

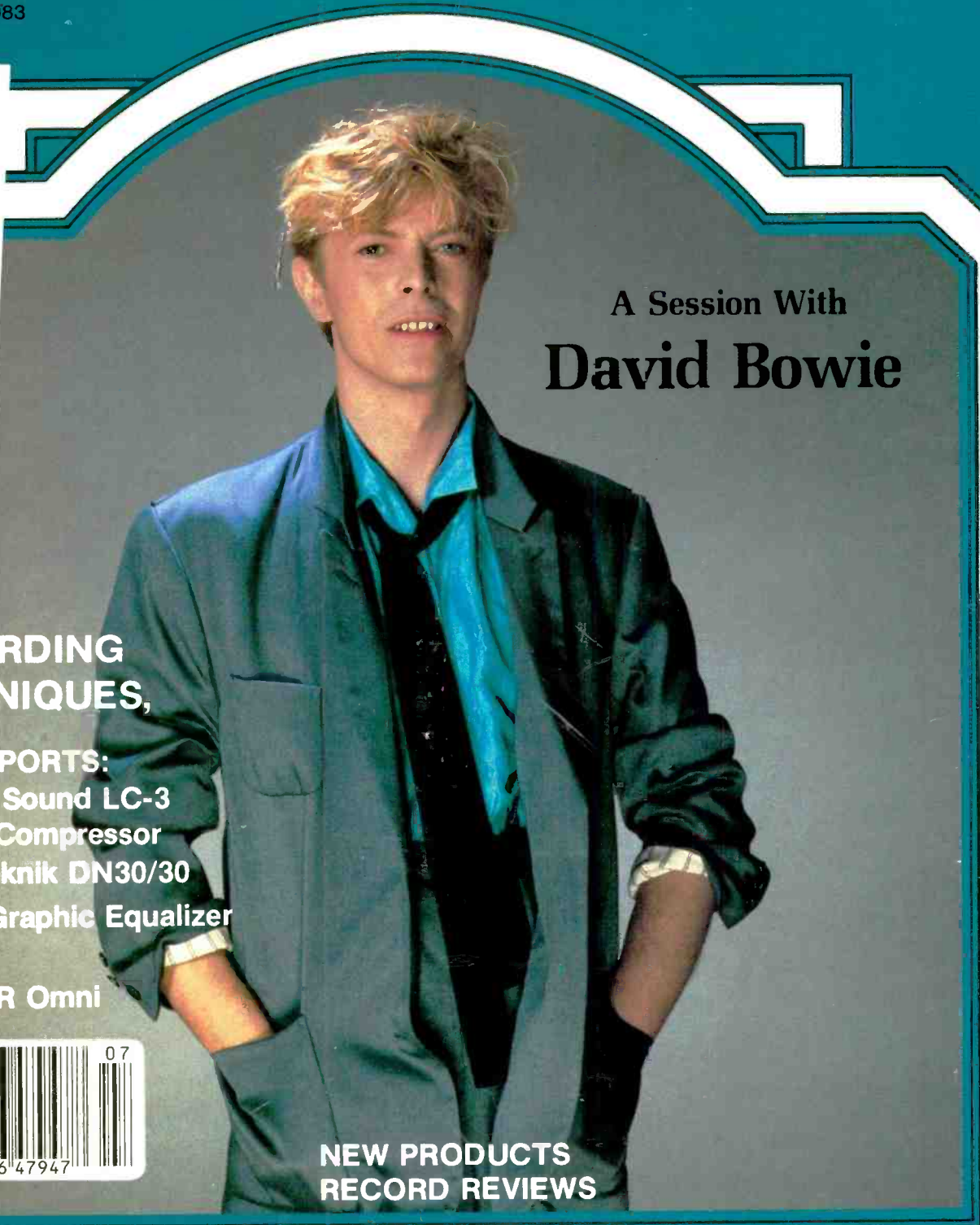
Profile:
Oliver Lake

MODERN RECORDING & MUSIC

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JULY/AUGUST 1983
VOL. 9 NO. 7

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A Session With
David Bowie

**RECORDING
TECHNIQUES,**

LAB REPORTS:

- Furman Sound LC-3
Limiter/Compressor
- Klark-Teknik DN30/30
Stereo Graphic Equalizer

NOTES:

The MXR Omni



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MODERN RECORDING & MUSIC

JULY/AUGUST 1983
VOL. 9 NO. 7

THE FEATURES

RECORDING TECHNIQUES— PART XIV

By Bruce Bartlett

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Want to have your own mini studio in almost any room of your house with almost no microphones, acoustical treatment, leakage, bulky guitar amps, drum sets or monitor speakers? This issue gives you an example of how to do it with today's modern equipment.

A SESSION WITH DAVID BOWIE

By Vicki Greenleaf and Stan Hyman

26

Bowie's back—minus the posing and posturing found on many of his past albums (Ziggy Stardust and Aladdin Sane leap to mind)—and talking about the whys and wherefores of *Let's Dance*. He also speaks out on the state of today's music and gives his opinion on the influence he's had (and is still having) on today's sounds.

BUILDING THE HYPERFLANGE + CHORUS, PART I

By Craig Anderton

36

In part one of this series, Mr. Anderton not only describes the basics of building it, but also explains how it works.

PROFILE: OLIVER LAKE

By Gene Kalbacher

41

Lake, versatile reedman-composer, who has recorded albums as a leader with several companies, talks about the formation of his new band, Jump Up—a reggaefied funk-jazz quintet. He also discusses the differences between setting up and recording for Jump Up and the World Saxophone Quartet, of which he's also an integral part.

Cover photo: Courtesy of Rogers & Cowan
Bowie color photo spread and b&w photo: Courtesy of Rogers & Cowan
David Bowie and Nile Rodgers: Courtesy of Atlantic Records
Oliver Lake photos: Courtesy of Gramavision Records

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The new and the notable with products from ProTech Audio, Furman Sound, Audioarts and others.

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By Craig Anderton

"The MXR Omni," a multi-effect unit—what it does, how it works, and how to use it—is explained in this issue. Mr. Anderton also gives us an evaluation of it.

AMBIENT SOUND

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By Len Feldman

You get what you pay for! In this issue we get some insight into the reasons for paying more for Studer/Revox products when Mr. Feldman describes his tour of the company's factories—its system of production and quality control.

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Clark-Teknik's DN30/30 Stereo Graphic Equalizer

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LETTERS TO THE EDITOR

Finally, Another Subscriber!

I have been reading your magazine for quite awhile, and finally decided to subscribe, due to the outstanding quality and wealth of information that your staff provides to the small guys who are trying to build bedroom studios.

I have learned a great deal from the Talkback column and the Letters to the Editor section. I would like to thank Craig Anderton in particular for all the projects he devised for not-so-wealthy musicians and recordists. The multi-track magic series was outstanding and saved me many hours of trial-and-error in trying to achieve a working knowledge of my Teac A-3440. I have subsequently helped my friends to learn what they can do with their machines.

The current feature on recording techniques has also been of the utmost help in putting it all together into a good solid understanding and application of the how-and-why of the ins-and-outs.

One more thing, and then I'll get off your case. Could you possibly do an interview with Tom Scholz—the wizard of BOSTON fame? He could probably give us some very interesting information that we could use in our setups at home.

Hang tight, rock on, and keep up the excellent work. Thanks for everything.

—Speedy Garcia
Rock 'n' roller at large

Thanks for the kind words, Speedy. We were just getting ready to tell the publisher how great we are, and will introduce your letter as evidence. Now, let's make a deal. You get on your friends' cases, and get them all to subscribe too. We'll get on Tom Scholz's case and get him to tell us what he knows. We'll pass it on ASAP.

Scratching for Studios

I have been trying to locate a book which contains information on how to build a recording studio from scratch. Your assistance and direction would be greatly appreciated, as the information I have been able to locate deals with recording equipment, rather than with the preparation of the studio itself.

—Mike Ruffone
Linden, California

Just add the words "small budget" and you have How to Build a Small Budget Recording Studio From Scratch, and that's the name of a book written by F. Alton Everest, and published by Tab Books, Inc., Blue Ridge Summit, PA 17214. It's available in paperback only, and costs \$9.95. A little closer to home, you can get the book from SIE Publishing, 31121 Via Colinas, Westlake Village, CA 91362.



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For additional information, see your TASCAM dealer, or write TASCAM Production Products, 7733 Telegraph Road, Montebello, CA 90640, (213) 726-0303.

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Electronic Projects for Musicians

In the May, 1981, "Notes," Craig Anderton spoke of an upcoming revised edition of his book *Electronic Projects for Musicians*.

I'd very much like to purchase a copy of it, as well as any others dealing with noise gates, limiters, EQs, etc. Could you please supply me with any further information.

—Randy Ruller
Ottawa, Canada

We received the following response from Craig Anderton: Electronic Projects for Musicians is published by Guitar Player Books, a division of Music Sales. It contains 220 pages and is priced at \$14.95. It includes 27 projects, such as preamp, noise gate, state variable tone control, three different fuzzes, AC adapter, electronic footswitch, tuning standard, phase shifter, talk box, and 16 other projects. There are also chapters on

theory, tools, how to find parts, multiple effects systems, troubleshooting, where to learn more, plus some typical questions and answers. The book also includes a soundsheet that demonstrates the sound of most of the projects.

I would also recommend Walt Jung's *Op Amp Cookbook*, published by Howard W. Sams, priced at \$15.95. It contains numerous bread-and-butter circuits (rectifiers, oscillators, filters, preamps, etc.) based on commonly available op amps. Also recommended is *Electronic Music Circuits* by Barry Klein, published by Group Technology, Ltd., priced at \$16.95, which includes a number of synthesizer circuits that, in some instances, can have pro audio applications.

All three books are available at many bookstores (and in the case of my book, music stores). A good mail-order source is Polymart, P.O. Box 20305, Oklahoma City, OK 73156

(allow 10 percent for shipping and 50 cents for handling for U.S. orders).



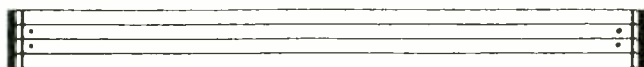
The Three Rs (Reading, Riting, and Recording)

I would like to know what kind of education a recording engineer must receive. I am eighteen years old and currently enrolled in a three-year electro-technology course. I am planning to use the knowledge gained from this course to further myself in a career as a recording engineer.

I have seen brochures for recording workshops, but have heard that you must go to them with some previous knowledge. Also, because of the short duration of some of these, I am skeptical of their academic value.

I am very interested in music, and am an amateur keyboardist and a halfway decent guitarist. My interests lie mainly on the technical side of things and therefore I think that engineering is the direction for me to take.

—Leon Ekiert
St. Laurent, Canada



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I am an EE student (currently a sophomore) looking for summer employment in a music-related electronics field. Ideally, I'd like to work for a recording studio, but I realize this is virtually impossible. I would gladly work in any position except janitor. I'd also be willing to be a roadie (I don't mind physical labor), or work for a sound reinforcement company—in short, any job in which I could become familiar with the equipment and get practical experience.

Do you have any leads or suggestions? I'm a drummer in a working rock band, if that's any help. And by the way, I think the "Talkback" section is a great idea.

—Peter Baltaxe
Princeton, New Jersey

These two letters say it all (ask it all?). They're typical of the many we get, asking about entry into the recording field. In fact, interest is so high that we've already got a major feature

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11. Magnetic Recording Tape
12. The Tape Recorder

V. Noise and Noise Reduction

13. Tape Recorder Alignment
14. Noise and Noise Reduction Principles

15. Studio Noise Reduction Systems

VI. Recording Consoles

16. The Modern Recording Studio Console

VII. Recording Techniques

17. The Recording Session
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The *Recording Studio Handbook* has been so widely read that we've had to go into a sixth printing to keep up with demand (over 30,000 copies now in print). Because it contains a wealth of data on every major facet of recording technology, it is invaluable for anyone interested in the current state of the recording art. (It has been selected as a textbook by several universities for their audio training program.)

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underway on *How to (try to) Get Inside the Industry*. We don't want to give it all away in advance, but here are some general tips.

If you want a career in audio, then think in terms of a career and plan your education accordingly. You can't become a brain surgeon in ten easy lessons; neither can you learn all there is to know about recording in a quickie course offered by a studio that's having trouble getting bookings. Some fly-by-night operations will separate you from your cash, and in return present you with a certificate suitable for framing (and for little else). A more reputable outfit might offer you a ten-week "overview" of the industry, which will give you a taste of what it's all about, and let you know whether the field is really for you.

If you've got the time, money, and academic stamina, go for a college education. Pro' Audio is getting more and more complex, and many of the major studios are getting more and more picky about who they hire. With 24 (and more) tracks, digital audio, automation, video interfacing and such, it's no longer enough to be able to snap your fingers in ½ time. And when

blue smoke comes out of the computer, no one really cares about your guitar chops. In other words, education is where it's at, and the more you have, the better will be your chances of survival.

However, you should be prepared to start at the bottom. That's probably just where your employer began, so if you're not into janitorial chores, you'd better try for med school instead. More on this later.

One More on Education

I am presently attending a recording engineering school here in Southern California. I was having trouble with some concepts in class until I bought your book "The Recording Studio Handbook." It has helped me tremendously in understanding certain things.

I'm in a beginning course, which is all lecture (no hands-on work). This has made it very difficult for me to pick up most things, since I can't really apply the lecture to any equipment. The actual hands-on studio

work is the next course, which doesn't help me now.

I've paid a lot of money for this one class, although that's not the main problem. It's just that I had my heart set on becoming a recording engineer. I still feel I could do it, if I had the chance to learn on-the-job. I feel that if I'm in the studio environment, I could pick up on things better. And so my questions are

1. Who would be the best person to write to at a studio—and I don't mean in the personnel department! I'd be interested in a gofer or clerical/secretarial job—in fact, anything!
2. Do studios have apprentice-type positions? I'd be willing to do anything, just to have the opportunity to observe and learn.
3. What would be the best approach? Nothing I've done so far has worked.

