering this because I stopped taking the test after Question #8!

10) How good is your health?

A) Man, I just never run down!

B) I have enough energy for most of the stuff I want to do.

C) I'm too tired to answer this one too!

11) Are you entirely confident about the equipment you'll be working with?

A) Hey, I think I've got it down inside and out and I've got the work sample tapes to prove it.

B) I think I'll have it down by the time I'm ready to open.

C) Pretty soon I'll be able to hire some sap to run it for me! Why should I have to worry about it?

12) How will your past work experience help you in your new studio?

A) I've had management experience, musical training, specialized education and have even done bookkeeping at another job. I feel my own studio is the next logical step for me.

B) I've worked in my own home studio for a few months and I'm starting to look around for some specialized schooling in recording and business.

C) Jeez, you're making out like this is going to be tough or something! I know plenty about recording studios. I mean, I read this book see...?

13) How attentive are you to detail?

A) Very. I know how important it is to have everything done right the first time and to keep accurate accessible records on how it was done. I'm a real fanatic about it.

B) Pretty good, but sometimes I can only deal with one thing at a time. It's tough enough trying to remember everything that might have to get done.

C) What was the question? I wasn't listening.

14) What is the reaction of your family and friends to your business plans? (Sometimes they know you better than you do!)

A) My family and friends have great confidence in me and my plans. I haven't let them down yet, and I don't plan on starting now.

B) My wife's not too crazy about the idea. But she says she'll go along with it for awhile.

C) Hey, what does my ol' man know anyhow? I'm supposed to take the advice of somebody who still wears suspenders and a belt? He's just against me like everybody else is!

15) If you have a partner, do you both feel completely comfortable and trusting with each other?

A) Very much so. We have our differences, but it is those differences that will make the business better and stronger.

B) I guess so. I don't know all that much about him, but he does have the money and he does seem as hot as I am to do this. So I guess I'll try it with him.
 C) As long as I'm there to keep my eye on him to make sure he doesn't try anything funny, everything will be fine. But he better know who's boss if he knows what's good for him!

SCORING

If most of your checkmarks are beside the first answer choice for each question, you are probably on the right track for a successful business. You have confidence in yourself and the ability to back up your claims. It ought to be obvious that the "A" answers were the most desirable if you could honestly list them as your real reaction to the question.

If your answers seemed to fall into the "B" category, don't lose hope yet. Perhaps you just need a partner who can handle the qualifications you find yourself a bit weak in. If you are weak in every area, having Nelson Rockefeller, J.P. Morgan, Henry Ford and J. Paul Getty in your corner might not help you. If

more than a couple of answers were best described by the "B" responses, then you've got some work ahead of you.

If your answers were consistently alternative "C," I hope you are a chuch-going person, because nothing less than intervention by the Deity is going to save you from the trouble ahead. Hoover Dam would not be able to hold back the problems you are about to be swamped beneath. Take the quiz again when you come up for parole.

I hope everyone has been able to better appraise himself as future businesspersons after taking this test. Patience, self-discipline, responsibility, attention to detail and all the other characteristics mentioned in the quiz are things that all would-be studio owners had better possess or develop before they begin to consider the fling into self employment.

As for me, I just found out Ms. Gladys B. has caught me peeking at the answer list and is outside unfolding her slide rule out of the saddle bags on her Harley-Davidson, so I gotta go!

See you next time.



ALL YOU NEED IS EARS

The memoirs of modern recording genius George Martin.

George Martin is the most famous producer in the music business. Working with such diverse stars as Judy Garland, the Bee Gees, Ella Fitzgerald, Cheap Trick, and The Beatles, he has constantly set new standards for the recording industry and redefined the relationship between artist and producer.

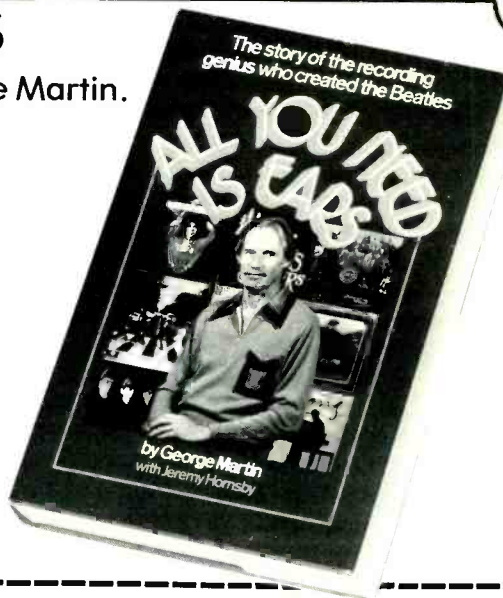
Now, in ALL YOU NEED IS EARS, Martin details his amazing career in the vanguard of modern recording... from the early days when wax was the medium, 78 was the speed, and an echo chamber was a small tiled room... to the advent of revolutionary digital reproduction. His vast experience makes him an expert commentator on fascinating backroom details like acoustics, arrangement, orchestration, microphone techniques, and more.

In addition, Martin offers an entertaining view of how he put together hit records, what it was like to be tapping The Beatles endless repertoire of songs, the hardship and excitement of forming his successful independent studio, AIR.

Lucid and absorbing, ALL YOU NEED IS EARS is nothing less than a personalized tour of the world of recorded sound.

MONEY BACK GUARANTEE:

Examine this book for 15 days, if not 100% satisfied return it for a full refund.



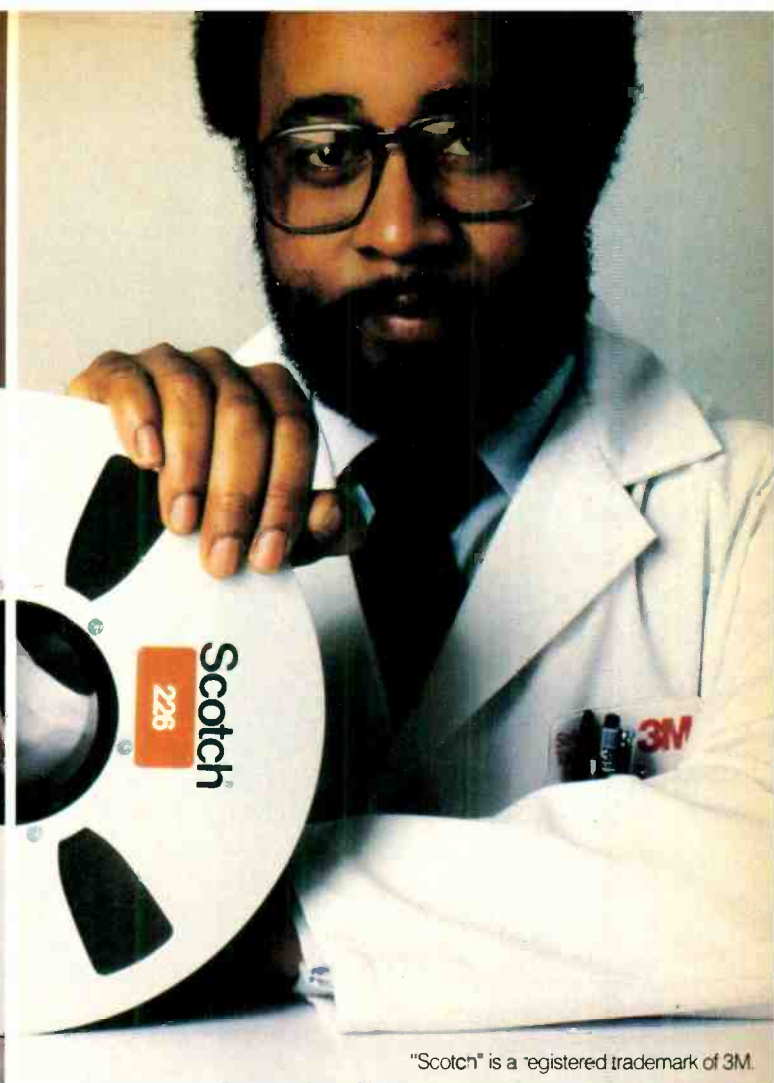
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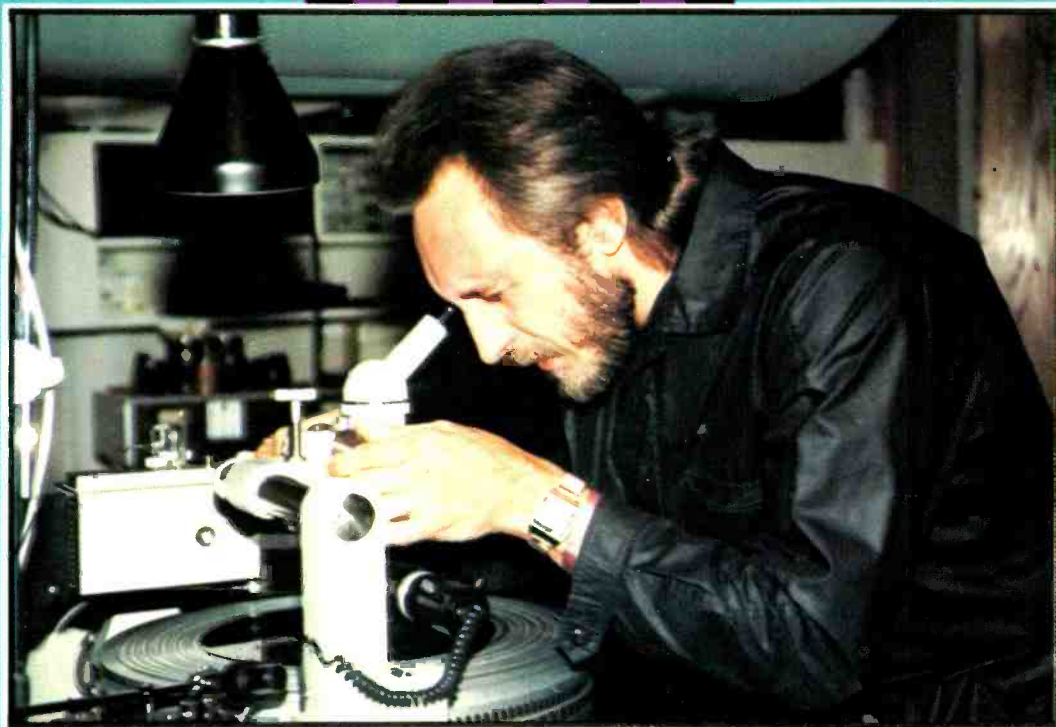
Most of the major equipment makers have already recommended Scotch 226. But you don't have to take their word for it. Test it for yourself. It's as simple as changing reels.



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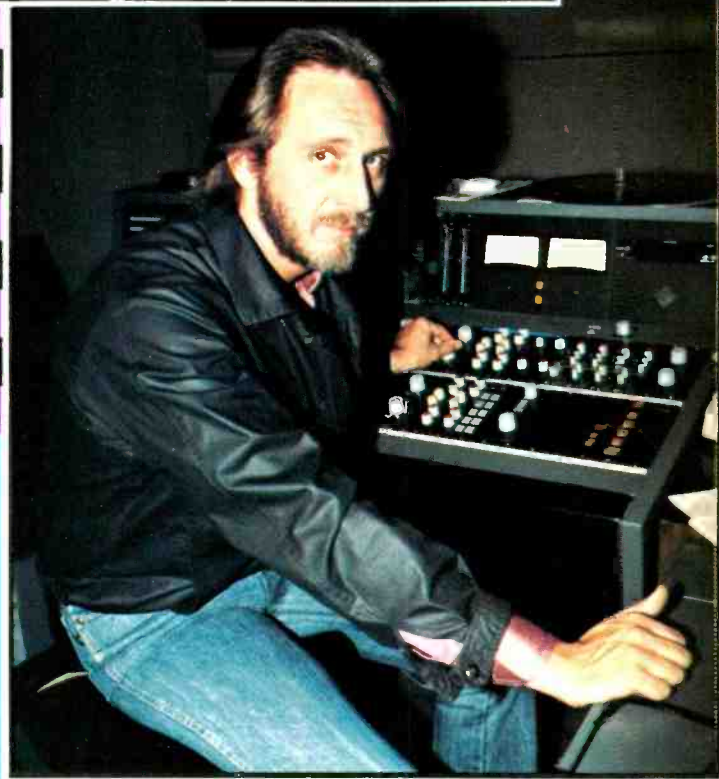


WITH

Mention the names of the members of the Who, and John Entwistle's name will always draw the same response: reclusive, sedate, a shadowed member; the non-flamboyant one who stands in place on stage—holding the sound together with his solid bass playing while the others flail and wail. He has been nicknamed the “Ox,” perhaps because he has provided the strength necessary to keep the others harnessed, to keep the sound from losing out to the frenzy of the performance itself. But there is much more to Entwistle than meets the eye. As he says in the following interview, that image of him as “the strong, silent type” is “rubbish.”

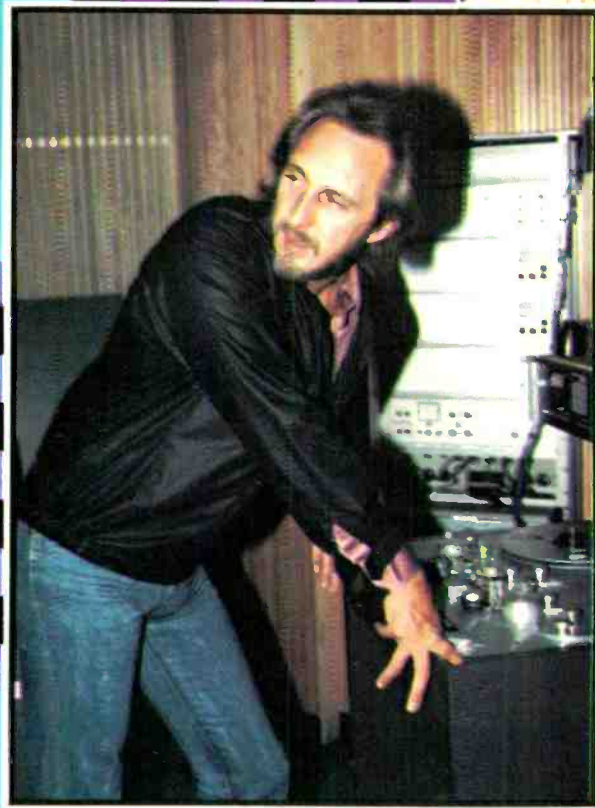
There is also the Entwistle that likes to smash televisions when a whole performance does not please him. There is the Entwistle who, while maintaining an air of suave dignity, has an active sense of humor and a bent for writing songs about morbid, ironic, sometimes absurd subjects

But mostly, there is the John Entwistle who is fiercely dedicated to making music. If there is a reason why Entwistle never leaped about on stage like



Pete Townshend, strutted like Roger Daltrey or maintained “eccentric” behavior like (the late) Keith Moon, it’s because someone had to keep the music rooted, and Entwistle chose to make that his chore. His interest has always been in making the best, most coherent and current music possible.

Although he is a fishing buff, Entwistle’s chief extra-curricular activity over the past decade has been that of making solo albums. The Who’s most prolific songwriter (outside of the group context), Entwistle released four solo albums in the early part of the 1970s, taking a break only when he felt



JOHN ENTWISTLE


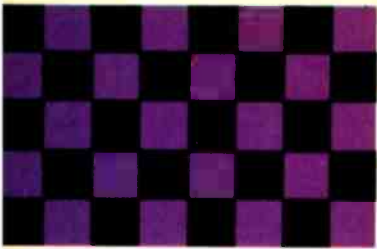
By Jeff Tamarkin

his writing was becoming stale. The first two solo albums were comprised simply of songs Entwistle wanted to put on vinyl but could not record with the Who. The next two bore a 50s rock flavor; they were fun, but Entwistle felt stifled by the limitations of the genre. He didn't record any solo projects for

about six years after the '50s albums.

Now, however, Entwistle is back with his fifth solo album, Too Late The Hero (Atco). Joined by Eagles guitarist Joe Walsh and drummer/keyboardist Joe Vitale, Entwistle has recorded a dynamic album—a set of basic, guitar-heavy rockers about sex and drugs and

rock and roll, subjects with which he had felt uncomfortable in the past. On Too Late The Hero, Entwistle finally and successfully comes into his own as a solo recording artist; there is no longer any reason for him to be hidden behind the more visible and volatile personalities of his bandmates.



“... I was able to con my mother into letting me play the trumpet and give up the piano.”

During a recent interview in New York City, Entwistle, looking healthy and content, spoke about his new album and shed some light on the highlights of his career with one of rock and roll's living group legends, the Who. In rock and roll, it's never too late to be a hero.

Modern Recording & Music: You wrote a song titled “The Quiet One” for the last Who album. The first line is: *Everybody calls me the quiet one...* You've been called “the quiet one” yourself. Do you feel that that is an accurate nickname? If so, will this solo album change that?

John Entwistle: That tag is a bunch of rubbish. I was stuck in that pigeonhole by a group of journalists when the Who first started. Keith [Moon, the Who's late original drummer] was always madly flailing about at the drums; Pete [Townshend, Who guitarist] was jumping up and down; Roger [Daltrey, vocalist] was singing. They [the journalists] looked for a pigeonhole to put me in and the obvious one was, “He's the strong, silent type.” Eventually, I lapsed into a lazy attitude of thinking that if they want to say I'm quiet, I'll let them go on believing it. Then, when I started doing my solo albums, I wanted a lot more out of my career, so I tried to dispel the idea of “the quiet one.” After 15 years, that's hard to shake off. But in no way am I the quiet one.

MR&M: Musically, that's certainly not an accurate description of you. Pete has written more quiet songs than you, and you've written some of the hardest rocking Who songs.

JE: Right, and as far as interviews, I've done far more than both of them [Townshend and Daltrey].

MR&M: How would you say your writing has evolved over the years, from “Boris The Spider” up through your first solo albums and now the new album?

JE: When I first started writing it was mostly as a means to getting extra

cash. We were spending most of our money on clothes and equipment. We were smashing guitars and all then. So our publisher suggested he would give us each a 500 pound advance if we each wrote two songs for our next album [Happy Jack]. So Keith wrote a couple and Roger wrote one and I wrote “Boris The Spider,” and that really got me into writing. I started writing more and more, and then I had ten songs that weren't going to go anywhere because the Who weren't about to make another album, so I did my first solo album [Smash Your Head Against The Wall].

MR&M: As far as the writing process itself, do you find it easier now than in the past?

JE: I always had trouble writing before because I wrote most of my stuff on bass. Although I played the piano I never got to writing on piano until the second album [Whistle Rhymes]. It's very hard to write on bass because you're just playing root notes all the time and you don't have a chord to work with. It's really a learning process; you learn more about song writing every time you write a song, more about chord progressions. I've taken a few refresher courses in harmony and stuff like that, just by reading books on the subject. Most of the stuff in the books you have to disregard anyway. Now I do most of my writing on either 8-string bass, piano or synthesizer. It depends on what kind of song I want to write; if I'm writing an orchestral piece I'll use a synthesizer, unless I use a sequencer.

MR&M: Is it different writing for the Who and writing for a solo album? For instance, you have to take into account the different guitar styles of Pete and someone like Joe Walsh, don't you?

JE: [Long pause] To a certain extent, it's different. But they overlap sometimes. Songs that I've written for my solo album could be suitable for the Who as well. With this album, I wrote mainly with myself in mind. I did the

demos for this album with Kenney Jones (Who drummer); he asked me to save a couple of songs for the Who because he wanted to play drums on them. I saved a couple.

MR&M: Did you always intend to record this album with Joe Walsh and Joe Vitale or was it more a case of them being available at the time you recorded it?

JE: Ever since I made my previous solo record [Mad Dog], which was six years ago, I planned to record with Joe Walsh, but it took me a while to change my style of writing rock and roll from the way I did on the last two albums [Rigor Mortis Sets In and Mad Dog], which were both 50s style rock and roll. I just stopped writing for about 18 months because every time I went into the studio it came out *dum-dee-dum-dee-dum-dee-dum* [sung in a Jerry Lee Lewis style 50s melody]. I couldn't get away from that. Then I went backwards to songs I had written before the 50s albums, and I came up with “905” and “Had Enough” [both on the *Who Are You* album]. Those were actually songs I'd written years before for a science fiction concept album.

MR&M: So, something just clicked one day and you started writing again.

JE: Yeah, once I started working on “Had Enough,” I got back into writing.

MR&M: How long did the actual recording of *Too Late The Hero* take?

JE: In actual studio time about four months, but the first session was April 7th, 1979.

MR&M: Did your ideas for the record change over that two year period?

JE: We started off recording eight songs, but then three of those were thrown out and two new ones put in. Then on the last sessions I put in three new ones and re-did two older ones. So we continually updated it.



THE ORGANIZER.

Investing in a "powered" mixing board can be a smart move. But it doesn't mean much unless you complete the process with Whirlwind's revolutionary new Medusa Power Series multicable system. This recent addition to the popular Whirlwind Medusa line lets you reap the maximum benefits from

powered boards like some of the newer models from Yamaha, Kelsey and Paice, more than justifying the added expense of your original purchase.

The first to combine both microphone and high-powered speaker cable in one custom, pre-terminated, pre-applied for multiple wiring system, the Medusa Power Series organizes all of your cables into one main cable running from the stage to the board. Which means a cost-effective, total wiring system designed to reduce set-up time and eliminate mess. As a Whirlwind Medusa system, the new Power Series features a variety of custom-made configurations made with the finest cable available and all brass connectors.