There must be some way for us outsiders to get in! Your comments and suggestions would be much appreciated. I'm not giving up yet!

—Teresa Ellis
Long Beach, California

Hang in there, Teresa! You'll make it eventually, if you've got what it takes. Most employers couldn't care less about your hands-on experience in school. If you get hired, it'll be for what you've learned, and not because you've spent a few hours playing mixer. The mixing will come later, after you've learned what the industry is all about. Yes, it's a hell-of-a-lot more fun than sitting in some dumb old class, listening to Professor Williams (inside joke) reading verses from the Handbook. But what counts later is how much you've learned, not how many hours you've logged at the board.

We'll come back to question number 1 in a future issue, when we begin our series on "Making It" (in the recording industry). For now, we'll just say get the schooling done before writing those letters. As for apprentice slots, some studios are getting into working with schools on "intern" programs, in which a student spends a semester at a studio, usually in a gofer position (usually? make that always). What would be the best approach? Stick it out in school, and then go for the big time. If you can do it, it makes you that much more eligible for getting inside. And once you're in, you'll be glad you picked up a little book-learning while the others were going the "hands-on" route.

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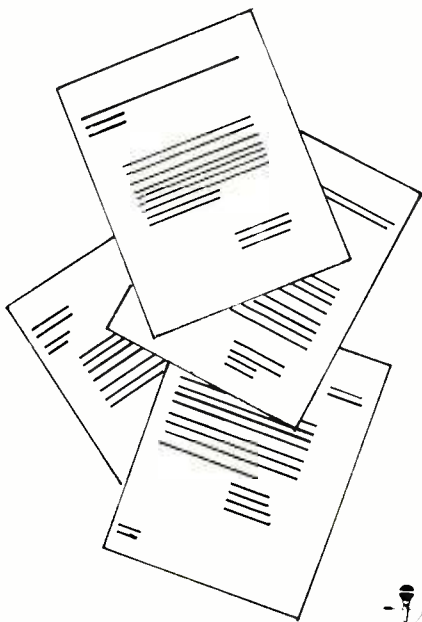
I am an aspiring engineer, and have worked my way through the ranks of apprenticeship. I graduated from a recording school about five months ago. I wish to submit an article for publication that I call "The Plight of the Assistant Engineer."

Many of my breed do not realize the expense and the fortitude needed to make it in this business. Many become disillusioned. I wish to present my side of the job adventure, because none of my colleagues seem to realize the sheer futility of their fantasy.

—Shawn Haines
Cedar Rapids, IA

You're on. Send in your thoughts and we'll be glad to consider them for publication. We're always interested in hearing from our readers, and it certainly sounds like you're got something on your mind. However, after reading between the lines of your letter, we wonder if you're not looking for too much, too soon.

If you just graduated from a "recording school" five months ago, you've still got a little on-the-job training ahead of you. And since you didn't say "college" or "university," we suspect you mean a short-term program. Many of these do not adequately prepare you for a career in the industry. We'll have more to say about this shortly, in a series of feature articles on getting into the recording industry. In the meantime, let's have a look at your article.



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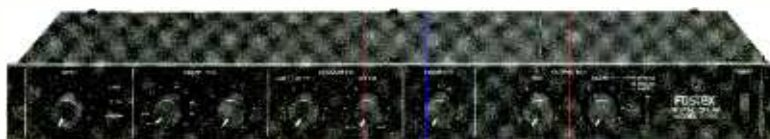
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TALK BACK

Anyone Seen a Canary Out There?

We just purchased a Canary Mixing Console, and would like to get in touch with the manufacturer. The console is made in England, and is a 16 x 2. I'm also looking for someone who has plans for wedge monitors. Any information would be appreciated.

—Mike Taylor
Arizona Production Services
Phoenix, Arizona

The British Canary seems to be quite a rare bird. Although we've heard the name before, we have nothing in our files, and neither does the British Information Service or the British Trade Office in New York. If any of you canaries see this inquiry, please sing out and let us know where you're hiding.

As for source plans for wedge monitors, we contacted John Eargle, vice president of Product Development at JBL. He told us that most people who build them simply get an example of what they would like to make and then proceed to copy it. There is nothing complicated about that, and an approximation of actual dimensions will probably suffice. However, wood thickness and quality is important.

Any Amp Info?

I am hoping that you will be able to provide some technical information (schematic) about an amp I was given to fix. This is all the information I can supply:

Name: Earth Sound Research,
made by Instrument Systems

Audio Corp., Farmingdale, NY. Model #1954, single channel with 4 inputs, 5 amp fuse, master, reverb, treble, middle, bass, volume, 4 output tubes, and 3 other tubes with no markings. (I compared them with a 6L6 tube chart and I think that's what they are.)

The person who gave it to me said he tried the company address and received no response. I also have yet to receive any response. The amp chassis has no markings; however, on the speaker cabinet was the model (1954) number and the serial number 10454. Cabinet uses 4-12" speakers (he said) and looks like a vintage tweed Fender design. The amp chassis fits inside the cabinet cavity on top.

That's about all I know about it, except that it reminds me of a Peavey electronic design. Any help would be greatly appreciated.

—Gary R. Gendron
Huntington, W. Va.

We contacted Instrument Systems Audio Corp. and found that the division that made the amp in question has been dissolved, and there is no one left who can supply information about it. If anyone out there can provide a schematic or any other technical information, we'd appreciate it if you would write in.



Cold RRRecorders

I own an 8 track recording studio, and when I'm not doing business I shut the heat off and it gets very cold. Is there any harm to my

equipment in doing this? If so, please explain why.

—Keith Gutschwager
Bayshore, NY

The cold temperature will not be a problem if the recorders are not in use. However, before the operation, you should warm up the room, and turn on all equipment for about half an hour. This will prevent any speed and wow and flutter problems on the tape recorder, which would be caused by belts and idler wheels hardened by cold temperature.

—Terry Shimada
Manager, Audio Division
Matsushita Technology Center
Secaucus, NJ

Finding Service Manuals

I recently purchased some (used? Ed.) equipment without owner's manuals. When the manufacturers were contacted, I found out that I would have to wait months for the manuals, because the ones that were available were insufficient.

The equipment is a Denon DR 750 cassette deck, a Technics SH-9010 two-channel parametric equalizer and a Technics SU-9070 preamplifier. The preamp comes in two parts.

—Lance Bird
New York, New York

If that preamp is really in two parts, you may have gotten stung. The SU-9070 was built as a one-piece stereo preamp whose 1980 list price was \$460. (The SH-9010 cost \$540.) The SE-9060 is a matching stereo power amplifier. Manuals are available from the Panasonic Parts Depot, 50

Meadowlands Parkway, Secaucus, NJ 07094.

The Denon manual costs \$2.00 (plus \$1 for shipping) and may be ordered from Denon at P.O. Box 1139, West Caldwell, NJ 07006. The manuals should be in stock, and should also prove to be sufficient—although we're not really sure what you meant by that.

Fine Tuning the SDD-3000

There are a couple of fine points which I would like to add to my review of the Korg SDD-3000 Delay Line (March, 1983 *MR&M*). First of all, when holding down the UP or DOWN buttons to set the delay time, I mentioned that the delay time first changes in 1 ms increments, then 10 ms, and finally 100 ms. However, there is a mode which allows you to jump immediately to the 10 ms rate, and then to 100 ms. You may enter this mode by holding down the UP button and briefly tapping DOWN, or vice versa if you want to go in the opposite direction.

Secondly, a sentence in the "Using The Programmer" section needs to be changed. It reads, "When you've got the sound you want, hold down the WRITE button and use the PROGRAM button to step through the program numbers until you reach #4." Just change "PROGRAM button" to "UP or DOWN buttons."

The Korg SDD-3000 is a fine delay, and I hope the above comments will clear up any possible points of confusion.

—Craig Anderton
Contributing Editor, *MR&M*



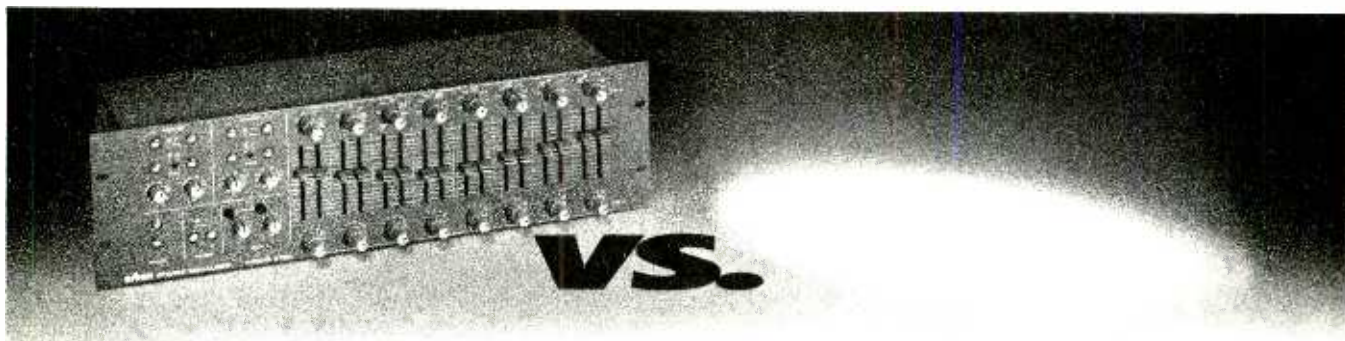
Fusion-Proofing a Dorm

I am in a four-piece fusion band at college. Because of the convenience (and the lack of a better place), we practice in my dorm. It's fairly cramped, but the acoustics are

great. We try to keep the volume level reasonable, but still we bother people, as is evident from their complaints. Is there some way that I can effectively sound-proof my room? If so, could this sound-proofing be two-way (that is, not let inside sound out, or outside sound in)? I need a quiet place to study, and it would be great if this project would serve a dual purpose.

—Matthew W. Benz
Middlebury, VT

Have you thought about forming a string quartet? That would be a lot cheaper than effectively sound-proofing your room. Unfortunately, you can think of sound as being just like water—if there's a way to leak, it will. Making a room leak-proof is expensive—probably a lot more than what you're paying for tuition. You could probably rent a rehearsal room in town for less. It wouldn't be as convenient, but it wouldn't involve calling in the contractors either. Sorry to be the bearer of bad news, but trying to turn a dorm room into a quiet zone is no term project.



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MUSICAL

NEWSICALS

MICROPHONE MIXERS

New from Shure Brothers is the M268 Microphone Mixer, specially designed for optimum effectiveness as a submixer for rock, jazz, and country music groups. It provides up to eight additional microphone inputs and allows musicians to inexpensively expand the capabilities of their mixing boards. The M268 also solves the problem of the drummer who needs multiple microphone setups but doesn't have enough inputs on his mixing board to accommodate them. Since it provides a high-impedance output for the onstage amplifier, plus a low-impedance output to feed the

main board, it is also an ideal mixer for electronic keyboard players.

Each of the unit's four microphone/instrument channels features two jacks: a 1/4-inch phone jack (for high-impedance microphones) and a standard professional three-socket jack (for low-impedance microphones). The M268 also includes an auxiliary input channel for tape recorders or other high-level accessories.

Other features include individual feedback-type gain controls for all five input channels, a master volume control, simplex (phantom) power for condenser microphones, a mix-bus

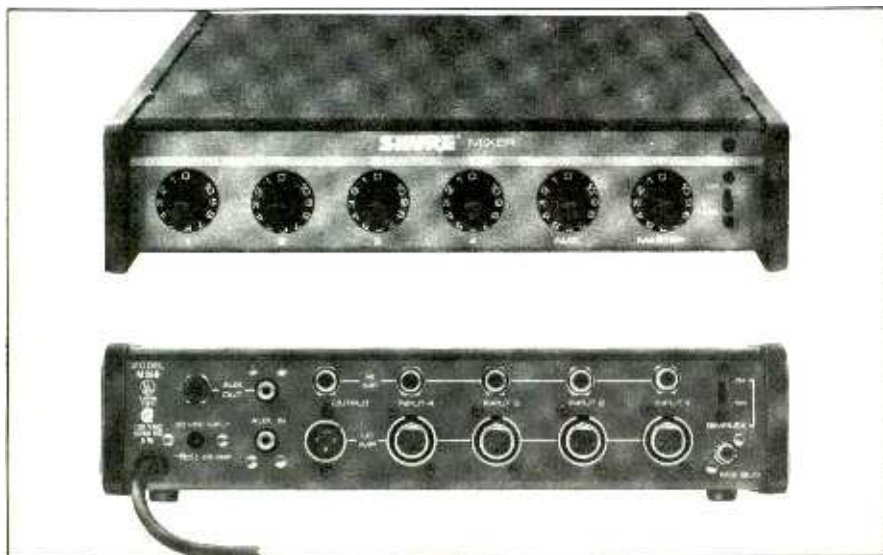
for simple mixer interconnection, and an automatic muting circuit that prevents speaker damage during turn-on and turn-off. The price is \$257.

Circle 27 on Reader Service Card

DRUMS AND PERCUSSION

One of the latest additions to the Zildjian line is the Paper Thin Crash Cymbal, with fast response and quick decay that is perfect for the studio drummer or any percussionist who wants a precise, bright crash that cuts out quickly. The new design features a nearly flat taper, exceptional thinness and a lustrous finish. The new cymbal is available in 14-, 15-, 16- and 17-inch sizes.

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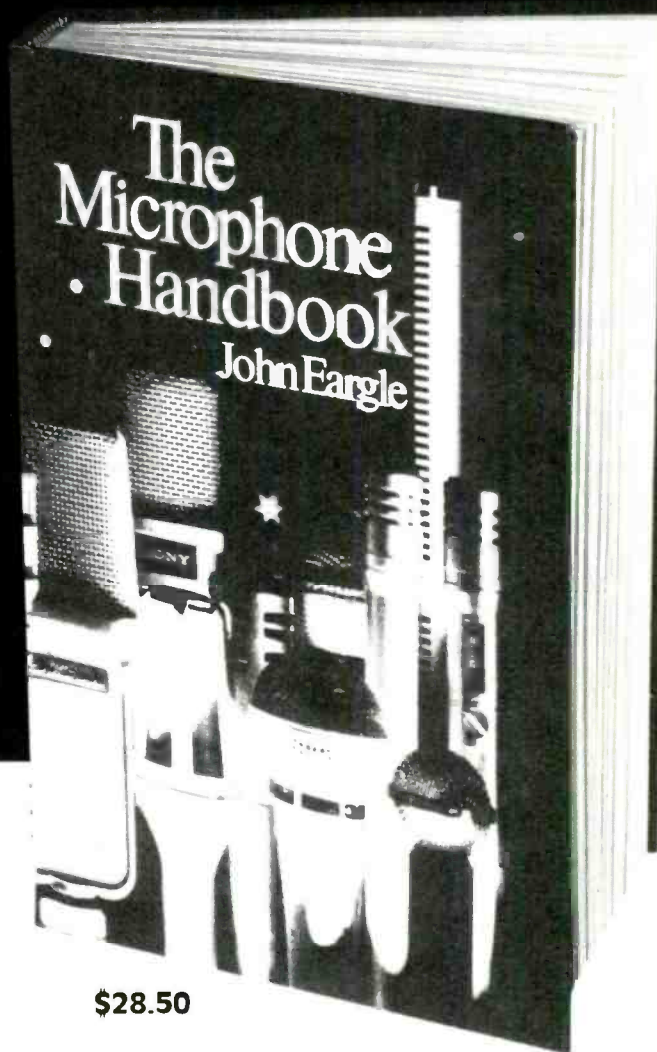
- Directional characteristics—the basic patterns.
- Using patterns effectively.
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JOHN EARGLE

noted author, lecturer and audio expert, is vice-president, market planning for James B. Lansing Sound. He has also served as chief engineer with Mercury Records, and is a member of SMPTE, IEEE and AES, for which he served as president in 1974-75. Listed in *Engineers of Distinction*, he has over 30 published articles and record reviews to his credit, and is the author of another important book, *Sound Recording*.



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SECX Big Jam case is a compact, sturdy flight case, prewired and powered to hold and control up to four Big Jam pedals. It features bypass jacks and a master input and output. The Big Jam Dual Readout Quartz Tuner has an illuminated VU meter, as well as an LED that glows red if the pitch is sharp or green if the pitch is flat. Open string tones (E, A, D, G, B, E¹) and an A-440 are audible for reference pitches. The tuner can be left in-line in an effects chain for a quick tuning reference during performances. It is AC/DC operable and can be used independently or in the Big Jam Effects Pedal System Case.

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Multivox introduces several new products to their Big Jam modular effects pedal system line. The Big Jam Pedal operates either on a nine-volt battery or AC. Its design offers small compact pedals and fully variable foot lever pedals. The foot platform on the pedal slides in when packed and slides out when in use for greater foot surface. It is also silent

when in use. The Big Jam Parametric Equalizer allows the user to custom tailor his sound and adjust dead or overly active frequency areas by honing in on particular narrow frequency bands and controlling their boost or gain. The pedal features gain, frequency, bandwidth and level controls. The Big Jam Delay offers up to 400 ms delay. The

SYNTHESIZERS

The SH-101 synthesizer from Roland is designed with interface flexibility for studio use, and contains features geared to on-stage applications. The monophonic SH-101 is AC powered, or may be battery operated for remote applications. An optional MGS-1 pistol grip modulator and shoulder strap are available. With the modulation grip, the VCO bend is accomplished with a wheel bender, and LFO modulation is brought in by a separate button on the end of the grip.

Synthesizer functions include a dual waveform VCO, a sub-oscillator, LFO modulation, noise generator, VCF with key follow, and a VCA switchable to either gate position or an envelope position which engages the ADSR. Portamento can be either normal-on, or an auto setting which adds portamento when the keyboard is played legato.

Besides normal synthesizer functions, the SH-101 contains an arpeggiator with three directions of arpeggio controlled either by the internal LFO or an external clock pulse. It also contains a 100-step sequencer that can be controlled internally or synced to such other Roland products such as the TR-606 Drumatix for more applications. Other features include key transpose, a built-in headphone amp, CV and gate inputs and outputs, and overall tuning control. The SH-101 measures 22.5 inches (W) x 3 inches (H) x 12 inches (D), weighs nine lbs. and retails for \$495. The MGS-1 modulator option is easily installed by any user and sells for \$100.

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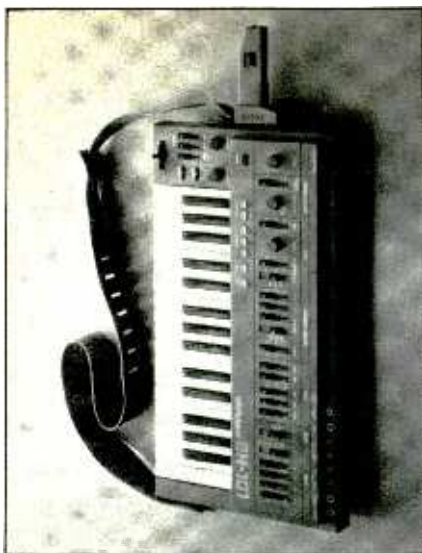
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From Buchla and Associates comes a multi-computer synthesizer, the Buchla 406. It consists of a five-octave weighted action keyboard; six orchestrally differentiated voices which can be simultaneously displayed, auditioned and edited; a high resolution graphic display which employs linear time notation capable of visually representing considerably more musical data than ever possible with conventional symbolic notation, and three separate computers, each designed to optimize a particular function.

The host computer, the brain of this instrument, handles user communication, data handling, and executive control. A second computer receives instructions from the host computer, directs its sixty-four acoustic parameters, and enables the user to specify precise complex sonic detail. The third processor is a pipelined digital signal generator that produces the instrument's six voices. This third computer also has very powerful algorithms for timber generation, waveshape interpolation, and timber modulation.

The instrument is provided with two high-level music languages: MIDAS, which is most appropriate for traditional keyboard organization, instrumental responses and scoring technique; and PATCH V, which allows the user to define the role of each individual key in terms of musical detail, form and structure. The Buchla 406 can interact with a variety of ancillary equipment because of a wide array of control voltage inputs and outputs. It can also decode, display and track an SMPTE time code signal, facilitating film, video, and multi-track composition.

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JULY 1983



The OB-8 Programmable Polyphonic Synthesizer, Oberheim's latest entry, contains all of the features of the OB-Xa in addition to such new features as a programmable arpeggiator, expanded LFOs, programmable pitch bend, programmable volume, external pan pots, and provision for a volume pedal. The program memory has also been expanded to include 12 splits and 12 double programs along with 120 sound programs. It also contains a selectable program cassette recall.



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"...It (The Furman Sound RV-1) was put into a rack in a recording studio with at least a half a dozen other reverb units, all of which were more expensive, three of which ranged in price from \$10,000 to \$20,000. All I asked was that every time the RV-1 was used the engineer put a slash on a piece of paper. When I went back to check it out (about a month later) they told me they threw the piece of paper away because it was full of marks. That's about the best recommendation that I can think of."

-Mike Shea, International Musician and Recording World, October 1982.



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13



In general, spring reverbs don't have the best reputation in the world. Their bassy "twang" is only a rough approximation of natural room acoustics. That's a pity because it means that many people will dismiss this exceptional product as "just another spring reverb". And it's not. In this extraordinary design Craig Anderton uses double springs, but much more importantly "hot rods" the transducers so that the muddy sound typical of most springs is replaced with the bright clarity associated with expensive studio plate systems.

Kit consists of circuit board, instructions, all electronic parts and two reverb spring units. User must provide power (± 9 to 15 v) and mounting (reverb units are typically mounted away from the console).

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The standard OB-Xa features retained in the OB-8 are eight-voice polyphony, each voice having two oscillators; two envelope generators; selectable two-pole or four-pole filter, and amplifier; five-octave keyboard with programmable split point and easy-to-use pitch bend and modulation levers, plus complete compatibility with the Oberheim System. The suggested price is \$4,395.

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PERFORMING MICROPHONES

Shure's new PE5 microphone is lightweight, economically priced and well-suited for younger musicians purchasing their first microphone. It incorporates a cardioid pickup pattern and a specially tailored frequency response that produces a vibrant, penetrating sound for clarity and distinction in instrumental and vocal pickup. The PE5 is equipped with an attached 15-foot (4.6mm.) cable, an on-off switch, a professional accessory swivel adapter, and is encased in black Armo-Dur®, a shock-resistant material. Other features of this microphone are an internal rubber shock mount and a Shure-designed pop-filter grille assembly. The PE5 is suitable for applications beyond live music performance, including home tape recording and general sound reinforcement. Available in two versions, the PE5H-C (high impedance, with 1/4-inch phone plug at the cable's equipment end) and PE5L-CN (low impedance, with a professional three-pin connector at the cable's equipment end), sell for \$49.50.

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GUITAR ACCESSORIES

The Super-Tom, a new pickup for guitar from T.W. Doyle, is a high-impedance output, humbucking-type pickup that requires no batteries and is primarily designed for music requiring broader frequency ranges. Utilizing precision-wound bobbins, a special coil for thick overdrive sound, and alnico magnets for high-flux ratings, it also uses specially elevated continuous pole pieces to create additional sustain. A built-in integral potentiometer and transformer match with any existing guitar circuitry.

The pickup can also be used as a complete lead driver in the Doyle D-1 guitar system, which gives the player the advantage of choosing from six tonal variations by using a six-position switch included with the D-1 system.

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P.A. MIXERS

A twelve-channel, unpowered P.A. mixer, the Crate PA 2212M, is the latest edition from St. Louis Music Supply Co. Features include reverb, a seven-band graphic equalizer, and high- and low-impedance microphone inputs. Each of the twelve channels has one XLR low-impedance balanced input; one phone jack high-impedance input; an input attenuator control; a reverb/effects control; bass, treble and gain control; an LED overload indicator, and monitor send control.

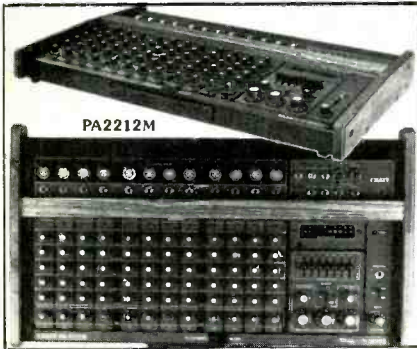
The master section contains master volume, master reverb, effects return, monitor send control, auxiliary channel input level control and phone jack input, headphone jack with a separate potentiometer control, headphone three-position slide switch (main/monitor/effects), seven-band

MODERN RECORDING & MUSIC

graphic equalizer with center notch, and a ten-segment LED bar graph for overload indication.

Output features include a monitor send jack, effects send and return jack, line-in and line-out jacks, two speaker main jacks and an external fuse. The mixer is contained in black metal casing with natural wood trim. The price is \$899.95.

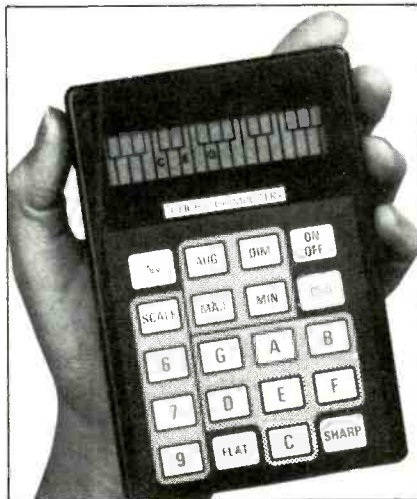
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input switches, equalizer by-pass switch and a microphone level control. The suggested price is \$350.

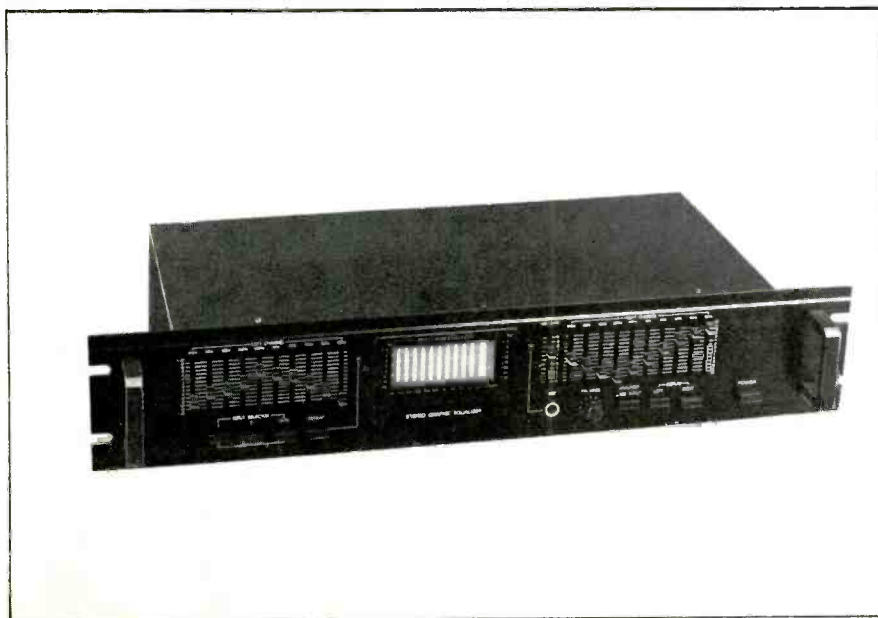
The Banana Chord Computer is a new handheld computer that displays all common chords and scales. A built-in LCD display shows the user how to play any chord, scale, inversion, augmented or diminished chord, as well as major and minor chords and scales. The user can also transpose any chord or scale up or down by half-steps. Inversions of all chords can be shown, including inversions of 6th, 7th, and 9th chords. Ideal for portable keyboard owners, music students, synthesizer players, home organists and others, it can also increase musical knowledge and simplify playing in unfamiliar keys. The price is \$59.95.