The new Whirlwind Medusa Power Series cable systems are available at leading music stores and pro sound outlets. After all, a powered board doesn't mean anything without the *only* multicable system created to help you reap its full benefits — Whirlwind Medusa Power Series. The Medusa Power Series is backed by a full two year warranty.

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MR&M: How do the other solo albums you've done compare to this one?

JE: I don't really think you can compare them; they're worlds apart. I don't really count the two rock albums as part of my songwriting progression. They're an excursion. So there's really been about nine years since my last real solo album. In that time, I've learned a lot about studios, bass playing, piano playing and songwriting. This is the first solo album by the new me.

MR&M: The art of recording also has changed so much in that time. How has your writing and recording been affected by technological changes?

JE: I think those first two solo albums were recorded on 16-track, using Dolby, working at 30 i.p.s. I think working without Dolby is a much better way to record. When you're mixing silence into your album, it interferes with the atmosphere. There are also changes in the way I record my bass sound. The main thing I've learned about studios is what *not* to use. If you use every gadget, it interferes.

Joe's [Walsh's] albums. I bought his first solo album and played it a lot, so it was a natural progression that I should use him. Joe Vitale plays not only drums but flute, guitar, bass, keyboards. The thing I like about his drumming is that he works with the melody as well as the tempo.

MR&M: How do you compare working with Pete Townshend to working with Joe Walsh as guitarists? After so many years with Pete, is it hard to adjust to another guitarist's style?

JE: In many ways, they're very similar. They both play a lot of chords and then overdub melodic lead lines. Obviously, Joe's licks are very different from Pete's, but it's a similar experience.

MR&M: Did you consider it challenging to step out of the role of being bassist for the Who to do your own album?

JE: Solo albums are always challenging. Every time you do one you're taking a risk, whereas Who albums sell a certain amount every time you release one; they're a safe bet.

MR&M: Is there a significance behind the title of the album?

"I'll never step into a concert hall that holds less than 5,000 again."

JE: It's the sort of title that hundreds of things can be read into. It's really just named after the title track, but there is the connotation that if you were a hero in the past, you had to be a fighter or a soldier. Because there hasn't been a war [in which England has been involved] in my lifetime, the only way to be a hero is to be a guitar hero.

MR&M: How would you describe the sessions for this album? What was a typical day in the studio like?

JE: They were really enjoyable. It's nice seeing a song get born. When you do a demo, you never really envision how the song is going to turn out. The

backing tracks for this were so easy to do because we were getting off on each other's playing. We all contributed to the actual arrangements, the structure. The first week in the studio we came up with six backing tracks, and I'm used to working with two a week. A couple of those had to be redone, but that's because we had two years to look back at what we've done and see if it could be changed.

MR&M: Do your songs go through a lot of change from the original concept to what we hear on the finished product?

JE: Not really. My demos are very similar to the record. Some of the arrangements were changed.

MR&M: You wrote all of the songs on the album. Was there ever a point when you considered co-writing some of them with Joe Walsh?

JE: I think we always intended trying to, but we didn't seem to have enough time. We had a deadline on each recording session because Joe had to be somewhere else, or I had to be somewhere else. We couldn't afford to sit around jamming because it might jeopardize what was going to happen at the sessions; we might have been left with no time to do one more song that we wanted to record.

MR&M: All of your albums, including this one, were co-produced by you and one other person. Why do you like to use that extra hand?

JE: I need someone to control things while I'm in the studio playing. The particular co-producer on this album, Cy Langston, I'd worked with on *The Kids Are Alright* and *Quadrophenia*. Also, he's been a friend of mine for 15 years and played lead guitar on my first solo album. We've found that we always have similar musical ideas; we're always going in the same direction.

MR&M: How were the production duties divided?

JE: He served as the engineer and he was also the one who usually decided which take to use. You can usually tell when you're playing if it's the right take, but you have to have someone in the control room who you can trust to get the right sound. I also need someone who can tell me, when I'm on the studio floor, if I'm a bit off-key or if the phrasing is a bit off. My part was to

MR&M: This is a very clean sounding record; there aren't many gimmicks.

JE: Yeah, it's very straightforward. The instruments on it are equally mixed. The bass is loud, but it doesn't interfere with anything else.

MR&M: How did you meet the two Joes?

JE: I met Joe Walsh about 10 or 11 years ago when he was with the James Gang. Then when I was with my solo band, Ox, for a tour, we supported Joe on three or four gigs as a special guest. And on some of the gigs that we headlined, Joe Vitale's Madmen were supporting, so that's how I met him. I didn't really know that much about Joe Vitale before that tour, but then I realized just how much he had done on

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decide what instruments were needed on the track and also to decide on the final performance and the final mix.

MR&M: Do you get technically involved in the studio or do you prefer to leave that up to Cy and the other people in the control room?

JE: As far as EQ and that sort of thing I get involved, but as far as plugging in, I have nothing to do with that sort of thing. Wires irritate me.

MR&M: The Who works with outside producers. How does that compare to self-producing?

JE: We still have a lot of control.

MR&M: Would you like to produce the Who?

JE: I couldn't really produce the Who on my own. I've produced and remixed a lot, mostly what was done for the films *The Kids Are Alright* and *Quadrophenia*, and for *Odds and Sods* [a compilation album], but as far as going in and producing a Who album, I think I'd need someone like Cy in the control room.

MR&M: Can you list some of the equipment used in the making of *Too Late The Hero*?

JE: Most of the basses used were Alembics with Alembic pickups—all custom made. I use my stage bass, an Explorer-shaped Alembic, on a lot of tracks. It's an eight-string version of the four string Explorer. I also used a medium sized Alembic.

MR&M: Why do you prefer eight string bass?

JE: The way I play it, it fills in the gap between what I play and what the guitarist plays. It gives a meaty chord sound, and it's nice for playing melodic figures. All the basses on the album were stereo and were recorded in stereo. I used a Music Man with a 2-12 cabinet for the bottom end, which I kept very clean. For the top end, I used a Mesa Boogie with an extension cabinet. The treble and the bass sound is mixed together. For a couple of the simple bass lines I did I used a long lead; if I'm doing a bass overdub I prefer to be in the control room.

MR&M: What guitars and keyboards were used?

JE: The synthesizers were a Yamaha 880 and a Prophet 5. The acoustic piano was a Bosendorfer. The guitars went from sunburst Les Paul to some of my old Strats.

MR&M: You're an avid guitar collector, aren't you?

JE: Yeah, I've got 176. There's only about twenty working basses. Joe didn't want to bring a lot of guitars so he used some of mine on the session.

MR&M: Mics?

JE: 90% Neumann.

MR&M: Any special miking techniques or studio setups?

JE: No. We were set up together. Everything was separated by screens, but the fronts were open all the time. It was quite a large studio and we set up quite a way back so we had plenty of air to move around in.

MR&M: What about effects.

JE: Not that many. There was an Echoplex, which Joe used.

MR&M: You've used horns in the past, and even played some of them, but not on this album. Any reason you didn't use horns?

JE: There were only two cuts on the album that merited using horns, and on those two I could get away with using synthesizers. It's far quicker than standing there for five hours overdubbing brass parts.

MR&M: If you don't object, can we talk about some of the key events of your career with the Who?

JE: Sure.

MR&M: Going back even further than that, let's take it from the top. How did you first become interested in music?

JE: I couldn't really get away from it. My mother and grandmother both played the piano. So did my aunt, and my father played the trumpet. So I was always surrounded by music. I was forced to play the piano at seven, but I was able to con my mother into letting me play the trumpet and give up piano. Then when Dixieland was dying out and rock and roll was coming in, I decided I wanted to play the bass guitar instead.

MR&M: Why did you choose bass? Many bassists begin on guitar and then switch for one reason or another.

JE: I thought it would be easier because it had four strings. It's actually a lot harder in a way. It's a pretty thankless job.

MR&M: What do you recall most vividly from the very early days of the Who?

JE: I just remember how exciting it



was because we were breaking new ground. We were the only band around using huge stacks of equipment. Everyone else was carrying around little combos. If we played with someone else, we were always louder than they were.

MR&M: Do you now use the same equipment on stage and in the studio?

JE: Amplifiers are completely different. On stage with the Who, I use two Strap stereo pre-amps going through four Sunn Coliseum Slaves, going through three 18s and twelve 12s. One of the 18s and one of the four-12 cabinets are miked through the P.A. system.

MR&M: Has the Who's stage system become more elaborate in recent years or has it been standardized?

JE: It's been pretty well standardized. I get most of the changes in tone and the effects I want out of the Alembic bass. It's got such comprehensive tone controls that I don't need anything else.

MR&M: Moving on to lyrical content of the new album, do you see any thematic strain running through the whole album?

JE: The subject matter is more open than my other albums. It's a lot freer. Sex and drugs were subjects that were taboo to me before.

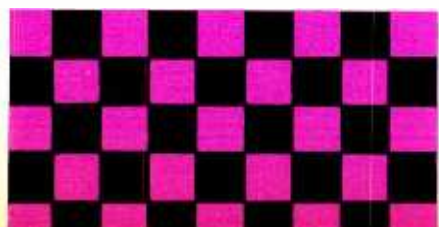
MR&M: Let's run through each cut, and hear anything you want to say about the lyrical content or the recording. The first track is "Try Me."

JE: That's about a guy who has a girlfriend who's into Quaaludes and pot. He'd like her to get off the Quaaludes and pot and more interested in him; in other words, "Try me, I'm all you need to get high." It was one of the last three songs that I wrote. It's got a lot of guitar backed up by one synthesizer, so it sounds like a guitar played through a synthesizer.

MR&M: Where did the inspiration for that song come from?

JE: I spent a lot of time in L.A. and saw a lot of guys carrying their girlfriends around because the girls were out of their heads on Quaaludes.

MR&M: What about "Talk Dirty," the next cut? That reminds me of some of your earlier material.



JE: Yeah, it's like some of the older stuff, except it's about sex, unlike my older stuff. It's about a guy whose girlfriend talks politics and religion all the time, and what he'd like is for her to get on to some other stuff, to talk dirty to him.

MR&M: "Lovebird"?

JE: That's about something many men [and women] experienced: going to bed with someone and waking up wanting to start all over again, as you see her back go out the door.

MR&M: "Sleeping Man"?

JE: That's based on a friend of mine who does the Who's lasers. He came to L.A. extremely jet-lagged, and wherever we took him he seemed to fall asleep, in his dinner or the arm chair. Once I heard a knocking on my door and when I opened it he was lying on the floor half asleep. But then he'd wake up at five in the morning because he'd had so much sleep during the day, and he'd want to do something. So the song is about someone who sleeps all the time.

MR&M: "I'm Coming Back"?

JE: After we'd done the film *The Kids Are Alright*, I seemed to be going back and forth to L.A. all the time. So that's about that.

way the public looks upon failure...or not so much failure, but let's say if a guy comes in second in a tennis tournament, people tend to forget about him and only look at the winner. In the movies, if someone makes a few bad moves they forget about him.

MR&M: That can apply to rock and roll, too, can't it?

JE: It can, but you've probably got a better chance at coming back.

MR&M: "Love Is A Heart Attack" isn't next; that's an interesting title.

JE: That may sound as if it's been based on Peter Sellers, and in a way it was. I don't mean to be cruel; it's actually based upon a joke that I heard. This man is told by his doctor that he's got to stay away from sex completely or else he's going to suffer another heart attack. So he and his wife decide he's gonna sleep downstairs and she's gonna sleep upstairs so they can stay away from each other. This goes on for about six months, and then one night they meet in the middle of the stairs. He says, "I was just coming up to commit suicide," and she says, "That's funny, I was just coming down to murder you." That's why love is a heart attack.

MR&M: Do you remember the first time you went into a recording studio? Was it intimidating to see all that equipment?

JE: The first time we went there wasn't that much equipment. It was glorious mono; just one tape machine, one head and quarter-inch tape. You had to do it all in one take or else bring in another machine at great expense. I was vaguely curious about where the other end of the mic went, but I was mainly interested in getting the song right. As you learn more about studios it's less black magic and more basic electronics.

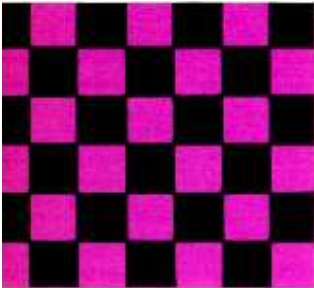
MR&M: Are you still intrigued by technical developments or is it just work to you now when you record?

JE: I like messing around. Some of the synthesizers now are such nightmares, though. They're so amazing compared to when they first came out. I just bought a Prophet 10, and they are more advanced units.

MR&M: Do these developments change the way you approach music?

JE: It changes the way I look at acoustic musicians. You don't need a drummer if you can do it all yourself. You can just walk on stage wearing a smart outfit, flip a switch and walk off.

MR&M: Doesn't that frighten you as a musician?



“There was a certain period when I went completely haywire. Everyone used to call me Rasputin.”

MR&M: "Dancin' Master" on the second side?

JE: That was just a means to get some solos in; it was a good "My Generation" type song to get in a bass solo. I wanted to do disco in a heavy rock way.

MR&M: "Fallen Angel"?

JE: That was originally going to be the title track, but when Pete put out his *Empty Glass* album, the cover had him with two halos, so I figured it was too similar.

MR&M: That's interesting; do you find that you both come up with similar ideas often?

JE: Yeah, we should really communicate more; we'd save each other a lot of time. "Fallen Angel" is about the

MR&M: And the title track?

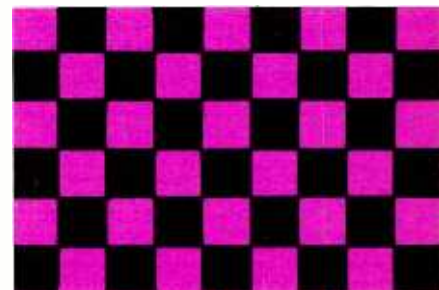
JE: That's about movies when the hero always won and the bad guy always lost. But in real life, it doesn't really happen that way. The character of the song experiences what happens in real life because he tries to live out his fantasies on the silver screen.

MR&M: Are you planning to tour with Joe and Joe?

JE: I'd like to, but that's up to the Eagles and the Who. I don't think either band has anything planned for right now.

MR&M: Well then, it's the perfect time.

JE: I suppose, but what we have to do is get managers to agree as well.



JE: No, because I watched a band the other day that used advanced computerized instruments and they were so incredibly boring to watch I knew no one would pay to see them.

MR&M: When you listen to the early Who albums, do you feel they still hold up musically? Can you still listen to them?

JE: Some of them are good for a laugh. No, actually, the older they are, the more I'd probably listen to them. I'm just starting to like *Quadrophenia*. I'm always embarrassed by old photos, though. [At this point, the interviewer shows Entwistle some old Who photos. One is an extremely early shot of the

band when they were still called the *Detours*, before they became the *High Numbers* or the *Who*!]

JE: That one was taken at a place in Shepard's Bush. It was a social club and they had bingo every Monday. I just wonder how my trousers used to stay up. [Entwistle is then shown a photo of the *Who* in their *Mod* period.]

JE: Those were our glamorous days. [Next, one from the days when his hair was long and he had a beard.]

JE: There was a certain period when I went completely haywire. Everyone used to call me Rasputin. That was also my heaviest period. I've lost 30 pounds.

MR&M: What do you remember most about Keith Moon? What sticks out in your mind about him?

JE: I have very fond memories of him and I also have nasty memories of him. In time, the nasty memories will disappear.

MR&M: How about as a musician?

JE: As a drummer, he could play things that no other drummer could play. But if you asked him to play something that any other drummer could play, he couldn't do it. He was completely unpredictable. I was the only bass player who could play with him. I've seen him get up with bands in clubs and the bands completely fall apart; it always turned into a drum solo.



MR&M: Let's run through the major *Who* albums and hear what you remember most about each. Let's start with *Tommy*.

JE: That was recorded over a period of six months and was originally going to be a single album. But as a single album the story just didn't make sense. So we stretched it into a double album. And it still didn't make sense. It didn't make sense until the film came out.

MR&M: Did you ever imagine *Tommy* would become so successful and well received?

JE: We had intended to make a film of it from the beginning, but we weren't powerful enough to be able to say we wanted a particular director and screenplay or format. We had to wait until we were a big enough band

and until Ken Russell [the director] came along before we could get much control over it.

MR&M: How about *Live At Leeds*?

JE: That's still the album I enjoy playing the most. It actually captured the *Who* on stage, which had never been done, and wasn't done again until *The Kids Are Alright*. I think the *Who* are a very important "live" band. They're not particularly important as a recording band—plenty of people sell more records than we do—but there's no one that we couldn't blow off the stage. *Live At Leeds* is a very important landmark.

MR&M: Do you think the *Who* is ready to do another "live" album?

JE: No, because I don't think we have enough material to make it any different.

MR&M: That's a good point. Why hasn't the *Who* changed its set after all these years?

JE: No one wants to hear "live" versions of your last album. The only way we could do a "live" album would be to inject material by other people, or record a whole album of new material "live," or start introducing solo material.

MR&M: What about *Who's Next*? That seems to be everybody's choice for the classic *Who* album.

JE: That started off as *Lifehouse*, but that project never really got off the ground, so it was chopped down to a single album. It never really seemed to be that important to us, but it turned out to be a classic album in the same way that *Tommy* was. You don't appreciate your own music until you look back on it and see its place and what it's done. *Who's Next* boosted our stage performance considerably; it provided us with the most stage material of any album since *Tommy*.

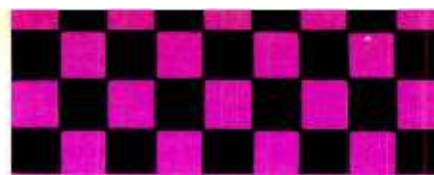
MR&M: *Quadrophenia*?

JE: People have only just started getting into *Quadrophenia*. When we first tried to play it "live" completely, the album hadn't been out long enough for people to be familiar with it, so it failed dismally. We cut out a lot of it and re-introduced parts of *Tommy*. *Quadrophenia* is a good album performance-wise; sound-wise I don't know if it came off that well. It was a sleeper till the film came out.

MR&M: Did you like the film?

JE: I liked it very much.

MR&M: *Who By Numbers* is one of the most underrated *Who* albums.



JE: We'd been off the road for about two years, and when we went into the studio we realized we couldn't play with each other. So we had to go away for two weeks to rehearse and then come back again. We were all feeling a bit disenchanted with the industry and what was happening. It was a bit of a down.

MR&M: That whole period (mid-70s) was a down musically, except for a few things.

JE: Yeah. That was my turn to do the cover, also; I think it was the cheapest *Who* album cover ever made. It cost \$60, as opposed to *Quadrophenia*, which was 17,000 pounds.

MR&M: *Who Are You*?

JE: That was almost as much of a struggle as *Who By Numbers*. We'd also had another two years off and had to rehearse again. But for me it was a landmark because it was the first album I had more than two tracks on. I really like that album; it's also our most successful album.

MR&M: What do you think of *Face Dances*, the most recent album?

JE: I'll tell you in 10 years time. It turned out a lot lighter than we expected it to. When we were working on it, it seemed a lot heavier. I thought it was going to be an uptempo guitar album, so I wrote two uptempo guitar songs. I didn't set out to make it like that.

MR&M: Looking back on the entire recorded output of the *Who*, do you have any particular favorites?

JE: I think the most enjoyable thing I ever did was the *Happy Jack* album. We did two ridiculous songs by Keith and two of my songs and one of Roger's and had a lot of fun recording it. We messed around doing it; we formed a marching band for one of Keith's songs and marched in a circle around the microphone. Roger stood at the front with a trombone. Pete played the penny whistle, I played the trumpet, Keith had two cymbals with straps. Of course, it never got recorded that way and we sat down and played it straight.

MR&M: That sense of humor carried over to the next album, *The Who Sell Out*.



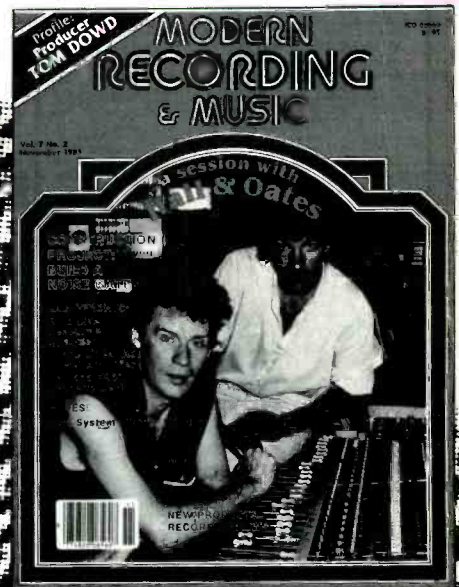
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JE: Right, then after that, it dwindled down. *Tommy* was deadly serious.

MR&M: What was it like to be caught up in the British Invasion fever? What was it like having girls rip your clothes off?

JE: They never did that to us. 95% of our audience was guys. We really didn't make it until flower power and *Tommy*. Our early tours of the States were only a couple of gigs in Detroit and the Murray The K show in New York. It wasn't until *Tommy* that we did tours that made a profit.

MR&M: What did you think of the festivals, like Woodstock and Monterey?

JE: Monterey was pretty comical; we had a lousy sound because we borrowed equipment. The whole drag was that we pioneered playing through stacks of Marshalls and cabinets piled high, but when we came here our managers tried to save money. So when we came over with Cream to do the Murray The K show, they had stacks of Marshalls and we had these diabolical little amps three feet high. When we did Monterey, we used Vox equipment, and then Hendrix and the Experience were using Marshalls. So we lost a lot of impact on the first trips by people trying to save money.

MR&M: Well, you couldn't have tried *too* hard to save money because you were still smashing equipment!

JE: Right. We finally had to say, "Look, we don't care if we don't make a profit out of this tour," so we sent our road manager home and told him, "You bring our equipment or we're not going to do any more gigs." You couldn't be the Who with toy amplifiers.

MR&M: How much of that onstage lunacy really carried over to your private lives? We always hear stories about how Keith drove cars into swimming pools and threw TVs out of windows. Did that really go on?

JE: Keith never drove a car into a swimming pool, ever. He accidentally went off the road and into a parked car once; he never learned to drive. He had a chauffeur, but he always insisted on getting into his cars when he was drunk. He drove up the steps of a hotel once. As for the TVs and stuff, my attitude is that if I have a dozen machines I just bought and half of them work and half don't, most likely they wouldn't have been taken back



but smashed instead. If I have a cassette machine and the tape gets stuck, I'll just smash it. If televisions don't work, I'll throw them across the room.

MR&M: Moving back to the present, how will you carry back this solo experience to your work with the Who? Will you perform these songs on stage with the Who?

JE: As long as the Who exists, it's very difficult to pursue a solo performing career. Should they not exist at a certain point, then I will carry on playing this stuff on stage. If the Who agree to play solo material on stage, then they can play this stuff on stage.

MR&M: What would you say is the Who's major contribution to rock and roll?

JE: Along with a few other bands, we completely changed the face of the rock industry. We've helped make it as big-time as it is now. Up until now, the only band that ever played in a

stadium was the Beatles. We turned it into something louder and bigger than it was.

MR&M: Can you see the Who playing small halls the next time they tour?

JE: Definitely not. I can honestly say I'll never step into a concert hall that holds less than 5,000 again. It has nothing to do with money; it has to do with sound and what the Who are really about. I don't think the Who are the Who in front of 3,000 people.

MR&M: To conclude, in a lot of interviews that Pete Townshend has done, he's said that rock and roll is a sacred institution and that the Who are a sacred institution. Are you a banner waver in that sense? Do you agree with that sentiment, or do you attach less social significance to it all?

JE: I don't dissect it as much. It's obviously the most important thing in my life, so to me personally, it is sacred, yes.



Profile:



Jr. Walker

By Ellen Zoe Golden & Rob Patterson

When Austry DeWalt, Jr. first honked his uncle's saxophone, no one could have guessed that the youngster would grow up to become one of the most consistent R&B hit-making musicians of our time. But, as fate (and talent) would have it, DeWalt—better known as Junior Walker—cranked up his musical gift with “Cleo’s Mood” and churned out such chart-toppers as “Shotgun,” “Do The Boomerang,” “Shake & Fingerpop,” “Pucker Up, Buttercup,” “Do You See My Love (For You Growing),” “What Does It Take (To Win Your Love From Me),” and many, many more.

Born in the early 1940s in South Bend, Indiana, Walker’s recording career began in the 1960s, in Detroit, when he worked with Harvey Fuqua at his Harvey Records label. When Harvey Records folded, Walker followed Fuqua to

Motown, formed Junior Walker and The All-Stars (featuring Willie Woods on guitar, Vic Thomas on organ and James Graves on drums) and huffed and puffed on the Sout Records’ subsidiary into the musical memories of millions.

With a whole new audience ready to discover some of the original soul music, the 1980s finds Junior Walker back on the road with a brand new band—including his son on drums—behind him. Modern Recording & Music caught up with the band at U.S. Blues in Roslyn, New York, and talked with Walker about the early days in the music business, some of the the present accomplishments (including a session with the group Foreigner on their latest single “Urgent”) and some of what’s to come from Junior Walker & The All-Stars in the future.

Modern Recording & Music: How did you first become interested in music and what attracted you to the saxophone?

Junior Walker: In South Bend, In-

diana, when I was 14 or 15, we used to go over on Sundays and listen to a guy named George Mason and his brother, Ray. They had a band that was playing

all the hits of the time. George Mason blew saxophone. I got interested in music by going over and listening to them jam. Maybe two or three years

later, my uncle said, "I hear you're trying to blow a horn." I said, "Yeah," and he said, "Well, I've got one in Chicago; I'll let you have it." So I went over to Chicago with him one day and picked it up. I tore that thing up two or three ways and learned how to play it. Then I traded it in for a horn that was a little better. I started playing that one and taking a few lessons. Then my mother got me a horn.

My mother and I went over to Elkhart, Indiana and went to a music store. She said, "I think you should get a good horn, 'cause you look like you're really trying to do something." When we got to the music store, the man said he'd take me over to the factory to pick out the horn. I picked out a Selmer Mark 6. My mom said, "You pay down on it and I'll pay for it," because I wasn't making enough money to pay for the whole thing.

I still have the horn my mother got for me. It's not the one I play onstage, but I still have it.

MR&M: Did you pattern your style of playing after anyone in particular?

JW: No, I listened to all different types of horn players. When I got that Selmer Mark 6 I really started blowing. Finally, I got my own style, a little style to myself.

MR&M: What happened next?

JW: I was playing everywhere you could think of—clubs, weddings, etc. Then, in '63, I got with Harvey Fuqua (former leader of The Moonglows and founder of the Harvey record label) and I started recording for him. He got me some jobs out of Detroit with people like The Spinners. That's how I met The Spinners, Marvin Gaye and all of those guys at Motown. Gaye was in The Moonglows with Fuqua, but he was cutting recordings for Motown. He did that thing "Hitchhike." Fuqua and his record company eventually went out of business and he went over to Motown. Later on, I went and talked to Berry Gordy and joined up with his Soul label.

MR&M: Did you have your own band then, or were you recording with different musicians each time?

JW: Before we started recording, I was with The Jumping Jacks, which later became The Stix Nix. When I joined up with Mr. Gordy, we called the group Junior Walker and The All-Stars. That was in the latter part of '63. In '64, Mr. Gordy released "Shotgun."

MR&M: What do you remember about the early recording sessions?

JW: Well, when I went in and recorded "Shotgun," Harvey Fuqua was there. He asked me to sing the song because the guy who was going to sing didn't show up. I wrote the song and Fred Patton was going to sing it, but he didn't show up. When they told me I was going to have to sing, I said, "Man, I can't sing," Fuqua said, "You wrote it, so we all nominate you." So, with that, Mr. Gordy told us to get on with the recording.

Everybody was around the studio including Brian Holland [of Holland-Dozier-Holland, producers and writers of most of Motown's hit records]. My drummer couldn't make it, so we used the Motown studio drummer. Fuqua stood behind the drummer telling him how to do the breaks, because Fuqua knew what I wanted.

We cut it one time and Brian [Dozier] jumped up and said, "That's a hit!" He ran into the control room and took over.

"...my uncle said, 'I hear you're trying to blow a horn.' I said, 'Yeah', and he said, 'Well, I've got one in Chicago; I'll let you have it.' "

We cut it again with Brian behind the controls and after the second take he said, "I can put this together with what I've got."

MR&M: Was that a four-track recording?

JW: It was four track. Nowadays, they've got 16, 24, 32 tracks, but all the songs we did back then were recorded with four tracks. And boy, they were bigger [sounding] than what's happening today.

MR&M: Were you ever very much involved with the technical process or did you just go into the studio and play?

JW: Actually, I just walked in there and recorded. I remember one time we were cutting a record—we were just tearing it up—when they started putting those baffles in between and we couldn't play well. The guy told Mr. Gordy: "I can't get it like he wants it." But Berry said, "I'm paying you to get him, so go out there and get him." That guy

got out there and set those mics up and he got us, too.

MR&M: Did it always go the way you wanted?

JW: Before we went into the studio to record "The Boomerang," my band rehearsed it. When we went to the studio to record it, *all* of the Motown band came in and said, "Give me something to play." They were telling my drummer [James Graves] to get up and I was telling them they couldn't tell *my* drummer to get up. Willie Woods [of Junior's band] was playing guitar, but there were two other people playing guitar, too. If you listen to "Do The Boomerang" and hear all those different people playing on that song, that was the Motown band. They wouldn't let me cut that record without them.

MR&M: While you were with Motown, did you ever play on anyone else's records?

JW: I did some things on Harvey Fuqua's records, but not on anybody's records at Motown. See, when I got with Mr. Gordy, he really didn't want me to do too much on anyone else's records. He just wanted my thing to stay like it was so if anyone asked me to play, he would just tell them to leave me alone.

MR&M: Apparently that was the right thing to do since Junior Walker and The All-Stars produced hits straight into the seventies. But you left the label, why was that?

JW: Motown started getting into movies and that hurt the record end.

MR&M: So you jumped?

JW: Yes.

MR&M: What else have you been doing since then?

JW: I blew on a lot of other records. I blew on Maria Muldaur's record over at Warner Brothers, and just recently, I blew on the new Foreigner single (titled "Urgent").

MR&M: How'd you get hooked up with Foreigner?

JW: One of the guys in the group saw me in New York and said, "I've got a record I think I want you to blow on." I asked, "Where is it?" He asked me to come to the studio and see how I liked the song. I went over and listened one night and I said I would blow on it. He said it was in the key of E and I said, "It doesn't matter what key it's in; as long as it's in a key, I can blow it." Well, they said they'd get it all set up and then they'd call me. When they did call me, I was in Washington, so I drove the truck to New York. It broke down on the way,



Autry DeWalt, Jr.—better known to R&B fans as Jr. Walker—blowing at U.S. Blues in Roslyn.

but I made it and we recorded the song.

MR&M: Did they tell you exactly what to play?

JW: They didn't tell me what to blow. They just told me to go ahead and they would decide what to do with it later. Well, those boys are making some money with that song now.

MR&M: Sure, but what about another Junior Walker record? Does this tour coincide with a new release?

JW: Well, the last record I cut was last year with Norman Whitfield for Warner Brothers. It was different with him; instead of recording "live," other musicians would cut their parts and then I would come in and play. At that time, I didn't have too much to say.

MR&M: When will that record be released?

JW: I don't know why, but they never released it.

MR&M: Have you signed with another label?

JW: No, I'm looking for a good record company. I'm just touring now to keep the band playing until I decide which record company is best for me.

• • •

MR&M: Tonight you're playing a club. Would you rather play in a club set-

ting or do you prefer a larger venue?

JW: As long as I get my money, I don't mind playing clubs.

MR&M: Is there any particular way you like the stage set up?

JW: I usually have the horn miked. I've blown an electronic saxophone once, but I'll stick with the natural sound 'cause I can do more with it.

MR&M: What kind of sax do you use on stage?

JW: It's another Selmer. I bought this one in 1970.

MR&M: One last question: Are we going to hear anything new from Junior Walker and The All-Stars tonight?

JW: No, I'm not going to play anything new. We're trying to get with a new record company, and when we sign up, then you'll hear something new. Oh, it's in my head. You have always got to keep that going. I want to go into the studio and more or less control my recording. I was doing it all before anyway and now I think I can handle everything.

The club, U.S. Blues, in Roslyn, New York is a pleasant surprise: a room ideal for listening, dancing, drinking at the bar and even dining, with the appropriate ambient sound for listening in each area. Set in what was once a house,

the club's main room is approximately 400' deep by 100' wide, mainly paneled in wood. In front of the deep, carpeted, modular stage there is a dance floor that is about 75' long. Up front, the sound is full and dynamic without being ear shattering; back along the bar one can listen and converse at the same time without straining to do either.

U.S. Blues is ideally set up for the multitude of purposes it was obviously intended for. Booking both national name-acts and local bands, U.S. Blues is a modern and efficient venue that satisfies the needs of the serious listener, the dancer, and even the musically indifferent socializer. Before Jr. Walker and The All-Stars' set, Modern Recording & Music spoke with one of the club's sound mixers, Phil Antonucci, about the club's particular set-up, as well as his specific tactics for the night's show. Jr. Walker had not brought along a personal sound-mixer.

Modern Recording & Music: How long has the present P.A. system been here?

Phil Antonucci: The present sound system has been in here about three years. The club was here before that, but then bands would bring in their own sound systems. When U.S. Blues started booking national acts, they wanted to design a system that complemented the well-designed room. This place is really well designed from a musician's point of view, because it's got a good stage and P.A., a nice monitor system, a lighting set-up, dressing rooms...the whole bit. It was almost designed for the musician to have a good time.

MR&M: It seems from the look of the room that it wouldn't be very "live" acoustically.

PA: It's a very "dead" room, because it was designed that way. It's got a lot of absorptive materials [panels] hanging from the walls; the stage is placed really well. There's almost no echo in the room and the stage is totally dead, so you have to depend a lot on the monitor system to hear what's going on onstage. In fact, a lot of bands come through here and feel as if they are not putting out, because everything's being absorbed. But you really are. The P.A. is doing the job. It lends to you putting on a more high-energy performance. It's a very deceptive room...

MR&M: Would you describe the component's of your sound system?

PA: The system was put together by ElectroSound, a West Coast company. It's a 30-input, 8-output mixing console, powered by 125-watt per channel Crest 2501 stereo amplifiers. We have five amps working on a three-way system.

In each speaker cabinet, there are two 15s, two 12s and a horn—a TAD driver. The rest of the speakers are JBL.

The system is set up for stereo, but we use it in mono, because it gives it a little more punch. We divide the five amps up so that one powers the horns, another one powers the 12s, another on the 15s. We have a spare amp if a band comes in with bass bins. The other amp is used on the monitors.

Our monitors have a 10-inch speaker and a horn, a "bullet."

MR&M: What kinds of microphones do you use, and how will you set up for Jr. Walker and his band?

PA: Jr. Walker isn't doing a sound check, but the opening act is totally set-up. What we usually do with two acts, of course, is give the main act a little more of the sauce than the opener—for instance, light cues.

The mics we have available here are several Sennheiser 421s, Beyer 201s,



Jr. Walker & The All-Stars, circa 1981. Walker's son (above center) now plays drums with the band.

SELECTED DISCOGRAPHY

<i>Anthology</i>	Jr. Walker & The All-Stars	Motown 786
<i>A Gassss</i>	Jr. Walker & The All-Stars	Soul 726
<i>Back Street Boogie</i>	Jr. Walker & The All-Stars	Whitfield 3331
<i>Greatest Hits</i>	Jr. Walker & The All-Stars	Soul 718*
<i>Home Cooking</i>	Jr. Walker & The All-Stars	Soul 710*
<i>Hot Shot</i>	Jr. Walker & The All-Stars	Soul 745
<i>Live!</i>	Jr. Walker & The All-Stars	Soul 705*
<i>Moody Jr.</i>	Jr. Walker & The All-Stars	Soul 733
<i>Motown Superstars Series, Vol. 5 [anthology]</i>	Jr. Walker & The All-Stars	Motown 5-105
<i>Peace and Understanding</i>		
<i>Are Hard To Find</i>	Jr. Walker & The All-Stars	Soul 738
<i>Rainbow Funk</i>	Jr. Walker & The All-Stars	Soul 732
<i>Roadrunner</i>	Jr. Walker & The All-Stars	Soul 733*
<i>Sax Appeal</i>	Jr. Walker	Soul 747
<i>Smooth</i>	Jr. Walker	Soul 750
<i>Soul Session</i>	Jr. Walker & The All-Stars	Soul 702*
<i>Shotgun</i>	Jr. Walker & The All-Stars	Soul 701*
<i>What Does It Takes To Win Your Love</i>	Jr. Walker & The All-Stars	Soul 721*
<i>Whopper Bopper</i>	Jr. Walker	Soul 748

* Available in both mono and stereo

Shure SM-57s...and AKG D-12s that I use for the bass drums. I always use 421s on the rack toms. Now I prefer miking the drums from the top. You get a lot more snap, where miking underneath you get a lot more boom. With a lot of tom-toms that are single-headed, you can mic from underneath and get away with it. Tonight I had to mic the two shelf tom-toms because I had no choice. The guy has a cymbal hanging right over the toms, so I can't get underneath it, and the cymbal would wash out the mic that close. I'll just play some EQ games to get the sound I like.

MR&M: What do you use on guitars and vocals?

PA: I use the 57s for all the vocals; we have direct boxes for the keyboards, bass and guitars. Jr. Walker has a Hammond B-3, so I'll mic the Leslie with two mics. All I have left are the 201s, which I've set up with one on the bottom and one on the top. I'll mix the top a little lower than the bottom, which I'll make a little gutsier and maybe push up the midrange.

MR&M: What will you use on Junior's sax?

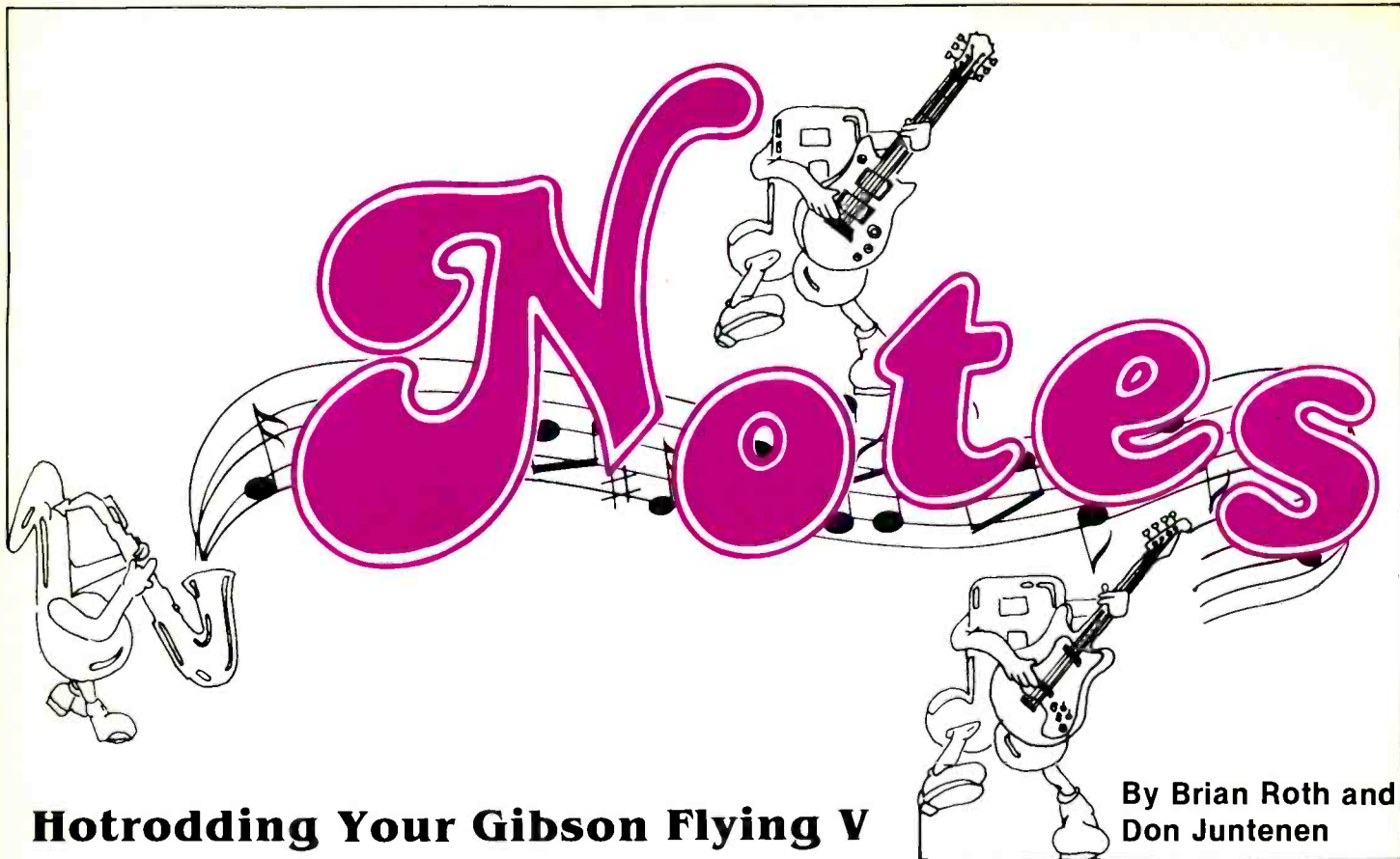
PA: Well, I use a 421 most of the time, but it's a toss-up between the 421 and an

SM-57. I've used them both on sax. I particularly like the sound of the SM-57 on a lot of stuff, and that's what I'm using on the sax tonight. The 57 is a gutsier sounding mic. You can get a good proximity effect on that mic that I can't seem to get from the 421. And...the 421 is three times the price of a 57.

MR&M: How do you deal with not having a sound check for the headliner?

PA: I set up from my experience of the room. I know the EQ changes I have to do on the drums, for instance. Drummers are a problem, because so many drummers play differently, and that affects how you mic things. Sometimes I'll have drummers in here from which I can't get enough sound because they play so softly. I actually get feedback from the mics because I have to turn them up so loud. Then there are some guys who come in and play really heavy—they kick the ass out of their drums, and that's the best sound you can get, because you have something to work with.

But even without a soundcheck I'll get the sound on the first song. I'll have it down by the first song, and there won't be any feedback or anything... well, there might be a few little squeals.



By Brian Roth and
Don Juntunen

Hotrodding Your Gibson Flying V

This month, "Notes" takes a slightly different approach. I will be describing a rather interesting series of modifications that a friend and I performed on a 1968 Gibson "Flying V" electric guitar.