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ELECTRONIC ACCESSORIES

The Electra Graphic Analyzer Model 535GA, from Omni Music Products, features a spectrum analyzer in combination with a stereo 10-band graphic equalizer. With the aid of the on-board pink noise generator, the Analyzer can be used to read the behavior of sound in any acoustic environment, and aids in a quick, accurate setting of the P.A. system. The stereo graphic equalizer allows equalization of two separate channels (such as main and monitors) and simplifies proper bandwidth adjustment. Also featured are multiple



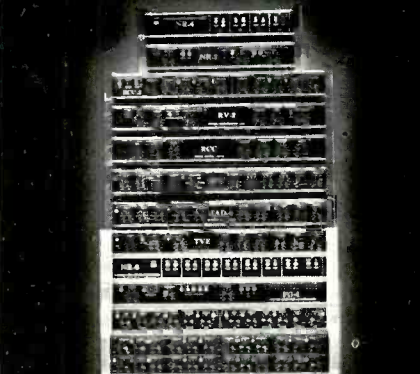
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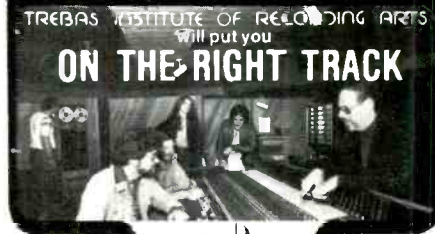
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Recording Techniques

Part 14

by Bruce Bartlett

How would you like to record a demo tape of a rock group in *any* room of your house, with almost *no* microphones, *no* acoustical treatment, *no* leakage, and *no* bulky guitar amps, drum sets, or monitor speakers? It can be done with today's equipment.

How? Take a look at *Figure 1*. With this method, the instruments are all electronic—an electric guitar, electric bass, electric keyboards, and a drum machine. The electric guitar player doesn't need an amp to play through to get a distorted sound: he just plugs his guitar into a signal processor that provides the sound of a guitar amp electronically. All instruments plug directly into the mixing board—no microphones are needed (except for vocals and acoustic instruments).

Monitoring is done over lightweight open-air headphones. A special delay circuit in the headphone amplifier moves the monitored sound "out of your head" and into the room, which helps to simulate loudspeaker monitoring.

So, with this equipment, you spend no money on room treatments, baffles, monitor amps, or speakers. You spend little or no time experimenting with microphones and microphone placement. Just plug in anywhere and record! You won't bother the neighbors with loud sound, because

it's all in the headphones. And you can forget about control-room acoustics, monitor equalization, and monitor coverage; since everyone wears a similar set of headphones, everyone hears the same sound.

This setup can greatly simplify the recording process. *Figure 2* shows the recording-and-reproduction chain for a conventional system of

guitar amps, studio acoustics, and so on. *Figure 3* shows the all-electronic system. Note how many stages are bypassed.

In *Figure 4*, a typical setup for a conventional recording session is shown. *Figure 5* shows the same instruments recording with an all-electronic mini studio. Note how simple the setup can be.

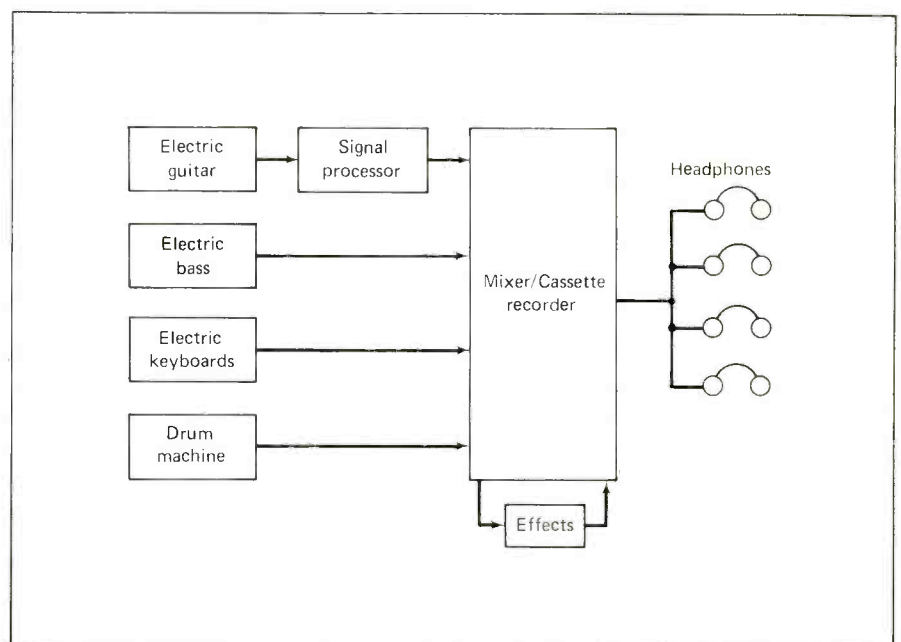
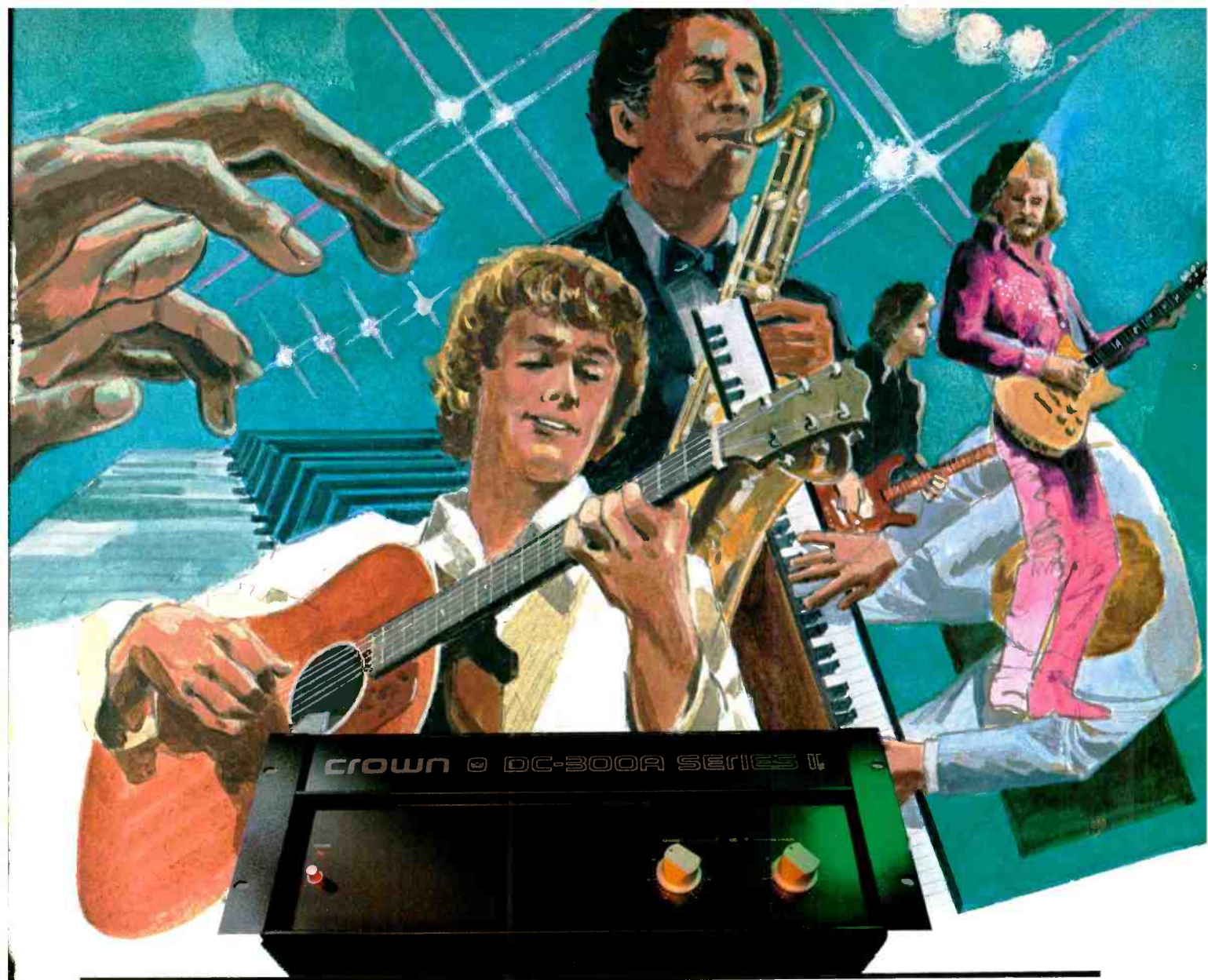


Fig. 1. All instruments plug directly into the mixing board.



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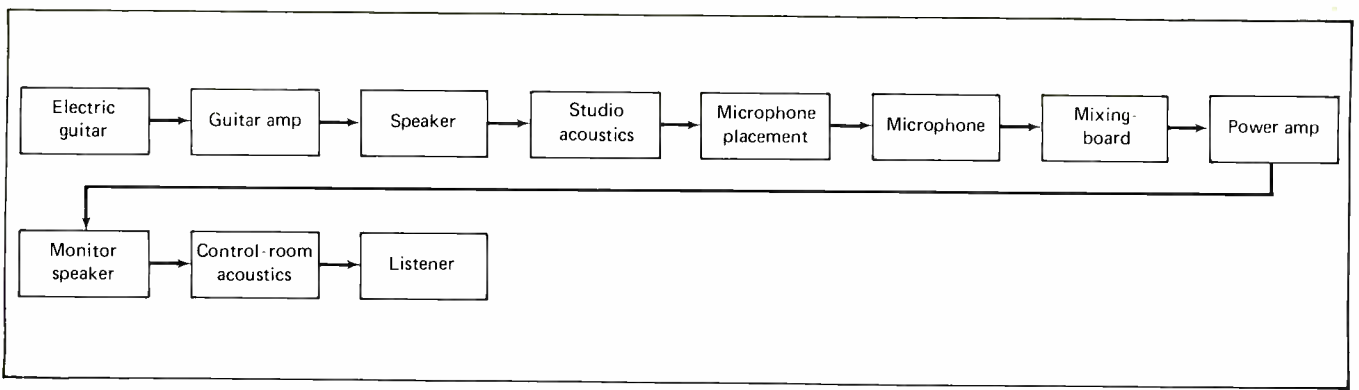


Fig. 2. Conventional recording and reproduction chain.

Drawbacks

Note that we've shown the advantages of this system, let's consider the other side.

Recordings made with all-electronic instruments may tend to sound synthetic, sterile, and predictable. Without the complexities of room acoustics to enhance the sound, creating new sounds may be difficult. The overall effect might be unnatural because no original "live" sound existed to be captured on tape. Instead, the sound doesn't come alive until it's heard over loudspeakers in a stereo system.

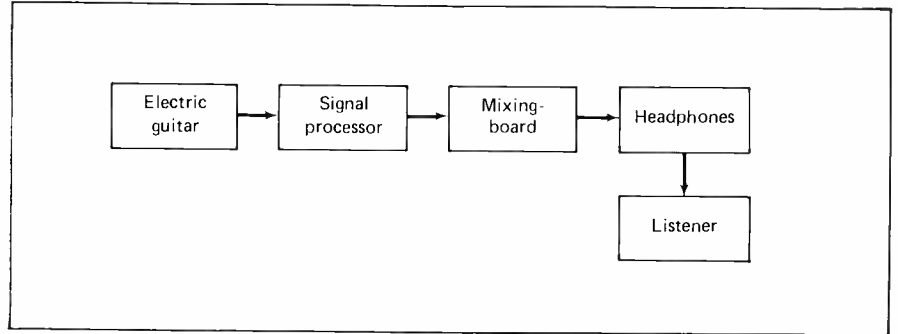


Fig. 3. All-electronic recording and reproduction chain.

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And we can't neglect the acoustic instruments, which add a variety of colors to a recording. If these instruments are required for a particular song, we'll need microphones to record them accurately. Pickups for acoustic guitar and piano may be a solution, but they don't sound as natural as good microphones do.

Still, with this system, it should be possible to record electric instruments and acoustic instruments all at once, rather than overdubbing them a few at a time. Electric instruments can be recorded direct while the acoustic instruments are mic'ed. Since the drums, electric guitars, and electric keyboards are heard only over headphones, there is no leakage of these loud instruments into the acoustic instruments' microphones.

That way, the musicians can play in "real time" with each other and develop an emotional interaction. The result can be better music.

buttons. The guitar players, however, can plug directly into the mixing console and be heard over the house system and stage monitors.

System Components

Instruments. Let's look at the all-electronic mini studio in more detail (*Figure 1*). The musical instruments produce electrical signals rather than sound; electric guitars and electric pianos convert vibrations of strings or rods into electrical signals; synthesizers generate signals with internal oscillators; drum machines can either synthesize a drum sound, or play back digitally recorded "live" drums at the touch of a key (as in the Linn Drum Machine).