It all started simply enough. My friend, Don, showed me a brochure that had accompanied a pair of Seymour Duncan pickups that he had recently purchased. It quickly became apparent that a "systems design approach" would be required to make the two new pickups do what Don wanted.

What made the project so interesting was the fact that the model SH-5 Custom (4-conductor) dual-coil pickups allowed the installer access to each coil within the pickup. Thus, you can utilize it as a single coil (with a choice of either), a dual coil "humbucker" or any other combination of series or parallel, in or out of phase connections. Whew!

This flexibility is achieved by having four individual signal wires from the pickup; one pair connects to the front coil, while the other wire pair connects to the back coil. These four leads are enclosed within an overall shield that also serves as the pickup's housing ground line.

Don's objective was as much tonal variability as possible, and since he was using *two* pickups, the possible combinations became mind-boggling. So, we made a list of the primary "sounds" that he wanted from the modified guitar:

- 1) Single coil from the front pickup.
- 2) Single coil from the back pickup.
- 3) Single coil from both front and back pickup.
- 4) Single coil from front pickup out of phase, with single coil from back pickup.
- 5) "Humbucker" (dual coil) front pickup.
- 6) "Humbucker" back pickup.

7) "Humbucker" front and back.

8) "Humbucker" front out of phase, with back pickup.

Obviously, some additional switching would be required to supplement the stock "front-both-back" toggle switch. After some head scratching, Don decided to add three miniature toggles to the pickguard. The first switch would select single coil or "humbucker" operation for the front pickup. The second switch made the same selection for the back pickup, while the third switch flipped the phase of the rear pickup. The original toggle retained its normal function.

After some more discussion, we decided that it would be nice if we could select either coil within each pickup in the "single coil" status. So, Don purchased three-position miniature toggle switches for the "single-humbucker" selectors. In position one, coil one was active; position two established "humbucker" mode; and position three selected coil number two.

We began to realize the possible combinations that the switching network would allow. Either single coil within a pickup could be used with either single coil of the other pickup in or out of phase. Plus, one pickup could be a "humbucker" and used in conjunction with a single coil or a humbucker configuration from the other pickup, in or out of phase. Talk about choices!

Now that the cerebral part was done, the next step was to implement the design. I had originally balked at butchering the stock electronics in the Flying V, but Don was one step ahead of me. Since all of the electronics (pickups, volume and tone pots, switch, output jack) were mounted on the pickguard, he simply removed the original electronics assembly and had a local plastics manufacturer make a duplicate

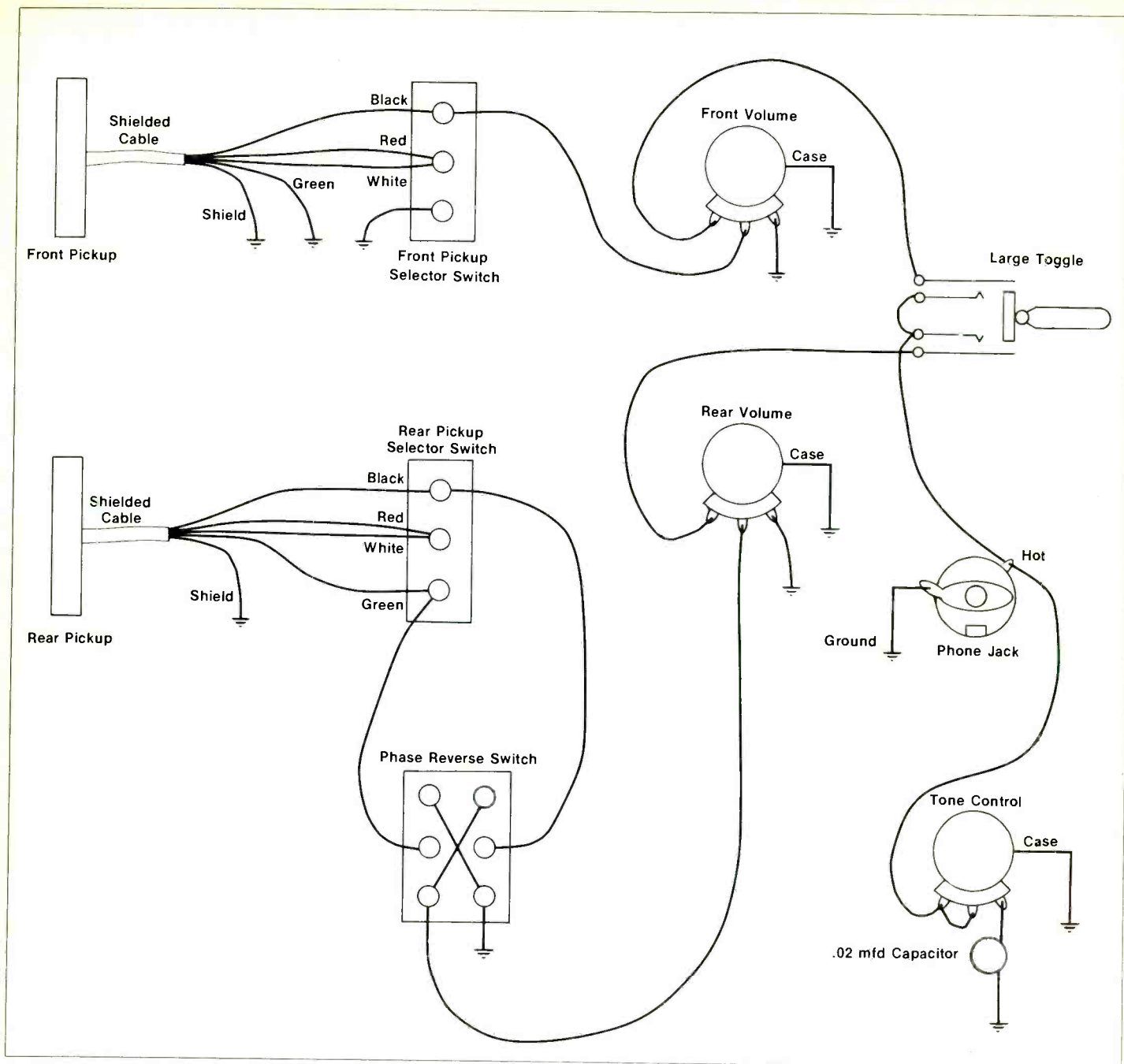


Figure 1: Pictorial wiring diagram (rear view of switches and pots shown).

pickguard. Then he stashed away the original electronics so he could restore the guitar to its original form if he should later decide to do so.

We were basically starting with a clean slate. Don mounted the two pickups, the three miniature toggle switches, a conventional large toggle switch, one tone pot, two volume pots and the output jack onto the duplicate pickguard. I sketched a wiring diagram (shown in *Figure 1*) to simplify the modification. Don, who is also a good "wire-er" decided to do all the hook-ups, and I set him up with the proper tools:

- A) Weller W-60 temperature controlled soldering iron.
- B) Damp sponge to keep the iron's tip clean.
- C) 63-37 ratio solder (22 gauge) to ensure good connections.
- D) Weller solder gun to make ground connections on the back of the various pots.

- E) Miniature needle nose pliers.
- F) Miniature wire cutters.
- G) Wire strippers.

After several hours of patient work, the new electronics package was ready to go back into the Flying V. We decided, however, to test the new assembly out of the guitar since it would be easier to correct any problems at this stage. We patched the output jack into an amplifier and ran through the various switch combinations. Proper operation was verified by lightly tapping on whichever coil (or coils) were supposed to be active.

Don had done everything right, so he installed the wonder guts into the guitar. It was at this stage he made his only mistake. He accidentally soldered the tailpiece of the ground wire to a wrong terminal in the electronics, so when

PARTS LIST

1 ea. SH-5 Custom four-conductor pickup, optimized for front position.

1 ea. SH-5 Custom four-conductor pickup, optimized for rear position.

(The above are available from Seymour Duncan Pickups, Box 4746, Santa Barbara, Ca. 93103, or by calling (805) 963-0676.

3 ea. 500 K potentiometers (fourth one required for dual tone controls).

1 ea. .02 mfd, 25 volts or greater, disc ceramic or polyester capacitor (two required for dual tone controls).

1 ea. 3-position toggle switch (standard on guitar).

2 ea. SPDT, three-position "on-off-on" miniature toggle switches (available from CEK Components, Inc., #7103, or equivalent).

1 ea. DPDT, two-position, "on-none-on" miniature toggle switch (CEK Components, Inc., #7201, or equivalent).

1 ea. 1/4" phone jack.

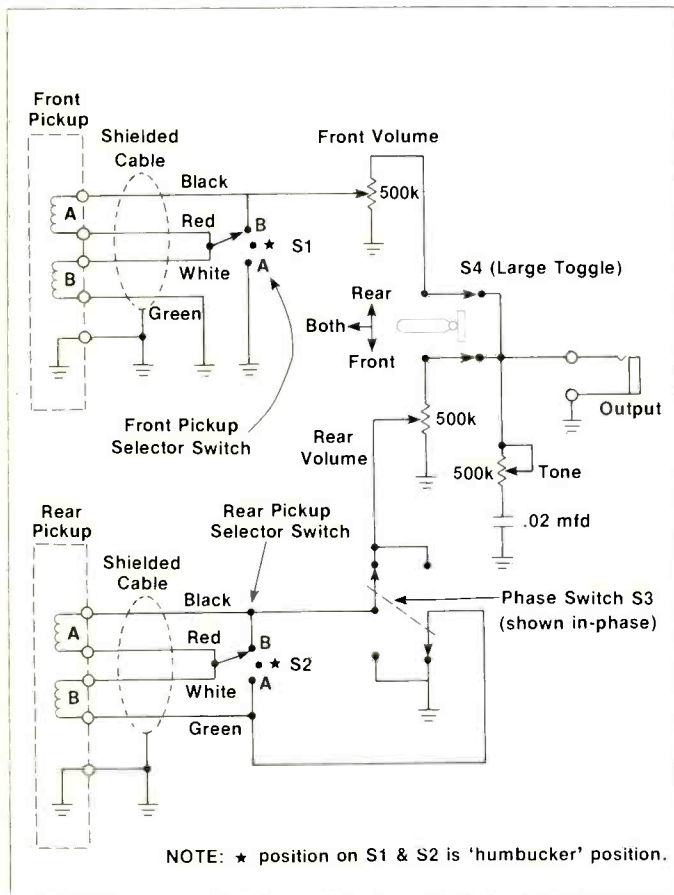


Figure 2: Schematic diagram of modified guitar wiring.

we fired up the guitar we noticed a moderate amount of hum. We quickly located the problem, and Don corrected the error. Considering the complexity of the switching network, that's a really good batting average.

Don sat down with his amplifier and started running through the possible combinations. The more positions he tried, the happier he became. The hardest part was deciding on just which sound was the best for a given song!

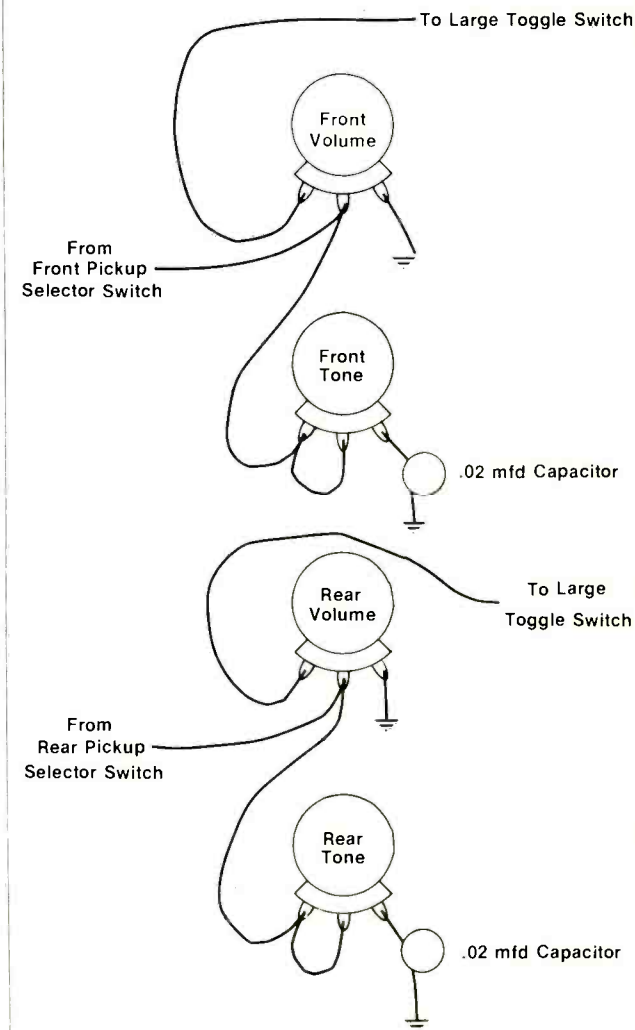


Figure 3: Alternate dual tone control wiring.

The "hot rod V," as I call it, has become Don's stock guitar for all his recording work (except for the few occasions when he uses a hollow-body Gibson). There is practically no limit to the sound possibilities.

Various Footnotes and Observations

We originally had wondered if it was really necessary to be able to select one or the other coils within each pickup for the "single coil" mode. As it turned out, the two coils in the front pickup sounded practically identical. However, since the rear pickup is located so close to the bridge, there is a difference in the sound of each of the coils. Plus, when you use combinations of coils, the tonal choices are greater. So it was worth the small amount of extra wiring.

Don had wisely decided to have a separate volume control for each pickup. This gives even more versatility when using

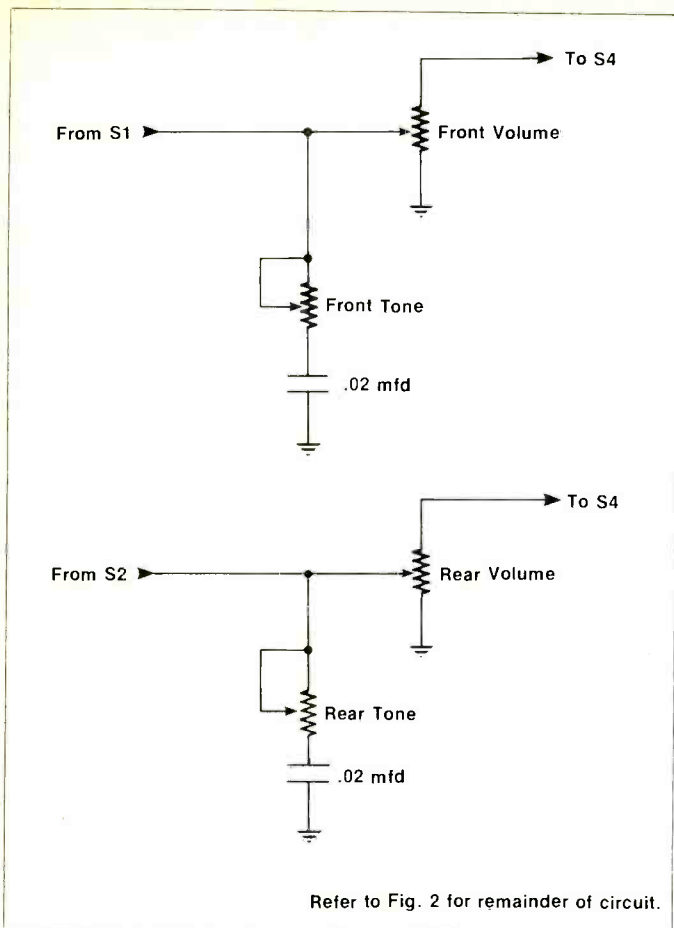


Figure 4: Schematic of dual tone control configuration.

both pickups simultaneously, particularly if one pickup is set "single coil" while the other is "humbucker." The separate volume pots allow the levels between each of these dissimilar pickups to be balanced.

The SH-5 Custom pickups can also fit into most Les Paul, SG and 335 guitars. However, it may be a real problem find-

ing space to install the extra switches, particularly on the 335 since there is no easy way to get inside the body of the guitar. Don feels that the Les Paul would probably be the easiest to modify, but extra holes would have to be drilled through the front of the guitar to install the switches. Also, the new toggles would require longer bushings.

If you are brave enough to modify these types of guitars, the tone control circuitry shown for the Flying V isn't appropriate; Les Pauls (and others) utilize a separate tone control for each pickup. So, substitute the alternate circuit (shown pictorially in *Figure 3* and schematically in *Figure 4*) and *do not* use the tone control connections from *Figures 1* and *2*. This optional configuration will retain the dual tone control functions.

In all of the pictorial diagrams, grounded connections are shown with the schematic symbol. This was done to simplify the wiring. Keep in mind that *all* grounded points connect together including the metal cases of the various pots and switches. If necessary, use a wiring lug (represented in *Figure 5*) between the switch or control and its mounting surface. Soldered connections can be made to the metal case of most standard pots, but not to the metal parts of the miniature toggle switches (solder will not adhere to these little fellers, plus the soldering heat may internally damage the workings). A less desirable alternative would be covering the component mounting surface with foil; don't forget to ground the foil or you'll have buzz city. And don't forget to connect the wire from the tailpiece to ground.

I am including a material parts list. Most items are available from any well-stocked electronics parts house, and maybe larger music stores. The pots and large toggle switch can be "recycled" from the stock electronics or purchased from a guitar parts dealer. As far as Don and I know, the SH-5 four-conductor pickups must be special ordered from Seymour Duncan at the address shown in the parts list.

In closing, we hope these modifications will be helpful. If you have any problems or questions, mail us a note at *Modern Recording & Music* and we'll try to help.

Until next time, happy hot rodding!

CIRCLE 33 ON READER SERVICE CARD

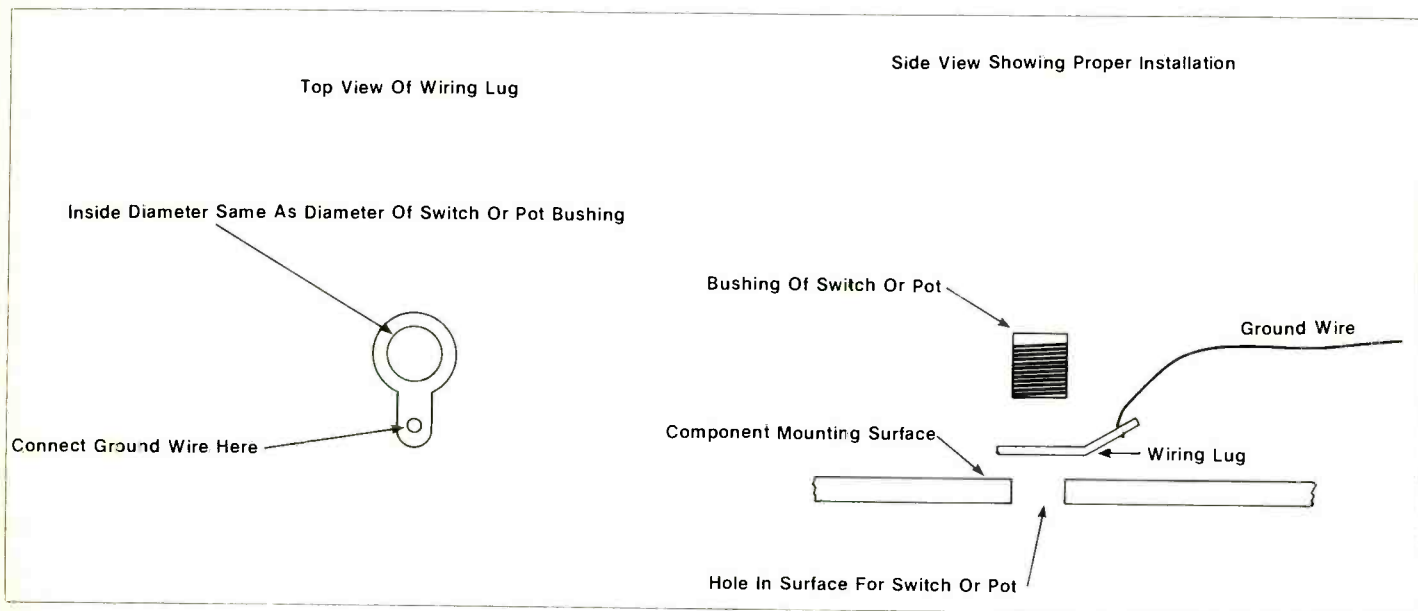


Figure 5: Details of wiring lug for grounding switch and pot bushings.

Ambient Sound

By Len Feldman

While We Wait for Stereo TV

There's no doubt about it! When the Federal Communications Commission finally makes up its mind about multi-channel TV it's going to affect all of us involved in the audio profession, whether we are associated with a recording studio, a broadcast studio or even just serious audio hobbyists and home recordists. Those of us who prepare sound tracks for video productions will have to revamp everything from microphones to audio lines leading to the video recorder or transmitter. Those involved in consumer video product design and manufacture will have to come up with two-channel versions of everything from the VCR to the TV set.

Japan, of course, has been broadcasting stereo audio for more than three years—with great success. In addition, it has been using its multi-channel audio TV system for bilingual audio transmission as well—a system that is particularly effective when used with motion picture telecasts. The Japanese language version of the film is heard on the “main” audio channel, while the original sound track of the film (if it is of American or European origin) is heard on the sub-channel.

For a while, it looked as though we were going to be second in converting to two-channel TV audio, but now we learn that West Germany is about to begin broadcasting its version of stereo TV (such broadcasts will have begun by the time you read this). That puts us in third place—not a very proud showing—providing some other industrialized nation does not suddenly begin broadcasting *its* version of stereo audio/bilingual audio on its TV system.

Considering the fact that the question of stereo TV was first raised in the U.S. way back in the late 1950s, at the time that the FCC began considering stereo FM systems, why have we had to wait so long and, for that matter, why are we waiting still? Well, to begin with, when stereo audio for TV was first suggested way back then, the FCC concluded that with the small TV screens then in use, the wide sound of stereo would be “unnatural” and would not be accepted by the TV

viewing public of that time. Perhaps so, but why the delay *now*?

The way things work here, any serious proponent who comes up with a workable system for something as important as new transmission standards for TV sound has a right to be heard, and that proponent's system must be tested and evaluated. Three such systems have been proposed for use in the U.S., and it became the job of the EIA (Electronic Industries Association) Multi-Channel TV Subcommittee to act as the impartial tester of the three proposed systems. As of this writing those tests are just about completed, but it will take several months before a comprehensive report is submitted by this committee to the FCC, and, based upon previous experience, it could take anywhere from six months to several *years* until the FCC makes up its mind and authorizes a particular system for use on the air. (We are still waiting for a decision on 4-channel discrete broadcasting, remember, as well as one on stereo AM, which seemed like a closed issue more than a year ago when the FCC tentatively gave the nod to the Magnavox stereo AM system but subsequently changed its mind and is still “deliberating.”)

While we wait, it might be worthwhile to examine the three basic systems which have been proposed. One of these systems is the one already in use in Japan; it is known here as the EIAJ System (Electronic Industries Association of Japan). In this system, stereo or bilingual programs are provided by means of an all-FM subcarrier with its center frequency at 31.47 kHz (twice the TV horizontal line frequency). Bandwidth of this FM-modulated subcarrier is kept within the range from 16 kHz to 47 kHz. Maximum frequency deviation of the FM subcarrier is ± 10 kHz, while maximum frequency deviation of the *main* carrier is ± 25 kHz, as it presently is in mono transmissions. In this and the other two proposed systems, when stereo is to be broadcast, the familiar “sum-and-difference” technique (now in use for stereo FM) is used. That is, the *sum* of the left and right channels (L+R) modulates the main channel, while the difference between the two channels (L-R)

modulates the 31.47 kHz sub-channel. When stereo is broadcast, the main carrier's deviation by the sub-carrier is +20 kHz. In bilingual mode the main sub-carrier's deviation of the main carrier (also known as injection) is ± 15 kHz.

In addition to these carrier and subcarrier components, the frequency baseband for the EIAJ system also has a control subcarrier, at a frequency of 55.07 kHz, or three times the horizontal TV line frequency. This extra subcarrier, which is an AM type, is used during multiplex transmissions to provide a code that tells the receiver whether to switch to the bilingual mode or the stereo mode. During stereo programs, a 985.5 Hz tone is transmitted as amplitude modulation of this control carrier, while during bilingual programs a 922.5 Hz signal is used. Maximum frequency deviation of the main carrier by this control carrier is only ± 2.0 kHz. The control signal can be used in TV sets to switch to the bilingual or stereo modes automatically, in much the same way that the 19 kHz pilot signal of a stereo FM transmission switches the FM tuner from mono to stereo.

The Telesonics System

This system, as well as the one proposed by Zenith Corporation, employs an AM subcarrier rather than an FM one. The subcarrier in the case of Telesonics is the double-sideband, suppressed carrier-type not unlike the subcarrier used in stereo FM broadcasting. This arrangement requires a pilot carrier signal, which is used at the receiving end to restore or reinsert the suppressed carrier of the subcarrier. In the case of the Telesonics system, the pilot signal has a frequency of 19.668 kHz, which is 1.5 times the horizontal line frequency. The double sideband suppressed carrier (used to transmit the L-R information, or the second language signal) would be at a frequency of 39.939 kHz, or 2.5 times the horizontal line rate. Tests of this system were also to be made using additional FM subcarriers for other transmission services not related to the TV program itself, such as Electronic News Gathering and telemetry. These additional subcarriers are impressed upon the main carrier at very low levels with highly restricted audio frequency ranges.

The Zenith Corporation System

Zenith also utilizes an AM subcarrier of the double sideband, suppressed carrier-type. Instead of employing a separate pilot signal, however, the Zenith system uses the horizontal line frequency itself for that function, with the center frequency of the subcarrier itself set at twice the horizontal line frequency, or at 31.468 kHz. In addition to this basic subcarrier, which is related to the TV program, the system also makes provision for a separate audio program, using an FM subcarrier having its center frequency at four times the video horizontal line rate, or 62.936 kHz, and additional FM subcarriers at 5.5 and 6.5 times the horizontal line

rate can also be included for telemetry or other telecommunications purposes.

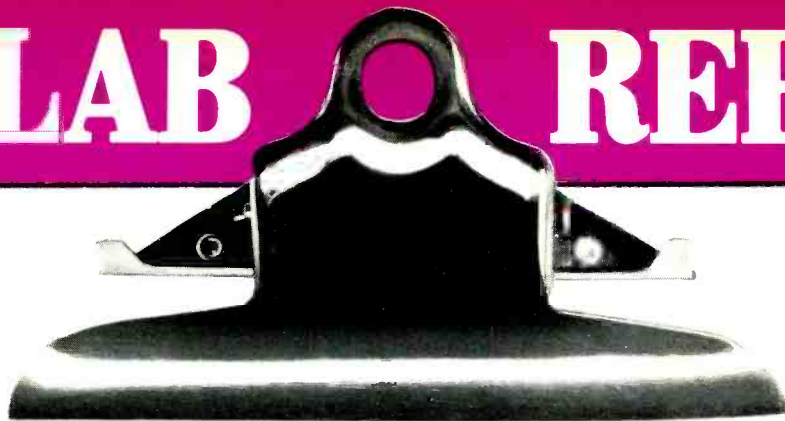
Poorer Signal-to-Noise Ratios

As we quickly learned when stereo FM broadcasting began in the early 1960s, "you can't get something for nothing." Cramming additional information into a given allocated bandwidth means taking a beating in one or more of the performance parameters associated with that service. In the case of stereo FM, we suffered a degradation of signal-to-noise ratio when switching from mono to stereo, especially under weak-signal reception conditions. The same holds true for *all* of the three systems proposed for stereo or bilingual audio on TV. No one would argue with the fact that an FM subcarrier, used as the L-R channel of the stereo audio, would cause *less* degradation of S/N than if an AM subcarrier were used, all other things being equal. Telesonics and Zenith believe that all other things are *not* equal, and they have put forth good arguments for their systems which tend to offset the poorer S/N ranking that both of these systems are bound to have relative to the all-FM EIAJ system.

Since we are all going to suffer a loss in S/N (just at a time when dynamic range of program material is getting better and better), it was decided to couple a noise reduction or companding system to the proposed transmission system. With all the noise reduction systems being promoted, it was no surprise that *three* proponents came up with companding systems specifically designed for use with TV audio. Unlike "closed loop" companding systems which must be decoded during playback to sound reasonably natural, the companding systems proposed for TV audio broadcast purposes had to be "compatible"—listenable for owners of TV sets *not* equipped with decoders (whether older mono sets, or even future, low-cost stereo TV sets). The three proponents whose companding systems were to be tested were Dolby (with its new Dolby C noise reduction system), CBS (with its new CX encode/decode system modified for use in TV) and dbx, Inc., with a modified version of its linear, wide-band, 2:1/1:2 companding system. If the use of one or another of these companding systems becomes part of a stereo/multi-lingual audio transmission system, then it is presumed that makers of more expensive sets will incorporate suitable decoder circuitry while lower cost sets will simply incorporate the basic de-multiplexing circuitry suitable for whichever transmission system is chosen, but will not incorporate a compander decoder.

In terms of what the FCC has to consider, then, we have no less than *nine* possible permutations of systems—three basic transmission systems, each with the possibility of one of three different noise reduction systems. Anyone who thinks that we're going to have a decision by early 1982 had better think again. Come to think of it, we may not even be the *third* major industrialized nation to have stereo TV audio. Perhaps sixth, seventh or worse will be more like it...





NORMAN EISENBERG AND LEN FELDMAN

Sunn SPL-4120 Equalizer



General Description: The Sunn SPL-4120 is a dual ten-band graphic equalizer. Each channel provides ten sliders on octave frequency centers from 31.5 Hz to 16 kHz; the range of each slider is ± 15 dB. In addition each channel has its own level slider control, a pair of LED indicators and a bypass switch. The green LED ("norm") may be used in conjunction with its level control to set proper signal levels for maximizing S/N while still avoiding clipping. The green LED comes on for a signal level in the SPL-4120 of 1 volt RMS (0 dBv). The red LED will light up when the internal signal hits 9 volts RMS (19 dBv). In the bypass position of the bypass switch, the signal is routed directly to the output jacks of the equalizer, thus bypassing its internal circuitry. In the "in" position of that switch, signals go through the equalizer. These controls, plus the device's power off/on switch (which lights up in its "on" position), are on the front panel which is fitted at either end with handles and slots for rackmounting.

Input and output connectors are at the rear. For inputs there are unbalanced 1/4-inch phone jacks paralleled with balanced male XLR connectors. Also on the rear is a printed block diagram of one channel of the equalizer showing signal paths from input to output. The power cord is fitted with a three-prong (grounding) plug.

Test Results: Specs for the Sunn SPL-4120 were confirmed or bettered in MR&M's lab tests. Especially noteworthy were the unit's very low distortion, high signal-to-noise ratio, wideband frequency response and an ability to handle a wide variety of signal levels without overload, clipping or other signal-degrading effects.

Figure 1 shows our usual spectrum-analyzer multiple-sweep display of the total range of all ten controls

per channel. Center frequencies were well within normal tolerances of frequency accuracy, as was the total range for boost and cut. This latter characteristic is detailed in Fig. 2 which shows two successive plots made on our Sound Technology 1500A. On this display, the double-line divisions represent decades of frequencies, i.e., 100 Hz, 1 kHz and 10 kHz. The vertical sensitivity is 10 dB per division. Illustrated in this display is the action of the slider on the 1 kHz frequency center. For this particular filter band, maximum boost was 15.7 dB; maximum cut was -15.1 dB. (The "L" and "R" notations can be ignored, since they simply represent the two successive plots needed to make this double display.)

Using the same test instrument, we set up an ar-

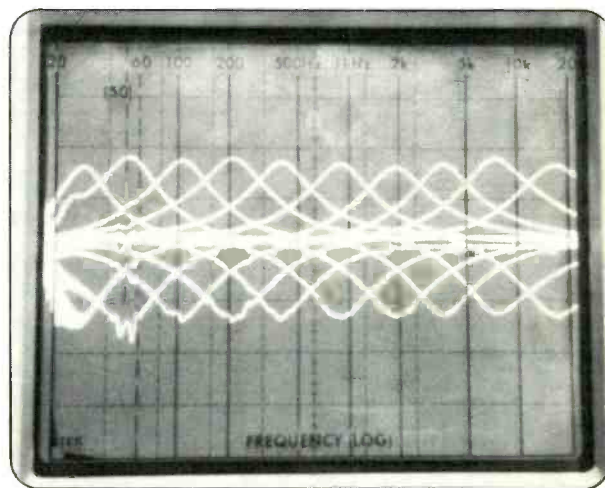


Fig. 1: Sunn SPL-4120: Range of boost and cut of each of the controls of the equalizer. Plot is from 20 kHz (log sweep), and vertical sensitivity is 10 dB per division.

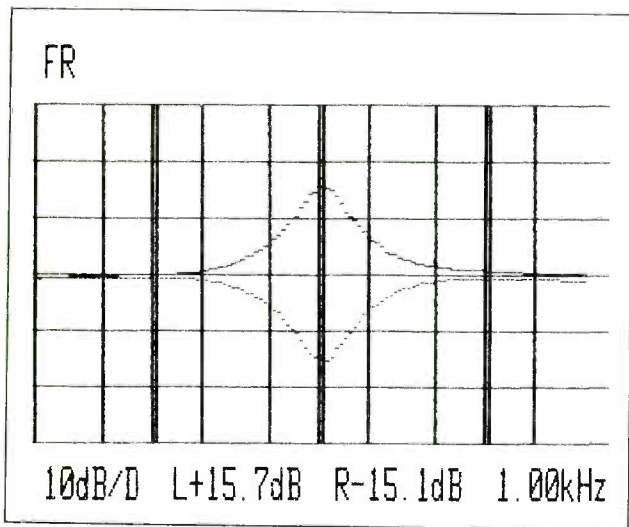


Fig. 2: Sunn SPL-4120: Precision plot of boost and cut range of 1 kHz band control.

bitrary overall response curve on the SPL-4120, such as might be used in a given application. The response thus obtained is shown in Fig. 3.

In Fig. 4 we show the response obtained when one control (in this instance, the 500-Hz slider) is placed at maximum boost, while an adjacent control (the 1-kHz slider) is moved to maximum cut. As may be seen, interaction is fairly minimal, with the 500-Hz filter still able to provide a boost of +10.4 dB maximum, and with center frequencies remaining precisely where they should be.

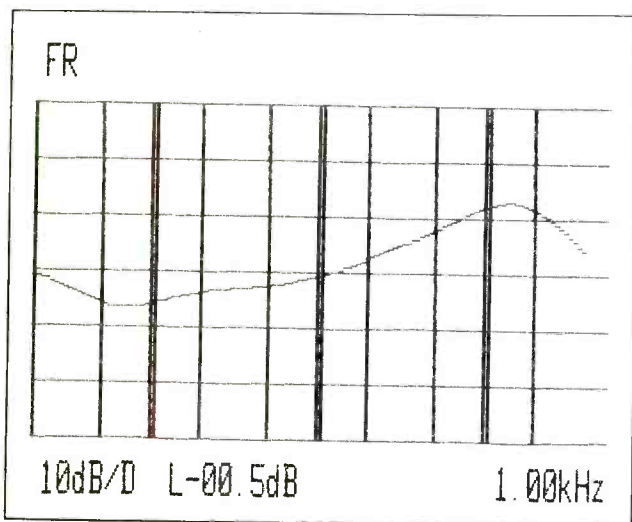


Fig. 3: Sunn SPL-4120: Sample response curve obtained with the unit.

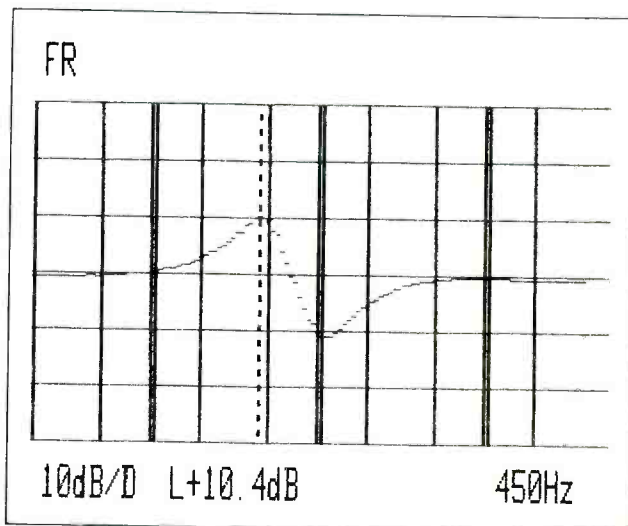


Fig. 4: Sunn SPL-4120: With adjacent band controls set for maximum boost and maximum cut, a minimum degree of interaction between bands is observed on the SPL-4120.

General Info: Dimensions are 19 inches wide; 3.5 inches high; 5.6 inches deep. Weight is 7.75 pounds. Price: \$385.

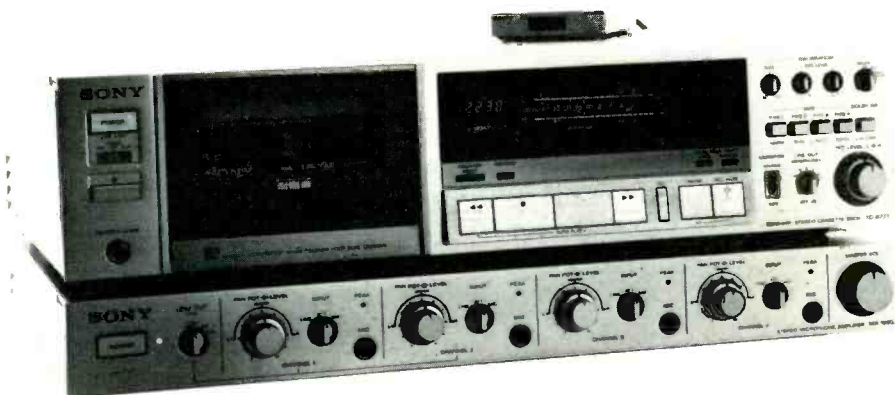
Joint Comment by L.F. and N.E.: We have seen too many sound processors, including equalizers, that seem to ignore the basics of good audio handling, such as low distortion (harmonic and IM), wideband response, high signal-to-noise ratio and ample headroom to avoid clipping or overload on strong signals. Happily, the Sunn SPL-4120 is not in that class. It is, first and foremost, a low-noise, low-distortion, precision signal-handling device that is not likely to become the "limiting factor" in the quality of any sound system into which it is interfaced. As for flexibility, note that both the inputs and outputs can be handled in balanced or unbalanced mode. We also like the fact that in "bypass," the entire equalizer circuitry is avoided, which allows the user to turn the unit on and off without experiencing annoying "pops" while in bypass. This makes level matching a lot easier than it is with equalizers that perform the bypass switching within their circuitry. And, as might be expected of an equalizer of this high quality, the filters use gyrator circuits. There are no coils to pick up hum or noise, or to go out of optimum adjustment. In sum, the Sunn SPL-4120 is well designed, it works smoothly and perfectly, it is easy to incorporate into any sound system and it is fairly priced vis-a-vis competitive units of similar quality.

SUNN SPL-4120 EQUALIZER: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Frequency Response	2 Hz to 200 kHz, +0, -3 dB	2 Hz to 350 kHz, +0, -3 dB
Total Harmonic Distortion	Less than 0.05%	
1 kHz		0.011%
20 Hz		0.03%
20 kHz		0.014%
SMPTE IM Distortion	0.03%	0.006%
S/N Ratio ("A" wtd, re: 1V out)		
Balanced	92 dB	NA
Unbalanced	89 dB	105 dB
Slew Rate (bal./unbal.)	9/6 V/usec	NA/7.5 V/usec
Maximum Input Level	10 V rms	Confirmed
Maximum Output Level (Bal./Unbal.)	10/8 V.	NA/10 V
Gain (w/controls centered)	0 dB, ± 1 dB	Confirmed
Level Control Range	± 20 dB	Confirmed
Filter Center Frequencies (Hz)	31.5, 63, 125, 250, 500 1 K, 2 K, 4 K, 8 K, 16 K	Confirmed (See Fig. 1)
Control Range	± 15 dB, within 1 dB	Confirmed (See Fig. 2)

CIRCLE 30 ON READER SERVICE CARD

Sony TC-K777 Cassette Recorder



General Description: The Sony TC-K777 cassette recorder is a three-head model using a closed-loop dual-capstan tape drive system. It has a Dolby-B and metal tape capability. The segmented bar-graph type signal meter does double duty as a signal level indicator and as a guide to calibrating the deck for bias and for recording sensitivity. Transport buttons are "feather touch" and permit going from any mode to any other directly. The tape counter shows real time in minutes and seconds, and the deck is available with an optional remote-control (infra-red wireless type) unit that handles all transport functions.

At the extreme left of the front panel are the power switch; an external timer switch for unattended record or

play; the cassette eject button; and a stereo headphone output jack. To the right of this group is the cassette compartment, covered by a swing-down door with a large see-through area. The cover itself can be removed for access to the heads. The largest portion of the panel is given over to the display panel which includes the real-time counter, the left- and right-channel metering, the Dolby-on indicator and the legends for four different types of tape (I, for normal bias; II, for chromium-dioxide; III, for ferrichrome; IV, for metal). The metering itself is calibrated from below -40 to +10 dB, and the positioning and lighting of the various segments are such as to facilitate the use of these scales for both signal level monitoring and calibration setting.

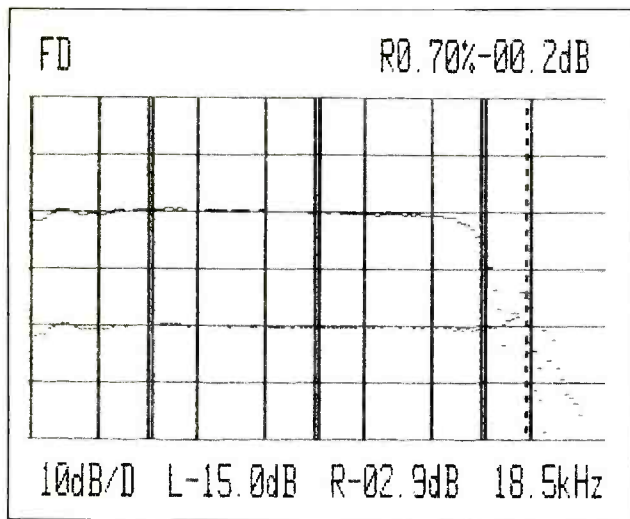


Fig. 1: TC-K777: Frequency response, record/play, Maxell UDXL IS (normal bias).

Just below the display panel to the left are the tape counter reset button and another button for the memory playback or stop function. Just below the display panel and to the right are peak-hold buttons—one for “auto” will hold successive peak readings for about 2.5 seconds, unless a higher peak occurs sooner; the other button for “manual” will hold a peak level on the scale until a higher peak comes along.