Drum machines should not be confused with the awful-sounding rhythm boxes of earlier years (remember the "fox trot," "tango," and "waltz" rhythms?). Today's models sound almost like real drums, and can be programmed by about anyone to play

priate, so it's common to mic' guitar amps in the studio.) But the sound of guitar amps can be approached by "tube distortion" units and equalizers. Some are guitar-level devices (operating around 1 volt maximum) that connect between the guitar and the mixing console. Others operate at line level, and are connected between the console's access jacks.

Tom Scholz (of *Boston* fame) is marketing a guitar-level signal processor called a "Rockman." It produces a variety of sounds through the use of equalization, compression, chorus, echo, and distortion. A four-position switch and a three-step volume control allow the user to key-in several pre-set sound characteristics. Maximum-distortion settings are typically used for lead guitar solos; intermediate settings might be appropriate for rhythm guitar. There are two "clean" settings with different equalizations—warm and bright. The output can drive

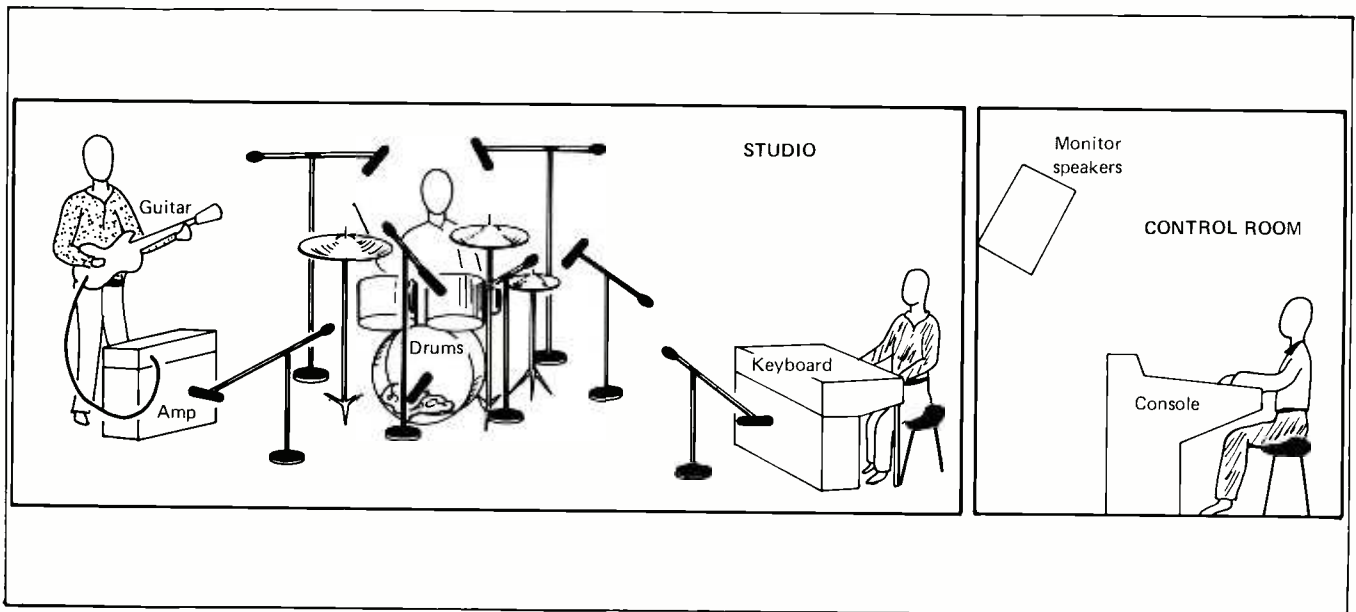


Fig. 4. Setup of conventional recording session.

Headphone monitoring has some disadvantages. The sound seems less "powerful" than that provided by loudspeakers—perhaps because no vibration is felt in the body. The recording engineer may have to tailor the headphone mix to sound right over speakers. Headphones also become uncomfortable after a while.

It's hard to imagine an all-electronic band on stage. There'd be no sweating drummer flailing away at an enormous drum kit—just someone sitting at a little table pressing

complicated rhythms. Drummers are the best programmers for drum machines, because they can put together rhythm sequences much more efficiently than non-drummers can.

Signal Processors. Another component in this system is a signal processor that simulates a guitar amplifier/speaker. Normally an electric guitar plugs into a guitar amp which distorts the sound in a pleasant way and provides a good tonal balance. (A clean signal direct from the guitar isn't always appro-

headphones or can plug into a mixer. Selling for \$249, the Rockman can be used alone as a practice device, or can replace a guitar amp for live gigs or recording.

Another such device is the Yamaha Producer Series MA10 Headphone Amplifier. It includes tone controls and two volume controls in series for controlled distortion.

Mixers. The mixer can be anything from a no-frills microphone mixer up to a complete console. If you use a mixer that has only low-impedance

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inputs, you'll need an impedance-matching transformer to match the high-impedance electric guitar and electric piano to their low-impedance inputs. These transformers are assembled by microphone manufacturers, and are sold by sound dealers and music stores.

Some new mixers are designed with headphone listening in mind. Yamaha's Producer Series headphone system comes in two parts: the MM10 mixer and the MA10 headphone amplifier. The mixer has four inputs for guitars or microphones, each with a pan pot, plus a stereo auxiliary input and a stereo aux output. With this system, a four-piece band with vocals can rehearse over headphones, record live, or overdub onto a 4-track tape deck.

The headphone amplifier accepts the signals from the mixer and amplifies them to drive up to four headphones. It also includes a separate guitar/mic' input with bass and treble controls and two in-line volume controls for controlled "overdrive." Two effects buses complete the package.

In the headphone amplifier is a 10-millisecond analog delay circuit to simulate the effect of room acoustics. The circuit is claimed to place the sound "out front" rather than in the head.

Some other products that fit the "miniature" philosophy are the Teac Model 144 Portastudio and the Fostex Model 250. They combine a 4-input mixer with a built-in 4-track cassette tape. Features included are equalization, panning, monitor mixing, effects buses, and noise reduction. Tascam is also selling a compact mixer with two microphone inputs and four line inputs, plus extensive patching capability to expand the system.

These small units can replace a bulky console, monitor system, and tape deck (with only some sacrifice in performance and flexibility). They're great for putting together demos, either for a group of musicians or for an individual laying down all the parts himself.

Headphones. By using lightweight, low-pressure headphones, you can monitor for hours without much discomfort. Just be sure to use accurate headphones; their tonal balance should match that of high-quality speakers.

A Typical Session

Let's run through an example of a demo recording session using these new tools. Imagine a rock band arriving for the session at the bass player's house, carrying only their guitars and synthesizers. No more heavy amps or drum sets to lug around. Since it's a warm sunny day, they set up on the back porch.

The guitar player plugs his guitar into a signal-processor input, and plugs the processor output into the mixer (say, a Portastudio). He also plugs in a set of headphones, adjusts the mixer volume, and starts to tune up.

The other players connect the bass, keyboard, and drum machine directly to the mixer. They slip on headphones. The bass player, serving double duty as an engineer, sets the recording levels and adjusts the monitor mix.

After everyone has tuned up, they begin to practice a song. The drummer looks like he's typing. Actually, he's experimenting with various

viously recorded parts on track 4, he records his part on track 1.

Next, vocals are mic'ed up close with windscreened omni-directional microphones. The close placement rejects room acoustics and background noise, and the omni pattern provides a natural sound without bass boost. Vocals are recorded on tracks 2 and 3. That completes the recording. Track 1 contains guitar; tracks 2 and 3 contain vocals; and track 4 has a mix of drums, keyboard, and bass guitar.

For the mixdown, the 4-track cassette recording is played into the mixer. Then the tracks of the recorded instruments are balanced, equalized, panned, and given some reverb from an outboard reverb unit. The result is recorded onto a 2-track cassette deck connected to the stereo outputs of the Portastudio. There's the finished demo tape.

So, with minimal equipment and minimal setup time, a band can record demos anywhere they please.

The trend toward miniaturization in home recording equipment also

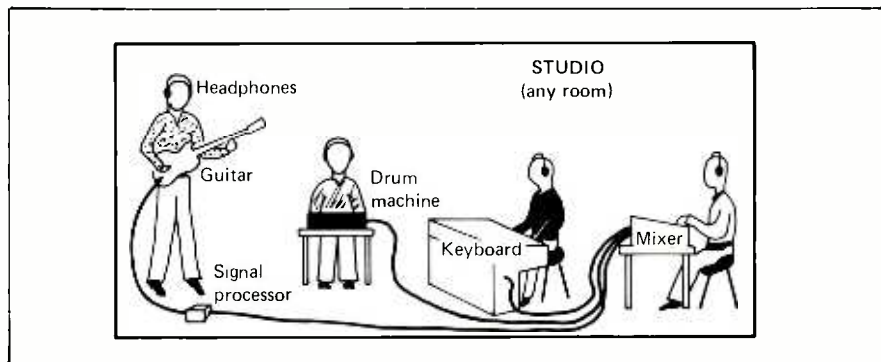


Fig. 5. Setup of all-electronic recording session.

rhythms, either playing them "live" or entering rhythm sequences into the drum machine.

Finally the tune is ready to be put on tape. The bass player hits the "record" button. Each instrument is recorded on a separate track of the cassette recorder—bass on track 1, drums on track 2, and keyboards on track 3. Track 4 is left empty. The guitar will be overdubbed later.

After playing back the tape, the bass player mixes tracks 1, 2, and 3 onto track 4 and records the result. Now tracks 1, 2, and 3 can be used to record new material.

Track 4 is played in the sync mode (off the record head) to the guitar player. While listening to the pre-

applies to the entire electronics industry. We have microcomputers, business-card calculators, compact stereo components, miniature speakers, Walkmans, and even miniature microphones. Although the hardware is becoming more complex internally, it's easier and faster to set up and use.

The all-electronic mini studio is not meant to replace conventional recording systems. In most situations, there are no substitutes for guitar amps, drums, microphones, and monitor speakers. But the all-electronic approach offers special benefits for the home studio: simplicity, portability, and freedom from room-acoustics problems.



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DAVID BOWIE



stan hyman &
vicki greenleaf



As the lunch hour passed, no one seemed to recognize David Bowie sitting in a corner booth of the Market Diner, at 43rd St. and 11th Ave. The silver Rolls Royce parked in front of the trucker's stop drew the only undue attention afforded him.

Dressed conservatively in a finely tailored, European-style suit, the 36-year-old rock legend hardly resembled the rebellious Ziggy Stardust figure, a stage character whose persona was neither male nor female and who became an integral part of Bowie's life on stage and off in the early '70s. There was little to remind anyone of Bowie's innovative role as a forerunner of "glitter" rock, new wave and disco.

A hiatus from the rock 'n' roll spotlight and the public eye in general was apparently a time of transition for Bowie into a more subdued and less indulgent lifestyle. An emotional breakdown, he explained, was the cause of his sudden disappearance in the late '70s.

While Bowie despised the "pop trappings" that accompanied his success as a rock artist, he couldn't remain inactive as a performer. A former painter who considers himself an all-around artist, Bowie decided not to limit himself strictly to music. He resurfaced in the lead role of the recent Broadway production of *The Elephant Man*, receiving extensive critical acclaim, and subsequently received offers to star in two feature films.

In *The Hunger*, also starring Catherine Deneuve and Susan Sarandon, Bowie plays a vampire doomed to die after some 300 years of ageless living. Bowie's favored work, however, was with renowned and controversial Japanese director Nagisa Oshima (*Realm of the Senses*, *Empire of Passion*) on *Merry Christmas Mr. Lawrence*, filmed in the south Pacific. Bowie plays a heroic prisoner of war held captive in a Japanese camp in Java during World War II.

While Bowie has devoted much time to film making, he hasn't abandoned rock 'n' roll. In early April, he released *Let's Dance* (EMI), an uncharacteristically light-hearted R&B effort.

Although Bowie exudes enthusiasm when talking about his recent projects, he doesn't feel that the new-found optimistic outlook in his music is a reflection of his positive attitude toward life.

Bowie admitted, however, that his staging during the upcoming international tour, scheduled to begin in the U.S. in July, will be much closer to his own personality than ever before. He has developed more faith in himself as a performer, he explained, and has been able to drop the posturing that accompanied his music in the past.

Prior to the release of *Let's Dance*, Bowie took time in New York City to speak briefly with MR&M about his philosophy toward recording and music.





Entertainment has become—as I see it— merely a re-peddling of information which you already know...

Modern Recording & Music: It's been several years since your last major tour of the U.S. How do you feel about corporate sponsorship of tours and big business' involvement in rock 'n' roll?

David Bowie: Things have certainly changed since I last toured; but I'm not sure whether it's been for the better or the worse. There seems to be an agreement among everybody—even the so-called underground musicians—that no longer is there the existence of an alternative society which used to keep the vibrancy going in music. It seems that we are now experiencing a democratically united MOR [Middle of the Road] and underground. They're both just different facets of the same thing. There's more and more emphasis on the fact that people just want to be entertained; forget the art, they just want to be entertained. It's a real shame because artists supply information. Entertainment has become—as I see it—merely a re-peddling of information which you already know, and it has a comforting effect. I don't think people can handle more input. The old input didn't do any good, so they figure why should they listen to new stuff. I don't think they want a spokesperson for the rock generation ever again. I don't think they want to have a new Dylan or a new Jimi Hendrix and I don't think they'll get one either. The media's learned its lesson and will never allow that power to be that active again. So, it really isn't that surprising to find big business involved in rock.

MR&M: Your influence on rock 'n'roll from a musical standpoint seems far-reaching. In addition, your dress mode and stage personas in the '70s foreshadowed what was to come. Did you then foresee such changes and the possible effect you could have on the future of music?