Across the bottom, under the display section, are the function buttons for rewind, forward, fast-forward, record, stop, pause and record mute. If you press the rewind and forward buttons simultaneously (with the memory function off), the tape will rewind and then begin play automatically.

The calibration controls, at the upper right of the panel, consist of four small knobs. One adjusts bias; two adjust recording level separately on each channel; the fourth activates the calibration procedure and selects the function of bias and of level. In “bias” position, this control provides for built-in test tones of 8 kHz and 400 Hz. The bias knob then may be adjusted so that the upper and lower meter scales show the same values, and the bias is then correct for the tape being used. In the record level position, the switch activates only the 400-Hz tone. The two record level knobs now may be adjusted so that the meters deflect to the points indicated on the meter scales. The procedure, and the metering are worked out so as to provide for the highest possible recorded signal level without running into tape saturation.

Below this group are the four buttons for tape selection, and the Dolby button. Below them are the tape source/monitor switch; an output level control; and a dual-concentric recording level control. The output level control adjusts volume through one pair of line-out jacks at the rear, and through the front-panel headphone jack. If the other pair of line-out jacks (fixed

level) are used, it still adjusts headphone volume independently.

In addition to the two pairs of line-out jacks at the rear, there are the line-in jacks, a switch for activating a multiplex filter (if needed for off-the-air recording); a switch for activating a line filter (if needed to reduce noise from appliances); the socket for plug-in of the infra-red receiver portion of the optional remote-control; an unswitched AC convenience outlet; and the deck's AC line cord.

Test Results: The Sony TC-K777 was tested with three different tapes. For normal bias we used Maxell UD-XL-IS. For high bias we used a new Sony tape (unmarked except for 70 usec. EQ and high-bias or CrO₂ position). For metal, we used another Maxell sample. Except for frequency response, the deck did best with the Sony high-bias tape; second-best with the metal tape. But even the results with normal-bias tape were very good indeed.

Before discussing these test results it may be well to explain the reference level we used. On the deck's meters there are two notations in addition to the major dB markings. One is “0 VU” which is positioned just near -4 dB on the scale. The other is the Dolby calibration mark found near -2 dB on the meter scale. Since we know that Dolby level corresponds to 200 nWb/m, that puts the “0 VU” mark at a level of approximately 160 nWb/m. By the same token, the main scale's 0 dB mark (which is 2 dB higher than the Dolby mark, and 4 dB higher than the “0 VU” mark) would turn out to be a bit higher than 250 nWb/m. That's a pretty high “zero dB” reference level against which to measure such parameters as frequency response or distortion (saturation) levels on a cassette deck. So, despite the additional markings, we decided to reference everything to 160 nWb/m, or the “0 VU” mark

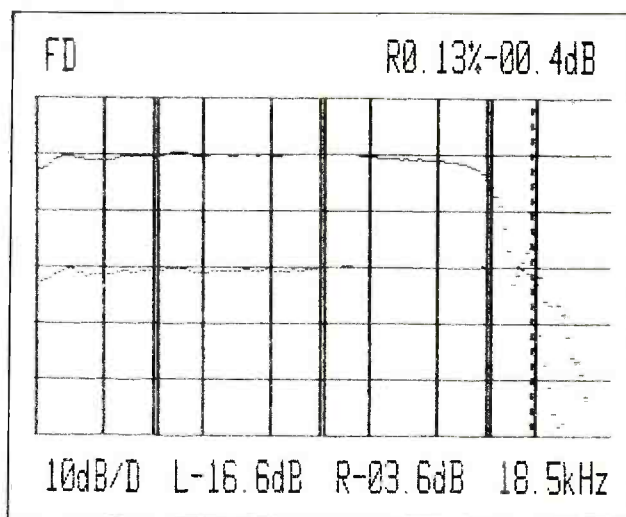


Fig. 2: TC-K777: Record/play response with new Sony tape (CrO₂ bias).

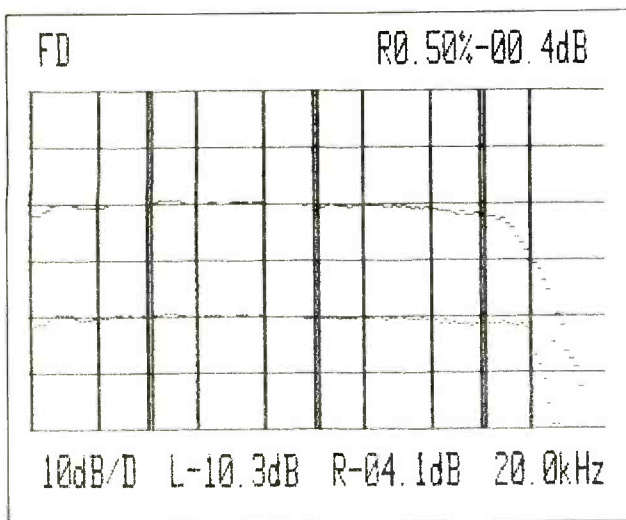


Fig. 3: TC-K777: Record/play response using Maxell metal tape (metal bias).

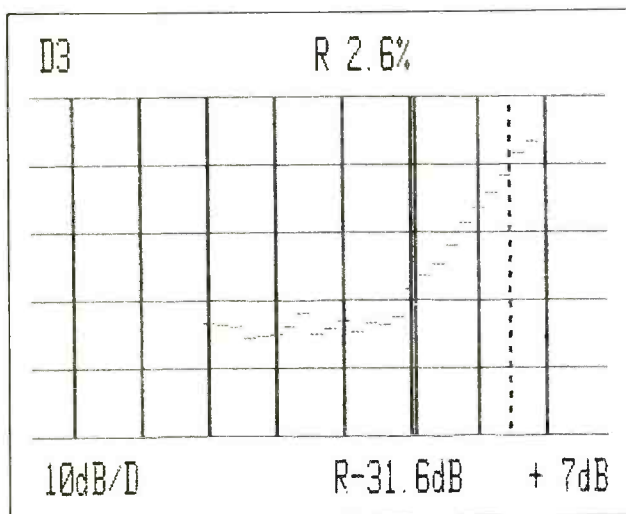


Fig. 4: TC-K777: Third-order distortion versus level, using Maxell UD-XL-IS tape.

on the meter's main scale.

Frequency response (with respect to that reference level) at the 0 dB and the -20 dB record levels for each of three types of tape is shown in *Figs. 1, 2, and 3*. In each of these displays, the upper plot was taken at 0 dB; the lower plot, at -20 dB. The dotted line "cursor" has been moved to the point at which response is down approximately 3 dB for the -20 dB level curve (always designated as "R" in the numerical readout below the graphs).

In *Fig. 1*, for example (normal bias tape), response is down 2.9 dB at 18.5 kHz (at that frequency, the response of the 0 dB level curve is already down -15 dB). Note that the double vertical lines in these graphs represent frequencies of 100, 1 K, and 20 K Hz; the other single ver-

tical lines are reference frequencies of 50, 200, 500, 2 K, 5 K and 20 K Hz. Where the -3 dB point does not correspond to a specific frequency used in the test instrument, that frequency is interpolated in the data listed under "Vital Statistics."

Referring to that data, by the way, you may be surprised at the very low amount of 3rd-order distortion produced at the 0 dB record level for the high-bias tape used in our tests—only 0.18 percent at 0 dB. So were we—and not only by that low distortion, but by all the other performance characteristics of this particular tape, including saturation level, which was a full 10 dB above reference level, and signal-to-noise ratios (an incredible 60.6 dB below the 3-percent 3rd-order distortion level *without* Dolby!).

These results were actually superior to those obtained with our metal tape sample, and yet this tape was a high-bias ferric chrome-equivalent type. We "begged" Sony people to tell us a bit more about this fantastic new tape (they had supplied us with a couple of unmarked samples, telling us only to use the 70-usec EQ setting and the high-bias CrO₂ position), but they insisted we would have to wait until the new tape was announced to the rest of the world. Presumably, by the time this report appears in print, Sony will have announced the new tape's name and perhaps also revealed how it is able to achieve the phenomenal performance it does.

Returning to the deck itself, *Figs. 4, 5, and 6* show plots of 3rd-order distortion versus record level for the three tape samples. Here, the double vertical lines represent "0 dB reference level" (the value of which is listed in "Vital Statistics"), while the dotted line cursor has been moved to that recording level which comes closest to producing maximum record level, or 3-percent 3rd-order distortion. Notice that, in the case of the new Sony tape (*Fig. 5*), the highest test level of +8 dB resulted in distortion of only 2.2 percent, and so we had to determine the 3-percent distortion manually, on another instrument. We found that it was +10 dB, a full 1.5 dB higher than the maximum record level we were able to get with our metal tape sample.

Using the newly expanded facilities of our Sound Technology 1500A tester we produced *Figs. 7, 8 and 9* to show not only S/N single, CCIR-weighted numbers (printed at the top of each figure, with the "L" number corresponding to "Dolby off" and the "R" number to "Dolby on"), but also the plot of the actual makeup of the noise spectrum in third-octave increments. The upper of these two curves is noise distribution without Dolby; the lower curve, with Dolby on. For each case here, the dotted line cursor has been moved to an arbitrary high frequency to show the effectiveness of Dolby in dealing with high "hiss" frequencies. Numbers below these displays refer to the S/N ratios for the third octave whose center frequency is shown at the lower right of each figure.

The wow-and-flutter of this Sony deck is, without

qualification, the lowest we have ever measured for any cassette machine: 0.020 percent WRMS. Perhaps even more important—now that we can analyze the frequencies of the various “wow” components (see Fig. 10)—it is amazing to note that there are *no* unusual wow-peaks over the range of frequencies analyzed by the tester (in this case, from 0.5 Hz at the left of the display to 200 Hz at the right). Most other decks that have been analyzed this way usually show peaks of wow at around 4 or 5 Hz.

Channel separation vs. frequency is plotted in Fig. 11. While we have moved our frequency cursor here to 5 kHz where a reading of 35.7 dB is obtained, it should be noted that at 1 kHz (the center double vertical line) the separation “blip” is about 12 dB lower (each vertical division is worth 10 dB) for a separation of about 48 dB.

We also measured speed accuracy, plotting it for some six minutes. Speed was very close to being exactly right (see Fig. 12), with a measured error of only +0.106 percent after 200 seconds of testing, and showing no signs of drifting toward any greater speed error.

General Info: Dimensions are 16 7/8 inches wide; 4 1/8 inches high; 15 3/8 inches deep. Weight is 21 pounds, 3 ounces. Price: \$950.

Individual Comment by L.F.: The ever expanding world of cassette decks seems to be dividing itself into two camps. There are those innovative manufacturers who keep coming up with more automation designed to simplify things for the amateur recordist but still provide reasonably good overall performance. Then, there are those decks which allow the knowledgeable user to tweak parameters to suit needs and preferences while at the same time providing superior tape transport mechanisms for minimum wow-and-flutter, features that are *truly* useful to the serious recordist (as opposed to gimmicky features that are often incorporated just for their own sake). The Sony TC-K777 three-head cassette deck is of the latter genre and, as such, is likely to appeal to MR&M readers.

Consider, for example, its elegant bias and sensitivity adjustments. In performing these adjustments, the metering system serves as a precise indicator of when these important operating parameters are ideally set for the tape being used. Then there is the real-time tape counter which reads minutes and seconds of recording time instead of arbitrary, non-linear three-digit numbers. Anyone who ever has been caught short of a few minutes or so of recording time using a cassette will appreciate this feature.

The Sony TC-K777 will not search for the selection of your choice. It will not test the tapes you insert automatically, and it will not self-adjust bias, EQ and so on unless you are there to do the actual adjusting. But it will make a great-sounding cassette recording that is limited only by the tape you feed into it, and it will play that recording back with imperceptibly low levels of

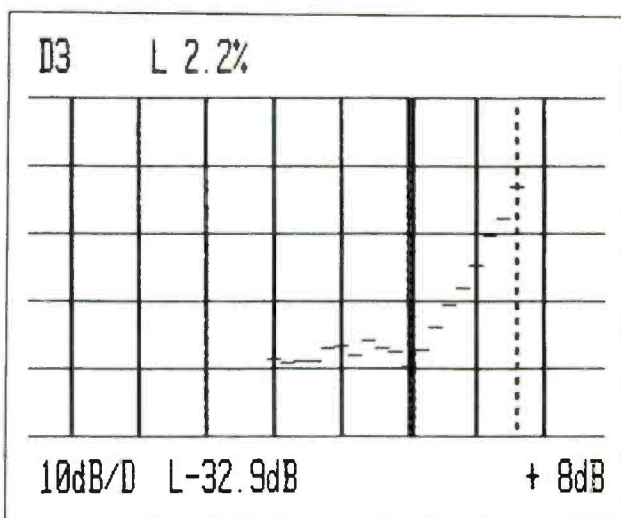


Fig. 5: TC-K777: Third-order distortion versus level, using new Sony high-bias tape.

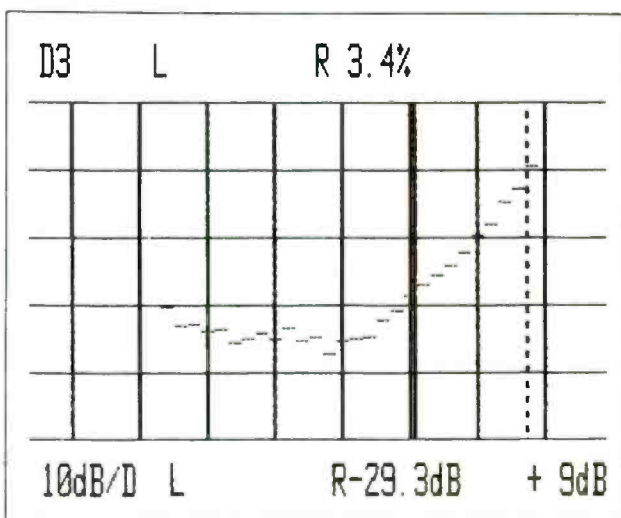


Fig. 6: TC-K777: Third-order distortion versus level, using Maxell metal tape.

wow-and-flutter. I did find the meter calibration confusing. And yes, I wish it did have Dolby-C in addition to Dolby-B—only because I think that the absence of Dolby-C may hurt sales. Now that Dolby-C has gotten its fair share of publicity, many buyers may think that a deck without it is an “older” model—which of course is not necessarily the case. As far as I am concerned, I’ll take the Sony TC-K777 as it is, and if I eventually decide that Dolby C is essential I can always buy an add-on Dolby C unit later.

A final word on the RM-80 infra-red wireless remote control, available as an optional extra for use with this machine. I did have an opportunity to use it in our tests of the deck. The word is: Great. Which also sums up my reaction to the deck.

Individual Comment by N.E.: I suspect that with the TC-K777 Sony set out to demonstrate that high-bias oxide tape could produce about as good results as metal tape. If so, Sony surely has proven its case. Of course, there are cassette decks that we have tested in the past that yield a little more high-end frequency response, or even do as good or better on signal-to-noise. But what seems to be going for this new Sony deck is its very low distortion and its unprecedentedly low wow-and-flutter—factors which do have a lot to do with the quality of a signal you can get onto a tape and then with how smoothly it is shuttled past the heads during playback.

And, in a sense, the key word here is "smooth." Not only in terms of response and tape motion but also in terms

of the very operation of the deck. With bias and sensitivity adjustments so easy to perform and so assuring of accuracy in conjunction with the clever metering system, making these adjustments can almost become fun for the user. This represents an entirely different psychology from the approach that leaves it all up to microprocessors, and as such it is aimed at a different kind of buyer—one who wants to do these things himself but who also wants assurance that he is not wasting his time or his tape. The end results can be equally good with both design approaches, and certainly this new Sony deck leaves nothing to be desired in the way of cassette performance today.

I especially like the fast-button facility of this deck,

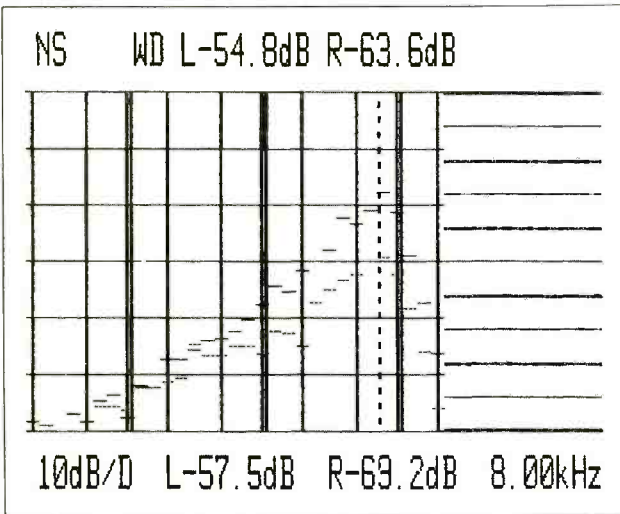


Fig. 7: TC-K777: S/N with and without Dolby B (Maxell UD-XL-IS tape).

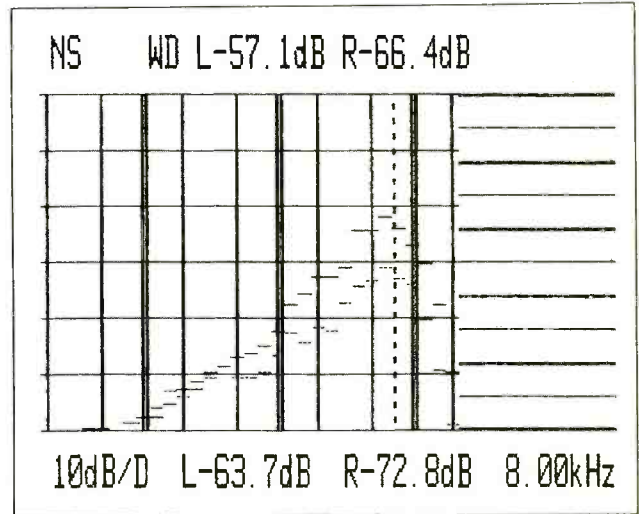


Fig. 9: TC-K777: S/N with and without Dolby B (Maxell metal tape).

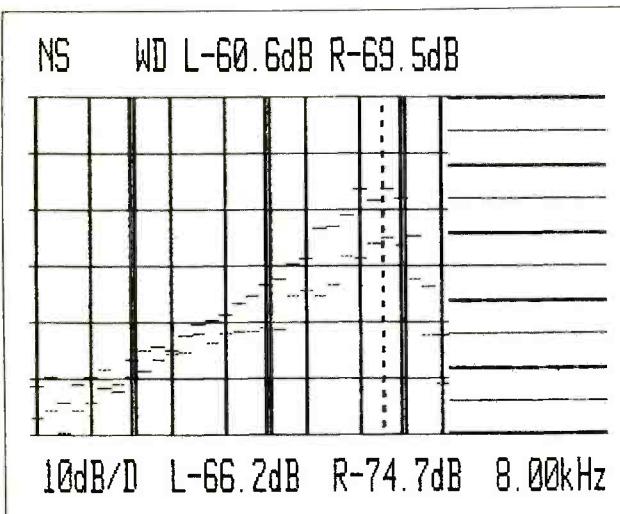


Fig. 8: TC-K777: S/N with and without Dolby B (new Sony high-bias tape).

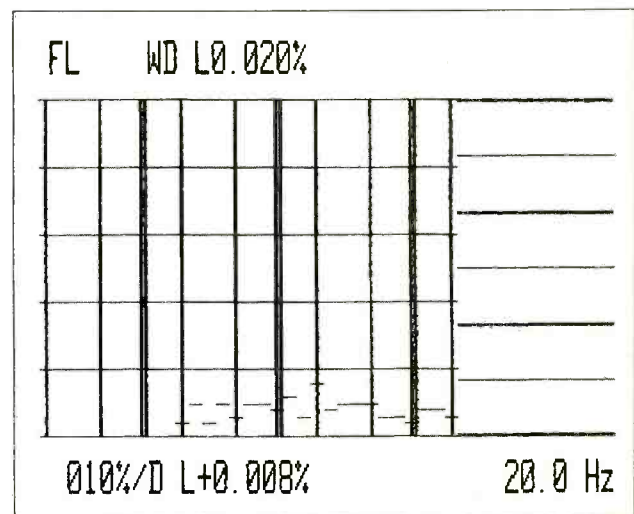


Fig. 10: TC-K777: Weighted (WRMS) wow-and-flutter analysis.