DB: Absolutely not. One never realizes that one is going to stay around this long. I would have taken better care of myself if I did (laughs).

When you're young, you think you have an insight into what really screws people up and you think, "Well, this will really put things on the line." And you attack music with a kind of boyish exuberance. You try to redefine the entire world before it gets a chance to make you old and sad and weary. You don't really think of the long term effects of anything. For me, it was really exciting to redefine rock 'n' roll at that time. There was nothing bigger to attack. As an art student, I saw all these wonderful things that I thought would be terrific to put into rock 'n' roll. So, I did it. And it was marvelous. But I didn't think that it would be felt in 10 years time; I wanted it to be felt now.... 10 years (laughs). You think you're Jimmy Dean; you've going to die in a Porsche. You don't think that in 10 years you're going to be an old man in new wave (laughs)!

MR&M: Do you feel that same attitude you had then exists among artists today?

DB: I'm a little dubious—and I'm the last person who should be saying this—about style over content. Style seems to be the predominant feature. I always hoped that the concept which I was creating was as powerful and as strong a foundation as the trappings with which it was presented. Maybe I'm just old-fashioned (laughs). As I said before, maybe the input has been so great that nothing particularly heavy is felt to be needed at the moment and that the style of one's existence is more important than the content. I think it's a shame, but it appears to be the overriding feeling in the world today. Another person's welfare is only as important

as its effect upon one's own. There is no humanistic approach at the moment in any part of the West. It's never felt so Godless. At any other time in my life I've never felt such a vindictive, self-serving atmosphere in the world. It's very scary.

MR&M: From a musical perspective, are there aspects of recording that you've yet to broach?

DB: Well, I guess we've gone full circle, and that brings us to *Let's Dance*. I think there is for me...the one thing I can tell you is that it was refreshing to record an album completely without synthesizer. It wasn't a contrived thought, but rather just happened. For me, the synthesizer—with which I'd been at home with for 10 years now—has taken on the voice of doom. It's now being handled and used to represent a new high-techno society; I acknowledge that aspect but feel that it shouldn't represent only one facet. It shouldn't just be the icy voice of isolation. With *Let's Dance*, I wanted a more personalized album and left the synthesizers out. I had a different kind of message. It's not like computers and new wave people with new wave minds. I didn't want the atmosphere of cold and calculated minds who look after themselves. I think I've made a more personalized statement than I've ever made before. It's a real mixed bag. I think there's a charming feeling about it. Working with Nile Rodgers and his friends have given *Let's Dance* a certain lightheartedness that I think it otherwise might not have had. There's a human rhythm in there and a positive feeling that I didn't have in the past.

MR&M: Have you still retained an experimental approach to recording?

DB: I think this album certainly has experimental aspects, but I don't think that it's as overwhelming as some of my previous work. I didn't want to scare off the new musicians who I was working with, so I held back some impulses. I was very careful about working in a studio with different technicians. To a large

I'm a little dubious—and I'm the last person who should be saying this—about style over content.

degree, I really felt that I was on my own again. I wanted to find a common ground where we all felt comfortable. I don't think it was a matter of compromising, but rather a question of finding a vocabulary that we all understood. It wasn't set out as an experiment, but working with Nile and Stevie [Ray Vaughn] and recording R&B-type material was an ambitious experience.

MR&M: Would it be a fair statement that David Bowie is part of his music rather than the music being part of David Bowie?

DB: Yeah, I don't think the music has ever been part of me. In terms of "this is the real me"—never! It's been an exercise in atmospheric direction; trying to create atmospheres that weren't there before. I think the most intoxicating effect in music is when you put on a record and think, "Wow,

For me, the synthesizer—with which I'd been at home with for 10 years now—has taken on the voice of doom.

what a great place this is." I think that's the fun of making music—the image it gives you if you play these two chords together. That always has been the appeal of it to me. My life positively pales in mundaneness (laughs). My God, if people knew!

MR&M: It's obvious that you have greatly shaped contemporary music. Are there any artists who influence your work?

DB: Continually. I must be one of the most eclectic writers around. I love saturating myself with new

people and their work. It's a social experience making music, although it doesn't come off like that on an album; instead, it often sounds like a very isolated and narrow vision. But the actual creation of music has always been a social affair for me when I'm in the studio. It's always amused me to see how a guitarist will take an idea of mine and alter it. In the same way, I love to interpret other artists' ideas and come up with my own (laughs) special rendition. It's what keeps me going!

Are there two *Let's Dance* albums out there? Or maybe, two David Bowies? The one in print just "doesn't compute" with the one in plastic.

At the truck-stop, the finely tailored old-fashioned David Bowie told our interviewers he wanted "... a personalized album, and left the synthesizers out." This Bowie, in his search for the personalized statement, wanted a charming feeling, a certain lightheartedness, a human rhythm (and possibly, a hit record).

Well, one out of five ain't bad. Maybe, two out of five. For all we know, this is David's idea of a personalized statement. As for charm, lightheartedness and human rhythm, we couldn't find any on our review copy of this hit record.

Not that these qualities are required ingredients for hit records. If they were, punk rock would never have... but that's another story.

As for this little story, *Let's Dance* is an intriguing look into the mind of a ten-year old legend. Perhaps that mind has been influenced beyond its owner's realization by high-techno society. No synthesizers? Then what are those sounds?

Producer Nile Rodgers supplied us with a few clues. Speaking about the horn sound on the "Let's Dance" cut, "Everyone can tell that they're real horns, yet there's something unnatural about the way they feel." Rodgers tried a trick that's worked well for him in the past, and is easy to duplicate with a minimum of signal-processing hardware. He explains, "I had the

horns play in a very legato style, lots of slurring. Then I played a guitar track with the specific rhythm I wanted. I used a KEPEX (KEYable Program EXpander) to overlay the (guitar) rhythm on the horns. It sounds almost unnaturally tight. The attacks come from out of nowhere. There's no pre-attack breathing. The horns just come in 'pop, pop'—and then decay out fast. It's an amazing effect." The technique was also used in the echo returns. Here, the KEPEXs were triggered by various rhythm tracks, so that echoes would move about, depending on what the rhythm section was doing. At first, Rodgers worried that Bowie might not like the sound. "It sounds great to me, but it is unnatural." Apparently, Bowie liked it, for there it is (especially noticeable on the horn tracks at 3:30-4:00, and on the vocal echoes throughout the cut).

Rodgers credits engineer Bob Clearmountain with some terrific ideas, especially on background vocal tracks. "David had written 'Cat People,' which was already a hit. We covered it. David had a concept for the vocals—a really weird harmony part. Clearmountain put them through an Eventide Harmonizer, and totally changed the pitch—a precise minor third up. The Harmonizer gave the voices a brassy, brittle sound."

Rodgers is always on the lookout for new sounds. "Whenever someone comes in with a new trick, I love it." (Someone recently introduced him to the "Doctor Click" machine, which will probably turn up on the next Nile

Rodgers production.) He's also into old sounds, and is in the process of acquiring some ancient tube-type European condenser microphones from a friend. While other industry heavies may take a little summer cottage at the beach, or go to the mountains to escape the heat, Rodgers is establishing a more-or-less permanent residence at New York's Power Station, where he has rented Studio C for the next few months for other productions.

"From a technical point of view, my next project is going to be really interesting. I'll get a chance to use some of the things I've learned in the last few months, since Bowie. I just can't wait—I've got all these computer-whiz guys coming in, but not to make it sound heavy-techno. It'll be to keep in the tradition that David spoke about; I know where he's coming from. I know he didn't want his record to sound 'techno,' and he wanted to have a lack of synthesizers on it."

Well, you can't have everything—even if you're David Bowie, star of stage, screen and recording studio. Perhaps there really are no synthesizers (we wouldn't bet on it). But there sure is synthesizer sound here, and it's not all out of a KEPEX.

On the other hand, maybe this really is the way that democratically united, middle-of-the-road, underground R&B is supposed to sound to an old man riding a new wave. After all, when Ziggy Stardust puts on a (three-piece?) suit, you just know that the times they are a-changing. (Did he write that one too?)

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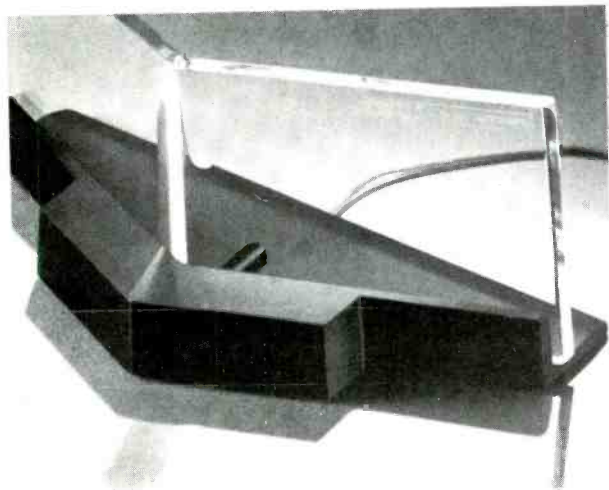
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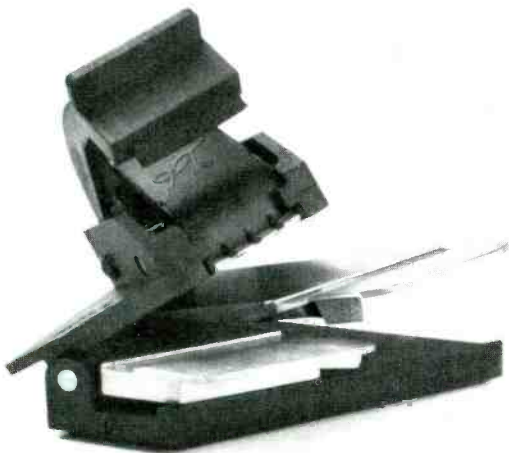
RECORDING/PRODUCTION CONSOLE



Audioarts Engineering has introduced the 8X Series recording and production console intended for 8- to 24-track recording studios and video editing rooms. The 8X has three-band sweepable equalization, stereo monitoring, four mixdown effects sends, phase-reversal switches, phantom powering, and assignable direct outputs. Another feature is the Super Solo section; this includes solo switching for pre and post fader, tape return and bus outputs to ease record and mixdown operations. In addition, all mic', line and return inputs are electronically balanced, as are all bus and direct outputs, stereo masters, effects sends, control room and studio outputs.

The 8X is also capable of sub-grouping without the use of VCAs to insure distortion-free performance. Standard features include the M104 conductive plastic fader, a 20 Hz to 20 kHz oscillator, full control-room and studio-listening function, headphone jack, and talkback/slate switching. It is available in 12 to 40 input configurations, with or without built-in patch bay, and with 8-, 16-, 24-track VU or LED metering systems. **Circle 36 on Reader Service Card**

AUTOMATIC RECORDING TAPE SPLICER



SoundsplICE's automatic splicing machine for one-quarter inch magnetic recording tape, the CAT™ Splicer, is small enough to fit into the palm of a hand and is easily accommodated on studio tape decks. Weighing only nine ounces, the CAT is made up of two basic assemblies, the base assembly and the joining tab assembly. The base assembly performs the cutting operation and consists of a base tray with two cutting plates. These plates are hinged to the base tray, moving independently in a scissor-like action. The plates are precision machined of anti-magnetic steel with self-sharpening cutting edges. The CAT enables the user to shave very small slivers from the tape. A one-quarter inch wide channel across the top surface of both plates provides an angle cut of 45 degrees. (A unit cutting at 60 degrees will be available in the spring of 1983.) A clean cut at the angle automatically holds, aligns and butts both ends to be joined. The joining tab assembly dispenses a pre-cut splicing tab over the two ends of the recording tape to be joined, with the tab automatically centered and aligned. The CAT splicer uses pre-cut adhesive tabs mounted on a continuous strip housed within a cassette, which is replaceable in a matter of seconds. Each cassette contains 350 tabs. The price is under \$100.

Circle 37 on Reader Service Card

RECORDING/SOUND REINFORCEMENT CONSOLE



Designed as a 16-input recording or sound reinforcement console, the System 8 Model 168 from Allen and Heath Brenell features in its input section: electronically balanced microphone inputs with phantom power option; line level inputs with separate insert points for connection of effects devices; PFL on each channel, plus a 20 dB attenuation pad on microphone signals; comprehensive three-band EQ, LF and HF offering selectable shelving at 60/120 Hz and 8/12 kHz; three auxiliary sends, one pre-fader, one post-fader and one switchable pre/post; direct routing to main stereo mix and long travel faders. Each channel is fitted with a peak-indicating LED and mute switch.

The group output section features effects insertion points, PFL and group/tape select available on each group output, plus level and pan control to the stereo mix. Two flexible auxiliary sends allow echo send from the tape monitors during overdubbing. Tape returns are also usable as extra effects returns during remix.

The master section contains a comprehensive monitoring system for multi-track work which allows instant monitoring of all signals without disturbing the recording in process; a one-shot PFL function with PFL-active LED indicator overrides monitor mix, outputs and metering. The control room monitoring system, with independent level control of headphones and loudspeakers, may be driven by the main stereo mix, stereo master recorder, or cue system. A loudspeaker dim facility is available and a mono switch allows compatibility checks. The cue system provides two separate mono foldback mixes (or one stereo mix) and a talk-to-cue facility allows communication with the performers. Mixes can be set up from the channels, track monitors (or a combination of the two), or the stereo mix may be selected as a cue source, which can be useful when overdubbing, providing an instant stereo foldback mix containing any effects present on the monitors.