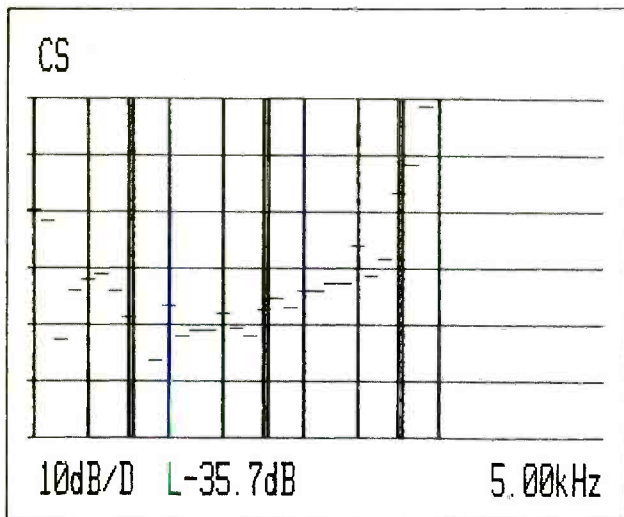


Fig. 11: TC-K777: Channel separation versus frequency.

and its two line outputs—one of which (the fixed level output) can be used to feed an external amplifier so that the front-panel line-output control is free to handle headphones for private monitoring. The two line outputs also can be used for dubbing onto another deck while feeding a playback amplifier, or for dubbing onto two decks without driving an amplifier. The inclusion of a line noise filter (and the due caution regarding its use) is thoughtful, as is the placing of the FM multiplex filter

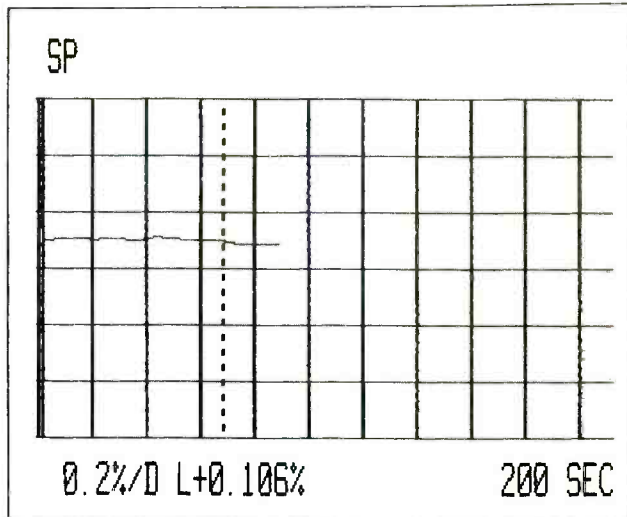


Fig. 12: TC-K777: Speed accuracy during first four minutes of play.

switch at the rear since this is hardly the most often used switch on a deck. That optional remote-control device is really "sweet"—it works from distances up to about 15 feet and over a fairly wide angle from its infra-red receiver. I think about the only item I would prefer on this deck would be slider-type level controls instead of the rotary knobs it now has. That might have added another inch or so of front-plate; in any event, as Len puts it, I am happy to live with the TC-K777 "as is."

SONY TC-K777 CASSETTE RECORDER: Vital Statistics

PERFORMANCE CHARACTERISTIC:	MANUFACTURER'S SPEC	LAB MEASUREMENT
Frequency response		
normal bias tape	± 3 dB, 20 Hz to 18 kHz	± 3 dB, 20 Hz to 18.5 kHz
high bias tape	± 3 dB, 20 Hz to 18 kHz	± 3 dB, 20 Hz to 18.5 kHz
metal tape	± 3 dB, 20 Hz to 20 kHz	± 3 dB, 20 Hz to 19.5 kHz
Signal-to-noise ratio, w/o Dolby, re:		
3% 3rd-order distortion record level		
std tape; hi-bias; metal	56; 58; 60 dB	54.8; 60.6; 57.1 dB
same, w/Dolby		
std tape; hi-bias; metal	66; 68; 70 dB	63.6; 69.5; 66.4 dB
Record level for 3% 3rd-order distortion; 0 dB = 160 nWb/m		
std tape; hi-bias; metal	NA; NA; NA	+ 7.5; + 10; + 8.5 dB
3rd order distortion, 0 dB record level		
std tape; hi-bias; metal	NA; NA; 0.8%	0.39; 0.18; 0.37%
Line output at 0 dB	435 mV	450 mV
Headphone output at 0 dB	77.5 mV (8 ohms)	70 mV (8 ohms)
Line input sensitivity for 0 dB	77.5 mV	85 mV
Wow-and-flutter WRMS	0.025%	0.020%
Speed accuracy	NA	+ 0.106%
Fast-wind time, C 60	80 seconds	88 seconds
Bias frequency	105 kHz	105 kHz
Power consumption	41 watts	41 watts

CIRCLE 31 ON READER SERVICE CARD

Ramsa WP-9210 Power Amplifier



General Description: The Ramsa WP-9210 power amp is the first of this line of products from Panasonic we have tested. It is rated for 200 watts RMS power output per channel into 8-ohm loads. Although there is no spec for 4-ohm loads, *MR&M* tested it in that application too (*see below*). The amp may be rack-mounted with the addition of angle side brackets that fit the front ends just behind the handles.

The front panel contains, separately for each channel, a peak indicator (red LED); signal presence indicator (green LED); and an input level control. Centered between these two groups is a red "standby" indicator. Over to the left near the lower part of the panel are the power switch and power indicator. The power switch is linked to an automatic muting circuit which silences any noise impulses to the speakers when power is turned on or off. The standby indicator actually is a thermal warning light since it comes on only when overheating occurs because of abnormal overload or excessive input. Under normal operating conditions, the standby light remains off. The peak indicator comes on when a peak level of -3 dB is exceeded, and the signal presence indicator lights up for any signal whose level is more than -20 dB. The input level control will attenuate signals whose level is more than $+8$ dB.

Input connectors at the rear include, for each channel, XLR 3-pin female, XLR 3-pin male and $\frac{1}{4}$ -inch phone jack connectors, all of them balanced. They all are paralleled on each channel, and so the input signal can also be fed to other devices, such as a mixer or another amplifier. Next to the input sockets are the speaker connectors, and farther over on the rear panel are a grounding post and two power fuses.

Test Results: In our lab tests, the Ramsa WP-9210 easily met all of its specifications, and exceeded many of them by a substantial margin. The 8-ohm load power

output for rated distortion was 236 watts per channel and the THD measured for rated output consistently was well below the 0.05 percent mark. Frequency response exceeded the claimed range by two octaves at the low end, and by one-and-a-half octaves at the high end. Signal-to-noise characteristics were excellent.

While we usually do not test an amplifier into 4-ohm loads when the manufacturer provides only an 8-ohm rating, we felt that this amp was rugged enough to withstand extended operation at the lower impedance, and indeed this proved to be the case. The 4-ohm load output was better than 340 watts per channel. (There is a difference of opinion regarding this; see "Individual Comments," below).

Referring to our "Vital Statistics" chart for this unit, we designated IHF IM distortion (this is the twin-tone IM measurement in which IM percentage is calculated from observations made on a spectrum analyzer) as "less than 0.01% simply because that figure represents the limit of resolution that we were able to confirm on our analyzer. As for the damping factor which we list as "greater than 100" (compared to Ramsa's claim of 200), our test setup makes readings above 100 unreliable, and we feel that any damping factor increase beyond 100 does not provide any measureable or audible improvement in sound reproduction.

General Info: Dimensions are $16\frac{1}{2}$ inches wide (this becomes standard rack-mount width with the addition of the side brackets); $5\frac{3}{4}$ inches high; $14\frac{1}{2}$ inches deep. Weight is 43 pounds. Price: \$879.

Individual Comment by L.F.: It took me a while to understand the exact functions of the colored LEDs on the Ramsa's front panel, simply because I have always regarded the term "standby" to mean that a piece of equipment was being readied for operation. Not

so here; the "standby" light really means that overheating has occurred, and that the heat-detection circuit which protects the output transistors has been activated. What Ramsa's standby light is telling you is that when (and if) normal operating conditions are restored, and things cool down, the output circuits will resume normal operation and the red light will go off.

Another somewhat surprising arrangement was the balanced wiring of both the phone jacks and the XLR 3-pin input connectors. Usually when both types of inputs are provided, the former are wired for unbalanced input and only the XLRs are wired for balanced input. Of course there is no real problem here, provided you read the brief 4-page operating instruction pamphlet supplied with the amp, but I still found the arrangement rather unusual.

Once we began to operate the amplifier on the test bench, these minor points faded from mind quickly. The amplifier is a superb performer, providing ample reserve power beyond its nominally rated specifications, extremely low distortion (both static and dynamic) and a margin of dynamic headroom (2 dB) seldom found in power amps intended for professional sound-reinforcement applications. In fact, the multi-function protection circuitry (relay protection during turn-on and turn-off, DC protection and overheating protection), plus the fact that no cooling fan is required for this conservatively designed unit makes it as ideal an amplifier for high fidelity sound systems as it is for commercial use.

Sonically, the amplifier performed as well as I could have hoped, and in all listening tests there was no evidence of clipping or of transient overload. In short, the WP-9210 seems to be a rugged amplifier that performs well, does not overheat even when subjected to long term, high

power output operation and should give long, trouble-free service. As for operating into 4-ohm loads, perhaps Ramsa omitted 4-ohm power ratings more because of an oversight than because of any fears concerning the amplifier's ability to perform well with 4-ohm loads.

Individual Comment by N.E.: From the standpoint of performance and of general ruggedness, the WP-9210 is obviously another in the growing number of high-powered amplifiers that straddle the "dividing line" between pro equipment and advanced "audiophile" type equipment. I agree with Len that calling a thermal warning light a "standby" indicator is unusual. As a matter of fact, if that light comes on, you should do anything but just "stand by" because it means something is wrong that should be corrected.

I feel that the paralleling of the 1/4-inch phone jack to both XLR inputs is a mixed blessing—it does make the input signal available for two additional possible devices, but there should be some specific instruction supplied for using the phone jacks with unbalanced lines.

The amp has no provision for bridged mono operation. As for its 4-ohm operation, despite what we were able to do in the lab with controlled load conditions, I would not recommend using this amp for prolonged driving of 4-ohm loads, simply because the instructions furnished with it say just that. In other words, I don't think the omission of a 4-ohm rating was an oversight on Ramsa's part. They say: "Combined impedance of speakers must be more than 4 ohms." I interpret this to mean that in actual use with real speakers whose nominal impedances may equal "4 ohms" (on paper) there could be a dip in impedance to below 4 ohms—this is not uncommon with speakers of "8 ohms" impedance that are paralleled.

RAMSA WP-9210 POWER AMPLIFIER: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Continuous power for rated THD, 8 ohms, 1 kHz	200 watts	236 watts
4 ohms, 1 kHz	NA	342 watts
FTC rated power (20 Hz to 20 kHz)	200 watts	218 watts
THD at rated output, 1 kHz, 8 ohms	0.05%	0.017%
THD at 200 watts, 1 kHz, 4 ohms	NA	0.022%
THD at rated output, 20 Hz, 8 ohms	0.05%	0.005%
THD at rated output, 20 kHz, 8 ohms	0.05%	0.024%
IM distortion, rated output, SMPTE	0.01%	0.005%
CCIF	NA	0.0064%
IHF	NA	less than 0.01%
Frequency response @ 1 watt for -1 dB	20 Hz to 20 kHz	5 Hz to 60 kHz
S/N ratio re: 1 watt, "A" wtd, IHF	NA	93 dB
S/N ratio re: rated output, "A" wtd	105 dB	114 dB
Dynamic headroom, IHF	NA	2 dB
Damping factor @ 50 Hz	200	greater than 100
IHF input sensitivity	NA	0.15 volt
Input sensitivity re: rated output	1.95 volts	2.10 volts
Slew rate (volts/microseconds)	13	15
Power consumption, idling/maximum	NA/630 watts	60/930 watts

CIRCLE 32 ON READER SERVICE CARD





GROOVE VIEWS

Reviewed By:
ELLEN ZOE GOLDEN
NAT HENTOFF
JOE KLEE
JEFF TAMARKIN
NORMAN WEINSTEIN

POPULAR

THE UNDERTONES: *Positive Touch*. [Roger Bechirian, producer; Pieter Boer, engineer; recorded January 1981 at Wisseloord Studios, Holland.] Harvest ST-12159.

Performance: **A successful expansion**
Recording: **Superb**

Someone once said that it's really tough to watch someone you love grow up. Nowhere does that notion hold truer than in 1981, a time when many of the early aggressive, minimalist bands have grown up and away from the simple approach to making music. Already this year the Jam and Squeeze—two early initiators of the Do-It-Well-But-Do-It-Simple Theory—have released records which featured a more mature exploration of their musical capabilities. With the release of *Positive Touch*, from Ireland's Undertones, early hook-and-beat-oriented fans may wonder where all the obvious silliness went. But there's nothing to fear: With repeated plays, the Undertones' new record manages to creep deeper into the soul than any of the group's earlier releases, proving once and for all that, yes, Virginia, there is life after pop.

The most wondrous Undertone evolution comes right out of lead vocalist Feargal Sharkey's mouth. On many of these songs, he side-steps his trademark ripple vocal and takes a chance on soulful delivery. He sings beautifully on "Julie Ocean" and gently on "Sigh &

Explode," but it's during the religious feeling of "You're Welcome" that Sharkey puts his heart and inflection and modulation right out on his sleeve.

While Sharkey continues to experiment with style, he and the rest of the group play with strength. From the record's opener "Fascination" through the mystic closer "Forever Paradise," the Undertones display a confidence never heard before. Producer Roger Bechirian manages to bring forward all the wonderful combinations these lads can muster—and they muster up plenty.

"The Positive Touch," with its

Hawaiian-type guitar-string pulls, features Sharkey vibrating down the musical scale (so, fa, me, re, do). The song is capped off with a Zappa-esque break—a section so delightfully weird with its snakelike essence that this song alone warms the cockles with the miracles of growth. The bluesy "When Saturday Comes" demonstrates once and for all a more serious song structure—not complicated, only carefully thought out. There's a building wall of sound that begins with drums, then adds an echoing guitar, then vocals and so on. It's at this point that the power in the Undertones' playing—always a con-



THE UNDERTONES: Yes, Virginia, there is life beyond pop.

fidant, assuring display—comes to its brightest.

Positive Touch does not entirely forsake bubblegum poetry; several of the new songs bounce playfully as Sharkey continues to warble (note: "Crisis Of Mine" and "I Don't Know"). But having proved they can present more than a stream of short, pop ditties, it's obvious that these boys demand attention as developing, expansive musicians. E.Z.G.

STEVIE NICKS: *Bella Donna*. [Jimmy Iovine, producer; Shelly Yakus, engineer; recorded at Studio 55, overdubs at Goodnight L.A. and Record One, all in Los Angeles, Ca.] Modern MR38-139.

Performance: **Sterile**
Recording: **Sterile**

Half of the 10 songs on Stevie Nicks' first solo album were written during 1974-75, and that fact, combined with Nicks' use of L.A.'s studio musician mafia (Waddy Wachtel, Russ Kunkel, Bob Glaub, Bill Payne and a couple of Eagles) give *Bella Donna* a decidedly mid-'70s feel. Even with the likes of Tom Petty and the Heartbreakers and E Street Bander Roy Bittan lending a quasi-rock and roll hand, it looks like this record is the first to attempt a revival of the California mellow sound that seemed to have made its disappearance already. Just what the world needs now—a return of processed assembly-line laid-back rock.

It's no surprise that Nicks' record shot immediately to the top of the sales charts; after all, she, like the band she's part of (Fleetwood Mac), does know how to make music that sells. But listening to this album it's very difficult to ascertain why it sells so well. Nicks' voice has a limited range, and even though it's a very recognizable voice, it can really be quite a grating one at times.

On some of the cuts, Nicks sings as if she's trying to imitate a five-year-old taking singing lessons. On others, she sounds as if she's been listening to too many of Petty's records lately. So what gives?

The main attraction of this and Nicks' work with the Mac is that she has a trademark sense of melody and that her voice, however unremarkable it is, can be very expressive. Nicks is a technically average vocalist who

makes up for that flaw with emotional delivery. She can take a simple, catchy melody, add a few haunting chords and choruses, and stuff it with hooks galore and studio perfection to lure anyone who falls for a memorable tune.

From start to finish, *Bella Donna* is pure Nicks. There are no surprises, even on the duets with Petty and Eagle Don Henley, even on the cuts which feature the various Heartbreakers backing Nicks. In fact, the cuts using Petty's boys are the record's savior, as they allow a slight rock and roll feeling to emerge where the play-by-numbers studio cats wouldn't know what to do. Nicks is obviously a hot property with a sense for marketable soft pop-rock. Next time around, hopefully she will have gained enough confidence to step out on a limb and break away from the mold. J.T.

THE ROLLING STONES: *Tattoo You*. [The Glimmer Twins—Mick Jagger and Keith Richards—producers; Chris Kimsey, engineer; Mixed by Bob Clearmountain; Recorded at EMI, Paris, France and Nassau, Bahamas.] Rolling Stones COC 16052.

Performance: **Back to basics—again**
Recording: **One of the sharpest-sounding Stones albums ever**

It's only rock 'n' roll but I like it. *Tattoo You* is a great Rolling Stones album—eleven songs with not a throw-away among them. For this record, the Stones have chosen to forget about trying to keep up with trends, so there is nothing here but the kind of straightforward rock and ballad material that the Stones do best. There are no signs that the Stones have been listening to whatever else is going on in music these days, and the album is better off for it.

For some reason, *Tattoo You* is divided up so that all of the scorches are on the first side, while the second side is devoted strictly to ballad material. It works wonderfully. One can see how this segregation could come in handy: if one wants to rock out, put on side one; if one wants to cool out, flip it over.

The Stones break no new musical ground here; what they do is to recycle ideas from their past and better them. In almost every track one will hear



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pieces of other songs from the Stones' past, but none are blatant ripoffs, so it's not as if the Stones had a dearth of new ideas. They've simply decided to write and record songs in the styles they are best suited for, and to do it well.

The album begins with "Start Me Up," a classic Stones rocker with Keith Richards' guitar churning out power chords that are somehow instantly recognizable as his, while Jagger spews out a tough vocal. The incomparable rhythm section of Charlie Watts and Bill Wyman drives the song home. Jagger's vocal work on this and the rest of the album is unpretentious and powerful—no more experimenting, just great rock vocalizing.

"Hang Fire," the next track, is the kind of speedy, danceable rocker that always sets crowds in a frenzy at Stones shows. Like "When The Whip Comes Down" or "Respectable," it's a rock 'n' roll song in the purest sense. "Slave" is a mid-tempo funk piece with a New Orleans tinge, featuring the now-familiar Jagger-Richards falsetto voices in the chorus which surface again on side two. Jagger also employs

a street-wise rap voice like the one he first used on "Miss You," while jazz great Sonny Rollins blows one of three saxophone solos he contributes to the LP.

"Little T&A" is Richards' token dirty, gritty rocker, and will undoubtedly be the one cut radio refuses to touch (T&A, well...means tits and ass). Richards plays some of his raunchiest guitar leads on the record here, as does Ron Wood, whose presence on the album on the whole is rather understated.

"Black Limousine" is a Chicago-style blues that might have been found on one of the first few Stones albums. It's a no-frills blues boogie, complete with Elmore James-type licks on the guitars and a wailing harmonica (by Jagger?). Side one ends with "Neighbors," a tribute to those neighbors that seem to bug Jagger constantly, and his tough, shouted vocal is living proof that he isn't too pleased with them. The track is one of the most pop-oriented on the record, and even has a rhythm that could have been lifted from "My Sharona." In general, it is a fun tune that finds the

Stones and Rollins having a good time getting down with the kind of rock 'n' roll they helped invent.

The slower side begins with "Worried About You," which, like "Tops" which follows it, is, in structure, reminiscent to "Fool To Cry" on the *Black and Blue* album. Jagger puts on his best Curtis Mayfield falsetto before switching to a soaring, heartfelt soul voice when the songs accelerate. Both songs allow Richards and Wood to get in some pretty guitar licks.

"Heaven" is one of those angelic productions that gives the Stones a chance to use the studio to enhance their natural abilities. Like "Time Waits For No One" a decade ago, brilliantly bubbling guitars swirl around in the mix, while Jagger again gives a soulful performance. "No Use In Crying" is a slow blues that also might have been found on an early 70s Stones LP, perhaps the classic *Exile On Main Street*, which this entire album resembles in more ways than one. Finally, "Waiting On A Friend" ends the record on an upbeat, happy sounding note and even offers a rare positive Stones look at women.

In general, the Stones have outdone themselves on *Tattoo You*. They've stripped away all of the hokey stuff and gone back to just being the Stones. The production by Glimmer Twins Jagger and Richards is superb, and the album even sounds as if time and effort were spent in the mixing room. All of the musicians are clearly heard and are accented when they should be, and nowhere is there a note out of place. This is not a cluttered, overdone recording. The Stones have matched some of their best material and performances ever with a technically superior recording.

A final note: to anyone who wrote off the Stones, forget it. This one is going to make you change your mind. J.T.

ALLMAN BROTHERS BAND: *Brothers Of The Road.* [John Ryan, producer; Chip Young and Stan Dacus, engineers; recorded at Young'un Sound, Nashville, Tenn.; mixed at Sound City, Los Angeles, Ca.] Arista AL 9564.

Performance: **Band still cuts it but too many cliches**
Recording: **Everything's neat and in place; no surprises**

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For the most part, the Allmans prove here to be a mere parody of themselves, but there are some very bright moments among the hackneyed ones. Not coincidentally, most of those high points are provided by guitarist Dickey Betts and happen to be the most accessible songs on the record.

Betts has written at least three excellent songs for this album that slightly alter the trademark Allmans concept by injecting a more jazzy or straight-ahead rock and roll feel than the group usually uses. Those songs—"Two Rights," "Straight From The Heart," and "The Judgment"—are apparently Arista's favorite cuts as well, because they are listed as "hits" on a sticker on the record jacket.

As for Gregg Allman, only one of his compositions, "Never Knew How Much (I Needed You)" shows him to be looking for a new way to express himself. Although that cut is primarily a bluesy one, as are the rest of Allman's songs, the use of soulful vocal choruses and Jimmy Hall's sax playing brings the track to life.

So, in a weird way, this new LP features some of the Brothers' best conceived and executed material in some time, while at the same time shows them trying fewer new avenues than ever before. Most of Betts' guitar work here is stuff that he's already overused to death, and almost every time Allman opens his mouth to sing, it's easy to guess exactly what words will come out and in what way. Allman's lyrics are amateurish in spots to the point of embarrassment. For instance, in "Leavin'," one must listen to him actually rhyme "Gonna play my blues" with "Got nothin' to lose." Not exactly thought-provoking stuff.