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COMPACT, FULL-RANGE, P.A. SYSTEM

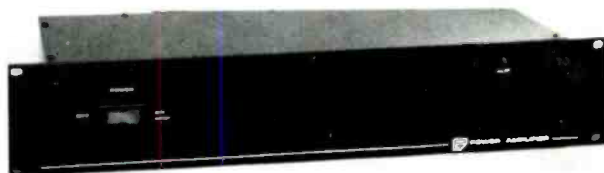
Cerwin-Vega's new V-29 compact, portable, full-range P.A. speaker system, based on a line of second-generation compression drivers and a new high-power 15-inch woofer, can be used for acoustic instrument or vocal sound reinforcement in small- to medium-sized venues. The 153EH 15-inch driver utilizes a high-flux density six-inch magnet and high temperature voice-coil construction on a two-inch Quintex™/aluminum laminate former. The bobbin is perforated for cooler operation and lighter weight.

The high-output H-25 compression driver and horn operates above 2.4 kHz and features a copper-clad, aluminum wire voice-coil driving a phenolic impregnated cross-hatch linen dome. In addition to an easily field-replaceable diaphragm, beryllium-copper lead-in wires allow repeated flexure without fatigue. A unique, newly designed horn flare with controlled directivity and a wider horizontal window allows for even sound distribution and best audience coverage. Exhibiting 100 degrees horizontal coverage above 5 kHz (-6 dB points), the system provides excellent pattern control. Maximum sound power has been obtained by utilizing a direct radiating vented box format. The flat response and lack of midrange peaking allows for the highest gain-before-feedback. The amount of boost or cut needed to accommodate room acoustics is minimal, and sound quality remains natural.

Well-suited for touring, the compact enclosure is constructed of ¾-inch acoustical particle board, heavily braced and covered with durable indoor/outdoor gray carpet. Supplied with fully recessed handles, the cabinet is sized to fit in wagons, vans, or rear seats; has no protruding horn flare; and the low-frequency driver is protected from accidental damage by a steel-mesh reinforced grille. The crossover features a unique auto resetting circuit breaker on the high-frequency horn unit for protection at high power. The input panel has a pair of paralleled ¼-inch phone jacks, enabling the user to connect two eight-ohm units on a single amplifier channel. The V-29 also features an adjustable presence control, and may be stacked for longer throws or combined with Cerwin-Vega's B-119 for extra bass output. The suggested retail price is \$385.

Circle 39 on Reader Service Card

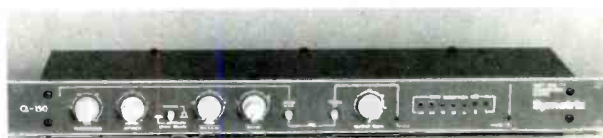
POWER AMPLIFIER



New from Protech Audio Corporation is a power amplifier, Model 872, that is capable of delivering 70 watts into 8 ohms, continuous duty, and is also available with a 70.7-volt transformer-isolated line output. Speaker protection circuitry is incorporated into the unit to prevent harmful transients from reaching the speaker system. The power on switch also houses a magnetic circuit breaker, providing fusing of the AC line. Both legs of the internal bipolar DC supply are provided with snap-in fuses. The adjustable volume control is mounted on the rear of the chassis to prevent unauthorized changes in volume after system alignment. Output is overload and short circuit protected.

Circle 40 on Reader Service Card

COMPRESSOR/LIMITER



The new, single-channel compressor/limiter, the CL-150 from Symetrix, Inc., is a low-cost, dynamic range processor. According to the manufacturer, the CL-150 incorporates a unique detection system known as Fast RMS™, which handles the jobs of both peak and RMS detection. The control features offered on the CL-150 include variable threshold, attack, release, compression ratio, and output gain. In addition, an automatic/manual attack/release circuit may be switched in for program controlled, automatic attack/release functions. Two CL-150s may be interconnected for master/slave stereo operation. The unit, which fits in a standard 1¾-in. rack space, has standard electronically balanced inputs and outputs. Suggested retail price is \$329.

Circle 41 on Reader Service Card

Building the 'Hyperflange + Chorus,' Part I

It has been a while since we've done a construction project, but I think you'll feel it was worth the wait after you see what the Hyperflange + Chorus (H+C for short) can do. The H+C was literally over two years in the making—I've gone through five distinct prototype stages, tweaking each one just a little further, until finalizing the design shown here. Not only has the H+C been extensively tested by me, but PAIA Electronics has been offering it as a kit with excellent response.

What makes the H+C so special? Unlike digital delays which can only sweep over a 4:1 range or so, the H+C typically sweeps from 170 microseconds to at least 15 milliseconds (over an 88:1 sweep range!), which gives a *highly* dramatic flanging effect. Also, compansion helps keep noise levels way down, even at the longer delays which are optimum for chorus effects. Plus, there is a unique modulation section which gives

an exceptionally musical sweep effect, choice of positive or negative flanging, voltage controlled inputs, footpedal option...and lots more, as you'll find out as we go along.

I figure that there are two types of people who will build the H+C—those who will buy the parts kit from PAIA, and those hardcore do-it-yourself (DIY) types who will build the thing from scratch. Let's establish at the outset, then, that the H+C is *not* a circuit for beginners. Therefore, this article will not even try to give a blow-by-blow description of the construction—that would take most of the magazine. However, there will be enough information presented for those who are DIY veterans to get this project successfully off the ground.

We will also cover the theory of operation for those of you interested in the workings of delay lines, along with applications. These applications are more-or-less

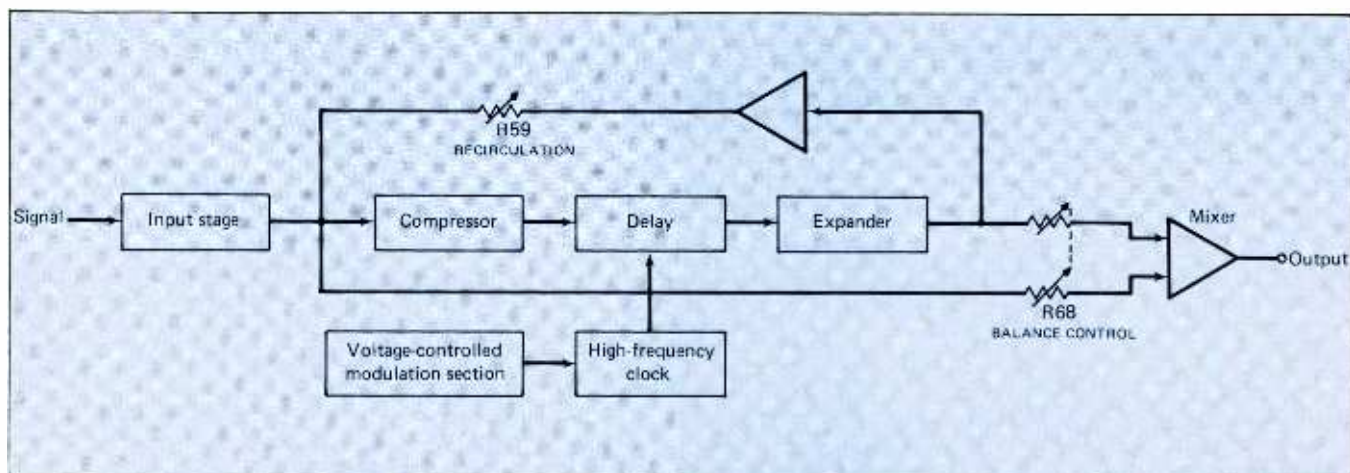


Figure 1. Block diagram of the Hyperflanger + Chorus.

pertinent to other flanging devices as well, so this section will also be of interest to those who don't build their own devices, but would like to get the most out of a flanger or chorus unit which they might already have.

General Information

Before discussing specifics, let's discuss analog delay from a general standpoint.

Different amounts of time delay give different effects. The following are some guidelines as to what kinds of sounds are associated with what kinds of delay times. The delays are so short that we can't describe them in terms of seconds. Instead, we'll be talking about milliseconds (1/1000 of a second), which is abbreviated ms.

0 to 15 ms delays: Mixing a signal delayed by 0 to 15 ms with a non-delayed signal produces flanging sounds. Flanging is a dramatic special effect that imparts a jet airplane-like sound to any instrument or tape track going through the flanger.

10 to 25 ms delays: Mixing a signal delayed by about 10 to 25 ms with a non-delayed signal produces the popular chorusing effect. This creates a fuller, more animated sound that resembles the sounds of two instruments playing at once.

25 to 50 ms delays: This gets into the so-called "slapback" echo range, where you can perceive that the delayed signal is occurring later in time with respect to the non-delayed signal. (With flanging and chorusing effects, it's difficult to tell that an actual delay is taking place because the delay time is so short.)

50 ms and up: This is the range covered by most echo units. Because it is difficult for low-cost analog delay devices to cover this wide a range of time shifting, you'll find that certain devices are optimized for certain ranges. The H+C covers the top two ranges.

How the H+C Works

Figure 1 shows the H+C's general format: an audio signal appearing at the input becomes delayed by a certain amount of time, and this delayed signal appears at the output. The balance control mixes the normal and delayed signals, and the *recirculation* control feeds some of the delayed signal back to the input for "sharper" sounds. A voltage-controlled modulation section lets you vary the amount of delay over at least a 70:1 range, allowing for automatic sweep effects, vibrato, chorusing, stereo simulation, and more.

The heart of this circuit is an analog delay IC called a *bucket brigade device*, or BBD for short. This particular IC includes 1,024 serial stages, each of which is capable of storing a voltage for a short period of time. The BBD samples the input signal at a very fast rate (above the audio range). Sampling is a process whereby the analog delay line stores the instantaneous amplitude value (level) of an input signal in its first stage, while passing previous samples—in a bucket brigade-like fashion—from the first stage down the IC's 1,024 stages. As this process of moving the samples down the delay line progresses, the first sample eventually will be shifted down the line far enough so that it appears at the output of the delay line, followed by the second sample, the third sample, and so on. The actual amount of delay depends upon the sampling rate and the number of stages in the BBD. The sampling rate is controlled by a

companion circuit to the delay line known as a clock. The frequency of the clock sets the sampling rate: a slower clock rate transfers samples slowly, while a faster rate moves the samples down the bucket brigade at a faster rate.

Unfortunately, while this all sounds good in theory, some problems creep into the process. First, in order to accurately represent the input signal, we need to take *lots* of samples—maybe one every 50 microseconds (a microsecond equals 1/1,000,000th of a second) or so. This is like the connect-the-dots games that kids play, where more dots improve the resolution of the drawing: more samples improve the resolution (fidelity) of the signal. However, as we increase the sample rate, we're also shifting our signals down the delay line at a faster rate, which gives us less delay. So while we can get a pretty decent sounding output signal with short delay times, at longer delay times our sampling rate goes down and the signal becomes less defined, which we hear as muddiness or distortion. If the clock rate is slow enough to enter the audio range, an annoying whistling tone appears along with the audio.

Increasing the number of stages seems like an easy solution, but, unfortunately, each stage contributes a certain amount of noise, transfer inefficiency, and high-frequency loss. We therefore need to choose enough stages to give us the delay we want, consistent with a high enough sampling rate to give us good fidelity when we reconstruct our signal at the output of the delay line.

The H+C Clock

Refer to the schematics (*Figures 2A and 2B*) as we go through the following sections on theory. (Incidentally, the circled letters on the schematic are keyed to connections on the printed circuit board.)

IC2 is a phase-locked loop set up as a voltage-controlled clock. Varying the voltage at pin 9 varies the clock frequency from 17 kHz to 1.5 MHz, which gives a maximum delay range of 15 milliseconds (0.015 seconds) to 170 microseconds (0.00017 seconds). This covers the flanging and chorusing ranges. R24 sets the initial delay time, while R25 mixes in the desired amount of modulation from the hypertriangular modulation circuit (more on this later).

Since the clock input of a delay line includes some capacitance, which acts like a high-cut filter, at high frequencies you need to deliver lots of current to the analog delay chip in order to charge that clock capacitance as fast as possible. IC3 is a high-current buffer capable of delivering a clean square-wave clock to the delay line, even at high frequencies.