Even the album's title is a cliché. The Allmans, although they might have been the first "Southern rock" band, should know better than to try capitalizing on the form and its trappings. There is no need for a band that obviously can still play and sing so well to have to pander to its audience by perpetuating myths.

If the Allman Brothers can take the excellent musicianship and recording expertise they are known for and apply those qualities to some really breathtaking material, they'll once again be what they were a decade ago. Now, they're just another—albeit a very talented—rock and roll and blues band from the South. J.T.

JAZZ

MEREDITH MONK: *Dolmen Music*. [Manfred Eicher and Collin Walcott, producers; Martin Wieland and Martin Balk, engineers; recorded at Tonstudio Bauer, Ludwigsburg, Germany and Hometown Studios, New York City.] ECM-1-1197.

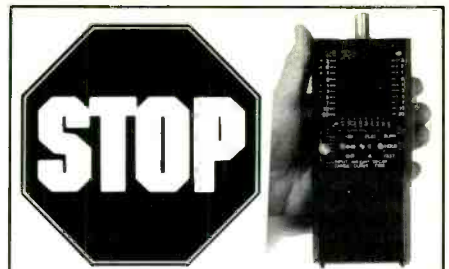
Performance: **Ethereal yet sizzling vocalizations**
Recording: **Overwhelmingly brilliant**

Over the years, preciously few female singers have explored the outermost limits of wordless song. One thinks of Ella Fitzgerald scatting away like a Gatling gun gone manic. The now defunct avant-garde jazz label "ESP" featured an astonishing jazz vocalist named Patty Waters who was capable of sounding—simultaneously—like a Moog synthesizer, a Greek siren, an electrocuted cat, a harlot and the resurrected voice of Edith Piaf. Yoko Ono also has experimented with transforming her voice in a number of irritating and innovative ways.

Meredith Monk's *Dolmen Music* places her in this tradition of "radical" female vocalists. Her album might actually succeed in introducing this experimental music to a broad audience—a feat that Ono or Waters could never hope to achieve. The reason is that Meredith Monk is a more sophisticated and polished practitioner of this form than her predecessors. Her vocal range is astonishing. This writer knows of no jazz or rock singer who can approach her highs and lows. Not to mention her commanding range of vocal textures. *Dolmen Music* is a virtual encyclopedia of what the female singing voice is capable of producing.

Consider "Biography," one of four brief songs that comprise side one. Monk's vocal initially evokes images of synagogue worshippers chanting a mournful prayer. She proceeds to transform her voice into that of a nagging old woman. Or do I hear a South American shaman? A demonic child singing to herself? I'll leave future images to your own listening imagination. Trust that Monk's vocals will set your imagination free.

The instrumental backups for Monk's vocals are sparse, wispy, ap-



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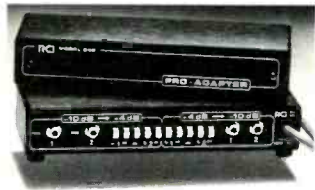
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propriate. Monk accompanies herself on piano on several cuts. Collin Walcott (from the late, much lamented group Oregon) adds exotic violin and percussion touches. Steve Lockwood plays piano on one cut while Robert Een and Julius Eastman add eerie cello and percussion respectively to the album's title track and centerpiece, "Dolmen Music."

"Dolmen Music" comprises all of side two and is either—depending on your musical prejudices—Monk's *magnum opus* or an affront to civilized ears. Three women singers (including Monk) join three male vocalists and skillfully weave their voices into a disturbing tapestry. *Disturbing?* I would hate to see the gothic horror movie from which this could be the soundtrack. The voices sound so *other-worldly* that one can only listen to "Dolmen Music" at selected moments—when nerves are steady. Play this number at your next reunion of Druids to conjure up that Stonehenge aura. Or save it for your next Halloween party to empty the house of guests in a hurry.

Monk has obviously made a careful study of vocal techniques from the non-Western world. Traces of Islamic chanting, of Native American song and Chinese opera can be discerned in her work. She has lovingly synthesized these traditions with Western music and has created from them a form that is fresh, humorous, sometimes frightening and consistently awesome.

All of these qualities are brilliantly captured in this recording. ECM has done it again: a recording of unparalleled spaciousness, clarity and brightness. Monk's voice soars out of the speakers with an electrifying presence.

And producer/head-wizard Manfred Eicher of ECM must be given credit for opening his ears to this rare and unclassifiable music. Those jazz critics who bitch about the homogeneity of the "ECM sound" should listen to *Dolmen Music*. Expect this record to get plenty of radio air play—in the 21st century. Meantime, get this record and treat your ears to a strange new world.

N.W.

ROLF LIEBERMAN: Concerto for Jazz Band and Symphony Orchestra. The Sauter/Finegan Orchestra. The Chicago Symphony Orchestra, Fritz Reiner, cond. [John Pfeiffer, producer;

Les Chase, engineer; recorded at Orchestra Hall, Chicago, Ill., November 1954.] RCA Gold Seal AGL 1-3882.

Performance: **A noble attempt**
Recording: **Early stereo**

THE SAUTER/FINEGAN ORCHESTRA: Selections. [No producer listed; no engineer listed; recordings made in New York, circa 1952 and later.] RCA Gold Seal AGL 1-3882.

Performance: **Modern yet accessible jazz**
Recording: **Truly startling mono for the most part**

RCA's Gold Seal is a label which reissues, at budget prices, classic recordings which have been discontinued from RCA's regular line. In this case it is a most ambitious and important reissue. The Sauter/Finegan Orchestra was the brain child of two first rate arrangers. Eddie Sauter had made a name as a jazz arranger with three of the most important big bands of the big band era. He set the style for the Mister and Missus Swing band led jointly by Red Norvo and his wife Mildred Bailey. He went on to do some of the most impressive charts in the Benny Goodman band book. Finally he joined Ray McKinley's avant-garde band in which a lot of the ideas that eventually grew to fruition in the Sauter/Finegan band first blossomed. Bill Finegan had been more associated with the sweet band of Glenn Miller but he had also arranged for Tommy Dorsey. When these two giants got together it was to form a recording-only band which made some records in May of 1952 for RCA. Three of those sides, "Doodletown Fifers," "Azure Te" and "Rain" are included in this collection. So are other Sauter/Finegan hits such as "Midnight Sleighride," adapted from Prokofiev's "Lt. Kije Suite" and Louis Alter's "Nina Never Knew" with a wonderful vocal by the late Joe Mooney. It was a listening band. There's a lot going on musically, melodically, harmonically (with two ace arrangers like Bill and Eddie there would have to be). Yet tempos were such that dancers were not discouraged from enjoying the music, too. The sound is incredible enough that in '52 when I first heard these recordings on RCA 45 rpm discs I was encouraged to write a laudatory letter to the editor of

THE LUMINOUS, SINGING LINES OF DUKE JORDAN AND BILL EVANS

By Nat Hentoff

For many years, they were respected but rather taken for granted. Now, a select number of these survivors are unquestionably recognized as jazz piano masters—Tommy Flanagan, Hank Jones, Barry Harris, and Duke Jordan. The latter first became known as a sideman with Charlie Parker in the 1940's and then, after a stay with Stan Getz, headed various combos of his own, here and in Europe. But the extent of Duke Jordan's growth in imagination and in control of that imagination was not fully realized until he began to record in recent years for the Danish SteepleChase label (which now has an American base at 3943 West Lawrence Avenue, Chicago, Illinois 60625).

Jordan's newest set, *The Great Session*, is the most satisfying of his career so far. This is partly due to the imposing presence of drummer Philly Joe Jones (the most exciting drummer Miles Davis ever had) and the huge-toned, lyrical bassist David Friesen. But Duke is more imposing than either—with his crisply singing melodic lines, unerringly swinging rhythmic designs, and spare, invariably apt harmonies. From "All The Things You Are" to "Night in Tunisia," Jordan plays with exhilarating authority and a marvelously supple use of space. Every note breathes.

As is customary on SteepleChase, the recorded sound is vibrantly clear, superbly balanced, and yet as natural as if you had been there as the music was being made.

Bill Evans played not only with enormous authority but also with uncommon intensity—an inner concentration so complete that it was as if he was often unmindful of the listeners in the club, playing only for himself. Yet he surely did com-

municate. On many nights, I saw the concentrated listening energies of an entire room focused on Bill's long, tensile lines with as much concentration as his own.

Although recorded in 1974 at New York's Village Vanguard, *Re: Person I Knew* (Fantasy) consists of never previously released performances. It is one of a series of posthumous sets that are being produced by Bill's long-time manager, friend, and sometime recording engineer, Helen Keane.

With bassist Eddie Gomez and drummer Marty Morell, Bill shows the scope of his repertory, reflecting his curiosity about all manner of tunes and possibilities. Along with his own originals, there are "Alfie," Johnny Mandel's "Emily," and an intriguing, brief series of initial thoughts on Herbie Hancock's "Dolphin Dance"—heard here as Bill was thinking aloud, as it were, about the piece before the actual start of a set.

The album as a whole is an essential part of the Bill Evans canon. I never heard him when he was less than absorbing, but some nights were more continually and deeply illuminating than others. This was one of them.

As for the sound quality, it is crisp and clear, with somewhat more warmth in Bill's piano presence than on those of the other instruments.

DUKE JORDAN: *The Great Session*. [Nils Winther, producer; Dave Achelis, engineer.] SteepleChase SCS-1150.

BILL EVANS: *Re: Person I Knew*. [Helen Keane and Orrin Keepnews, producers; Michael De Lugg, engineer.] Fantasy F-9608.

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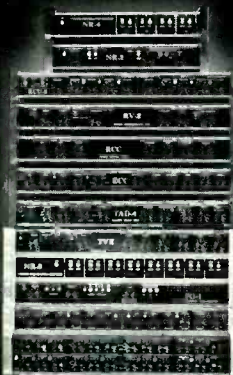
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the only audiophile magazine I knew about then, saying that recordings like this were all that was needed to get me back to listening to jazz again. RCA hasn't meddled with the sound much putting it on LP. It seems not to have been rechannelled electrically for stereo which is in itself a blessing. If you didn't hear these sides when they first came out, I envy you the thrill of discovering this band for the first time. It will surprise you.

It was only a year or less after that first record date that Eddie Sauter and Bill Finegan put together a working organization to go out on the road and play gigs. Some of the studio men like Mundell Lowe, Nick Travis and Joe Mooney stayed with the band when it traveled. Others were replaced by sidemen who were more willing to travel but who, today, are in the studios and playing other top jobs around New York. One of these, Harvey Estrin, even puts on concerts at the 92nd Street Y.M.H.A./Y.W.H.A., recreating this repertoire with a fine band of local New York players.

About two years after the first record date the Sauter/Finegan band had their chance to make history. They were engaged by the Chicago Symphony Orchestra to give the American premiere of Rolf Lieberman's *Concerto for Jazz Band and Symphony Orchestra*. If the idea was not initiated by RCA I'm sure they did everything they could to encourage it. Both the C.S.O. and S/F O were under contract to the label and while Fritz Reiner had never been associated with jazz, he was the type of conductor who could be counted on to be open to the project. Dr. Reiner was also a tyrant as the Sauter/Finegan Orchestra was soon to learn. He expected the same discipline and artistry from the Sauter/Finegan Orchestra as he did from his own Chicago Symphony players. This is not unreasonable until you think about the differences between the disciplines involved in being an improvising jazz musician and a symphony player. The band had not been trained to sight read difficult parts although many of them, also being crack studio musicians were adept at that too—at least more adept than Count Basie's band or even Duke Ellington's would have been. At an early rehearsal, Dr. Reiner singled out the band's pianist for special tongue-lashing. Reiner seemed to be especially

hard on pianists including one by the name of Artur Rubinstein who after a particularly difficult recording session left the stage saying things like "never-again-with-Reiner." The upshot of it all was that Fritz Reiner summarily dismissed the band's pianist and replaced him with his assistant conductor George Schick who sat down and sight-read the difficult piano part to this score, but without an ounce of the proper jazz feeling.

In those days RCA was experimenting with what was then called binaural sound. Today we know it as stereo. There were two producers on the date. Richard Mohr supervised the mono version while John Pfeiffer was in charge of the two-channel version. The binaural version came out as a prerecorded reel-to-reel tape (no cassettes in 1954) but only the mono version ever came out on disc (coupled with Richard Strauss' *Don Juan*). This, then, is the two-channel version's first appearance on disc.

When the mono LP first came out those of us who were into both concert music and jazz were jubilant. Previous to this there had been the Gershwin *Rhapsody In Blue*, but that was usually performed by concert pianists, not jazz pianists. None of the other so-called jazz/classical works were very good. Stravinsky's *Ragtime* and Milahud's *Creation du Monde* left a lot to be desired jazz wise. Here, we all thought, was the work that would put jazz into the concert hall for good. Well it didn't happen and it didn't happen for two reasons. First—Lieberman's *Concerto* is no masterpiece. Second—there weren't enough jazz bands with concert music skills that were sharp enough to tackle this incredibly difficult score.

Listening to it again after a quarter of a century it still doesn't sound like that great a piece of music. What does come through is the noble attempt that the composer made to bring these two different disciplines together and how close he came to succeeding. He has been bested only by those jazz composers who have written music that fuses the concert and jazz disciplines. This is because it is easier for an Eddie Sauter or a Bill Finegan to take the required courses at Juilliard and learn the concert discipline than it is for Lieberman or Stravinsky to absorb jazz because there is no conservatory where one can be taught how to im-

provise and feel.

Someday the symphony orchestras of the nation will embrace the kind of compositions which can bring about this desired fusion. I'm speaking of Duke Ellington's *Black, Brown and Beige*, Ralph Burns' *Summer Sequence* or any of the dozens of works commissioned for Stan Kenton's band and the other "neophonic" groups which have sprung up in the wake of Kenton's pioneering effort, selections such as Robert Grettinger's *City of Glass*.

Harvey Estrin told me that there was another performance of the Lieberman concerto with the New York Philharmonic under the direction of Leonard Bernstein (a conductor with closer ties to jazz than Reiner) and Leonid Hambro. I suspect given the differences between Reiner and Bernstein that this would have been a superior performance to the one recorded here but alas, Bernstein and the Philharmonic were exclusive Columbia artists and Sauter/Finegan were under contract to RCA.

So here we have this LP of some of the better Sauter/Finegan jazz sides coupled with a recording that's a historical landmark even if it's not about to take its place beside Beethoven and Mozart in the repertory. It's certainly a recording worth having especially at RCA Gold Seal's Best Buy budget prices. J.K.

CLASSICAL

HAYDN: *Symphony No. 100 in G, "Military"; Symphony No. 103 in E Flat, "Drum Roll."* The Mostly Mozart Festival Orchestra, Johannes Somary, cond. [Seymour Soloman, producer; Tom Lazarus, Jonathan Thayer and Jeff Zaraya, engineers; Peter L. Jensen, digital engineer; recorded at Vanguard's 23rd St. Recording Studio, New York, N.Y.] Vanguard VA 25007.

Performance: **Crisp, clean chamber playing, like I said in April**

Recording: **Digital excellence, like I said in April**

RZEWSKI: *Four Pieces; Ballade No. 3.* Frederic Rzewski, piano. [Seymour

Soloman, producer; Tom Lazarus and Jonathan Thayer, engineers; recorded at Vanguard's 23rd St. Recording Studio, New York, N.Y., no date listed.] Vanguard VA 25001.

Performance: **Exciting, angular and provocative**
Recording: **Digital excellence**

DEBUSSY: *Sonata for Flute, Viola and Harp; Syrinx, for Solo Flute;* **RAVEL: *Sonatina En Trio;*** **FAURE: *Impromptu for Harp;*** **DEVienne: *Duo No. 3 for Flute and Viola; Orpheus Trio.*** [Seymour Soloman, producer; no engineer listed; recorded at Vanguard's 23rd St. Recording Studio, New York, N.Y., no date listed.] Vanguard VA 25002.

Performance: **Better than such trifles deserve**
Recording: **Better than such trifles deserve**

RAVEL: *Bolero;* **RIMSKY-KORSAKOV: *Capriccio Espagnol;*** **ENESCO: *Roumanian Rhapsody, No. 1;*** **BERLIOZ: *Overture to Le Corsaire.*** The Baltimore Symphony Orchestra, Sergiu Comissiona, cond. [Seymour Soloman, producer; Tom Lazarus, John Newton, Jonathan Thayer and Jeff Zaraya, engineers; Peter L. Jensen, digital engineer; recorded at the National Presbyterian Church, Washington, D.C.; no date listed.] Vanguard VA 25005.

Performance: **Musical fireworks**
Recording: **Digital fireworks**

RESPIGHI: *Roman Festivals; Pines of Rome.* [The Baltimore Symphony Orchestra, Sergiu Comissiona, cond. [Same production credits as above.] Vanguard VA 25004.

Performance: **More fireworks**
Recording: **Still more fireworks**

TCHAIKOVSKY: *Symphony No. 4 in F minor.* The Baltimore Symphony Orchestra, Sergiu Comissiona, cond. [Same production credits as above.] Vanguard VA 25006.

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Now if you'll get out your April 1981 issue of *Modern Recording & Music*, you'll notice that Vanguard put out a two-sided recording of Haydn's *Military Symphony* (see page 98). One side was digital. The other side was analog. I commented at the time that each was a fine recording of its kind but who needs two Haydn "Military" symphonies...especially who needs two recordings of the same performance? I also mentioned that there was a card enclosed for listeners to express their preference. It seems that digital won because here, highlighting Vanguard's first all digital release, is that same digital recording of Haydn's *Symphony No. 100 in G, "Military"* but with one important difference. This time it is backed with Haydn's *Symphony No. 103 in E Flat, "Drum Roll."* So it seems as though digital is the way Vanguard is going to go.

Now one would think to dispose of the Haydn quickly because it has been reviewed before...but wait...only one half of it has been reviewed before and the same crisp clean playing and recording that marked No. 100 when it came out as VA 25000 is still there on the new record plus a version of No. 103 that is worthy of its companion piece. Indeed I find the Haydn disc the most musically satisfying of all the new Vanguard recordings and I hope that we will hear a good deal more Haydn from Maestro Somary and his Mostly Mozartians who, I'd like to point out, are Hardy Haydnians as well.

The fine sonics of the Haydn, which I pointed out in April, carry through on all the other recordings of Vanguard's digital debut although I must confess a preference for the New York 23rd Street Sound over that of the National Presbyterian Church in Washington. But then let it be remembered that Messers Soloman, Zaraya, Lazarus, etc., have been working at 23rd Street for years. The National Presbyterian Church is new to them and in time it will probably become as sonically comfortable for the Vanguard team as 23rd Street. It's also a lot easier to balance a chamber orchestra, piano soloist, flute, viola and harp trio than a full symphony orchestra, especially when you are dealing with such blast-off material as Ravel's *Bolero*, Respighi's *Pines of Rome* and Tchaikovsky's Fourth.

All right, so Vanguard has passed the first stage of digital—the gimmick.

They gave us the digital/analog comparison record to wake us up to what the difference was and give us a taste for the better sound. Now they're in the second or spectacular stage. Once they have our interest they have to stun us with sonic showpieces, some of lesser musical value (I've had it with Ravel's *Bolero* at least for awhile), some of more musical value (there's a lot more to Tchaikovsky's Fourth than the crash-boom of the finale). They've even included some things that haven't been done to death like the modern piano music of Rzewski. If I do not find it immediately appealing, I suspect it will grow on me. Much modern music does that. There is also a recording by a superlative chamber group, The Orpheus Trio, centering around Paula Robison who may not be as flashy and virtuosic as Rampal or Galway but who I find one heck of a lot more musical. Unfortunately the music they have chosen for their digital debut strikes me, like most French chamber music, as being of little more substance than the sort of music one hears in hotel elevators or dentists' offices. Yet under the hands of the Orpheus trio the charm is enough to make these morsels palatable if not exceptional. I hope there is stronger stuff in store from Orpheus. I must admit I'm not sufficiently familiar with the available harp, flute, viola repertoire to offer any suggestions.

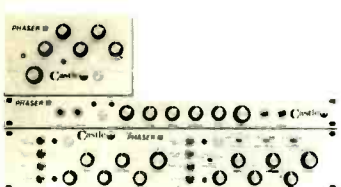
Yet one ought to quibble with such a wealth of music played as excellently as it is and recorded as excellently as it is. Presuming, as one has the right to presume when Seymour Solomon is at the helm, that things will only get better from here I look for much of excellence from the Vanguard digital series. May I suggest the Mozart *Concerto for Flute and Harp* with Paula Robison and fellow Orphean Heidi Lehwalder as soloists and in the orchestral role, who but Somary and his Mozartians. *That* would certainly be an auspicious start. And if that leaves poor violist Scott Nickrenz without anything to do he could record Berlioz' *Harold In Italy* with Comissiona and the Baltimore Symphony.

So Vanguard's rocket is at the second stage. We have only to wait for the full blooming we can expect from a record company that has always put the music first for surely they will find the way to make the technology serve the art.

J.K.K.




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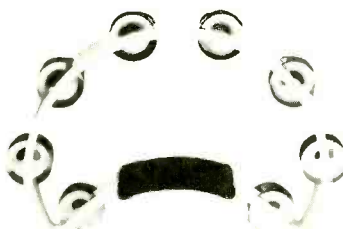
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