The H+C Modulation Section

While a static clock frequency can produce musically useful results by giving a fixed amount of delay, most musicians prefer to add some modulation to the clock to produce a more animated effect. Delay lines generally use triangle wave LFOs (low-frequency oscillators) which alter the clock rate in a linear fashion. *Figure 3A* shows a typical triangle wave; *Figure 4* graphs an exponential sweep of delay time from longest delay to shortest delay versus clock rate. Note how the first part of the sweep (from 0 to 200 kHz

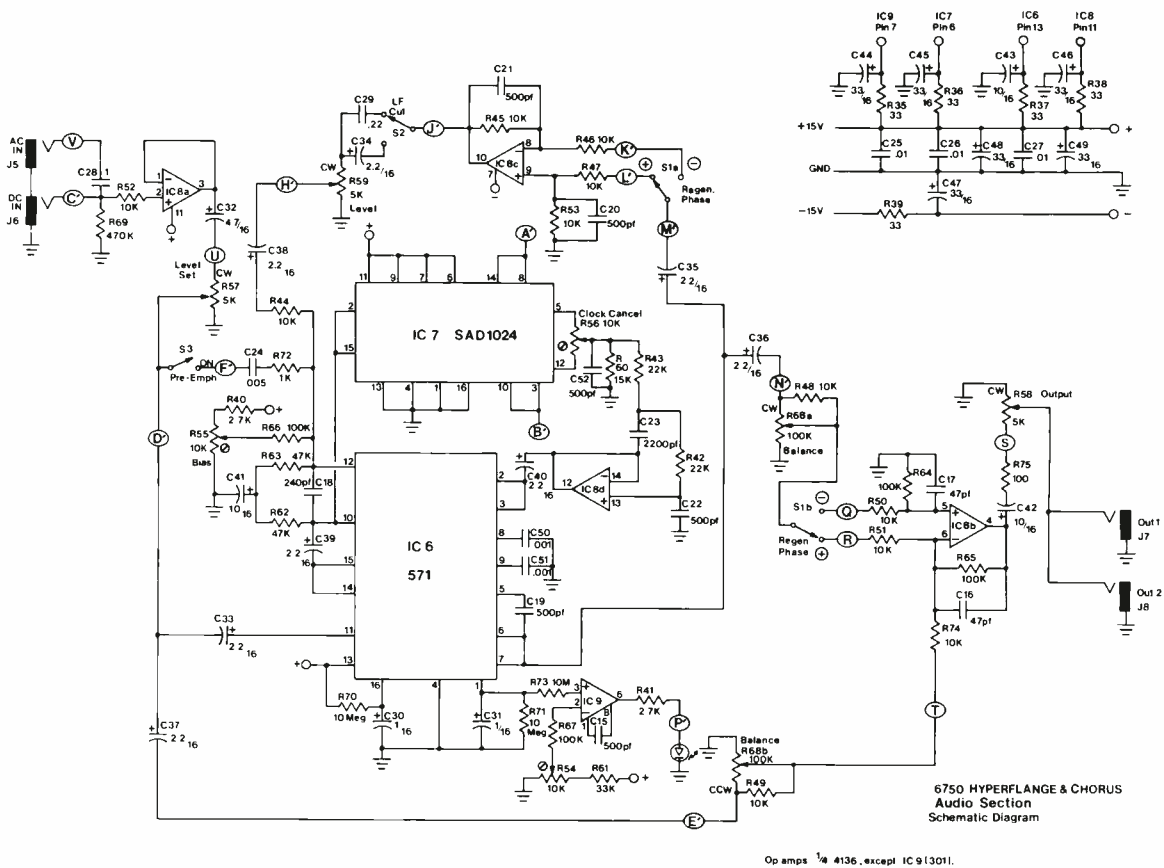
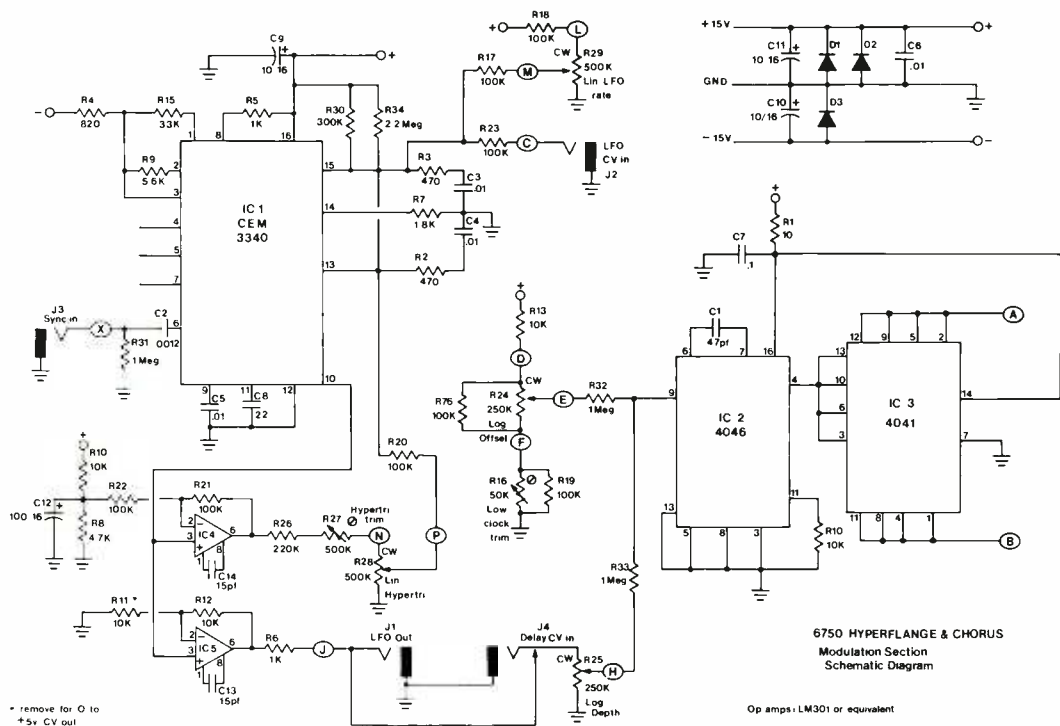


Figure 2. Schematic diagrams for (A) the modulation section, and (B) the audio section. Electrolytic capacitors are labelled with capacitance/voltage. Thus 2.2/16 means a 2.2 μ f capacitor rated at 16 volts. Note: circled A and B on Figure 2A connect to circled A' and B' on Figure 2B.

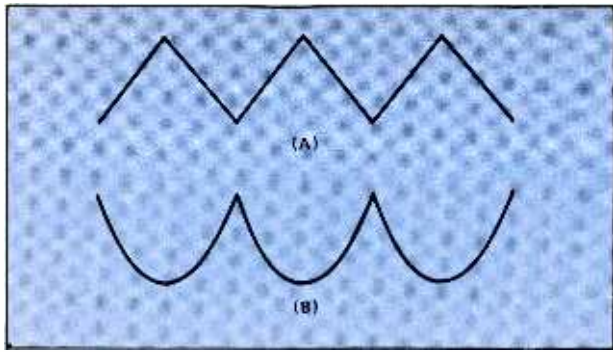


Figure 3. A triangle wave with minimum (A) and maximum (B) "hypertriangularity."

clock rate) covers a great deal of delay and, as the sweep continues, you add less and less additional delay time. The sonic result is that the flanger seems to linger for a long time at the top of the range, then swoops down rapidly into the lower range and almost immediately returns to the top of the range again. Since the lower (longer) delay ranges often create the most interesting sounds, this is not the best way to go. The wider the sweep range of the flanger—and the Hyperflange + Chorus has quite a wide sweep range—the worse a linear sweep sounds.

The first attempt I saw to fix this problem was a clock circuit by Jacques Boileau published in the March/April 1982 issue of *Polyphony* magazine. The "Hypertriangular" clock used in the H+C is a simpler, and more versatile, implementation of his basic idea. *Figure 3B* shows the waveform of a hypertriangular clock. Note that the waveform is exponential in character. This means that the clock sweeps through the upper delay range rapidly and, as it sweeps towards the lower delay range, the clock slows down. The end result is a sweep that sounds like it moves smoothly through the entire delay range, neither spending too much time at the higher end nor spending too little time at the lower end.

We can obtain a hypertriangular sweep waveform by taking a voltage-controlled, low-frequency triangle wave oscillator and feeding its triangle output back into the voltage control input. However, you need an oscillator with excellent stability and wide range. IC1, the Curtis CEM3340, is the perfect (albeit costly) solution. Its triangle output (pin 10) feeds a buffer (IC5) which then drives the voltage controlled input of IC2. Another buffer (IC4) drives the hypertriangularity pot (R28). This pot varies the amount of triangle wave fed back to the voltage control input; maximum hypertriangularity produces the curve shown in *Figure 3B*, while minimum hypertriangularity gives the standard triangle waveform in *Figure 3A* (which is still musically useful for small-range sweeps).

We can vary the modulation speed in two ways: R29 feeds a variable voltage into the CEM3340 to set the initial speed; however, you may further vary the speed (exponentially, even!) by injecting a 0 to +10 V control voltage into J2. For synchro-sonic effects, you can feed sync pulses or square waves into J3; a positive (+10 V) pulse to this jack reverses the LFO sweep direction if the LFO is sweeping upward.

Also note that you can tap the modulation section output via jack J1 if you want to slave two H+C units together, or feed other voltage-controlled devices with

the hypertriangular waveform. You may also control the delay by plugging a 0 to +10 V control voltage into J4; however, this interrupts the connection going from the hypertriangular clock to the 4046's control voltage input.

H+C Audio Section

IC8A is a preamp with choice of AC or DC coupling. Use J6 for all applications unless you encounter distortion or other problems; in that case, plug into J5.

The signal leaving IC8A goes through an attenuator pot (R58) which lets the H+C accommodate high signal levels, such as those found in +4 dBm studios.

IC6 is a compressor/expander. The compressor squeezes the dynamic range by a factor of 2:1 by limiting high level peaks and boosting low level valleys. The input signal couples into the compressor in two ways: through an on-chip resistor, and through a pre-emphasis network (C24 and R72), to optionally add more treble to the signal. Capacitor C18 is a high-frequency rolloff capacitor which exhibits variable bandwidth characteristics (i.e. when the compressor's op amp is running at high open loop gain, there is a maximum amount of high frequency attenuation). R70 adds a slight bias to C30, thereby defeating the compression action for low-level input signals. R55 varies the voltage going to the compressor op amp's summing junction, which varies the quiescent output

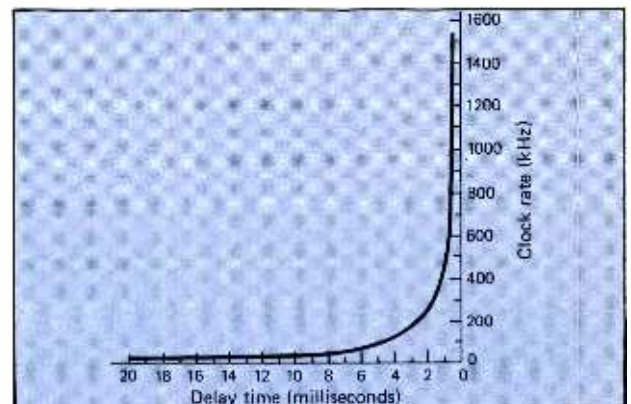


Figure 4. A graph of delay time versus clock rate.

voltage of the op amp and allows direct coupling into IC7. The reason why direct coupling is important is that the input of IC7 wants to see as low an output impedance as possible from the preceding stage; this minimizes bias variations as the clock sweeps over its full range, which could otherwise restrict signal levels through IC7.

IC7's output, consisting of a series of sampled voltages, doesn't really resemble our input signal since it is more of a "stair-step" waveform than the smooth waveform we had at the input. IC8D is a low-pass filter which not only smooths out the samples, but also minimizes any of the high frequency clock signal that may still be riding along with the audio signal. Most delay lines also use a low-pass filter at the input, to prevent high frequency input signals from interfering with the clock signal; C18 performs this function with IC6.

The filtered signal then goes to the remaining section of IC6, which is hooked up as an expander. This "undoes" the effect of the compressor by adding a

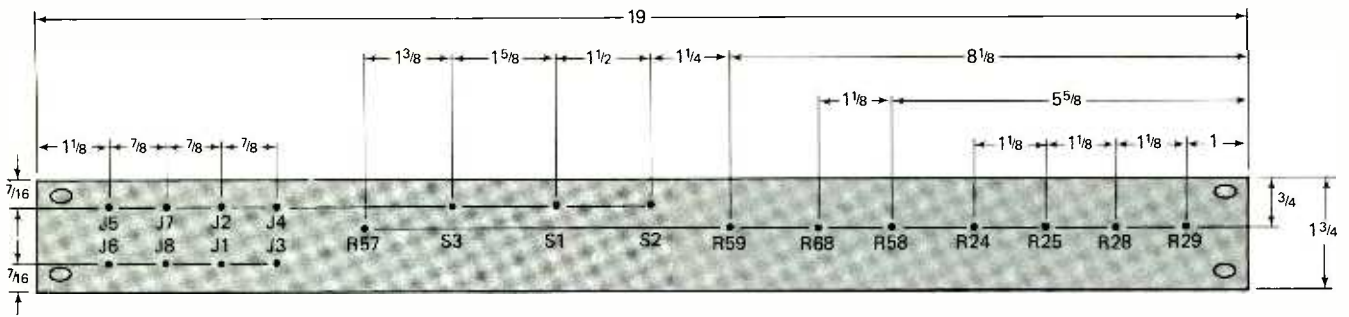


Figure 5. The front-panel drilling template.

complementary amount of expansion (1:2) to the audio signal. Not only does this restore our original fidelity and dynamic range, but, best of all, any noise generated in the delay line section is expanded downward, which greatly improves the signal-to-noise ratio.

Unfortunately, compansion is not perfect—it doesn't eliminate noise, but instead makes it far less prominent. However, when you consider that the alternative is an objectionable noise level, it's no problem putting up with the much less objectionable quirks (occasional pumping or breathing, and an inability to handle the exceptionally fast transients associated with companding circuitry).

IC9 is a clipping indicator that samples the voltage on the expander's filter capacitor (C31). When the voltage on this capacitor exceeds the voltage selected by trimpot R54, LED1 lights to indicate an overload condition.

The expanded output goes in two directions. One is towards IC8C, which recirculates the signal back to the input. S1A alters the phase of this stage to give positive or negative recirculation for two different tonalities. S2 lets you cut the low frequencies to minimize "booming," while R59 determines the amount of recirculated signal.

IC8B combines the delayed and straight outputs to create frequency response cancellations which result in flanging sounds. The non-delayed signal goes

Building the H+C

Analog delays involve both audio and radio frequencies. As a result, the circuit board must be very carefully laid out to minimize stray RF. To give you an idea of what I mean, the first prototype I constructed on perfboard had about 2 V peak-to-peak of RF riding along on the ground lines. Proper circuit board layout reduced that by 40 dB (20 mV of RF). While you might think this isn't a problem—after all, you can't hear RF—your tape recorder or other delay lines could very well be affected by stray RF.

For proper operation, you *must* use a properly laid out circuit board. You can either order an etched, drilled, and legended board with component layout, or 1:1 artwork with component layout (if you want to etch your own), from PAIA (see parts list for ordering info). The circuit board artwork is not included with this article because of space considerations (the board is about 11.25" x 3.75").

Once you have the circuit board, install all components and jumpers, and solder in sockets for all the ICs (important!). After mounting all parts except ICs on the circuit board, move along to front panel fabrication.

Figure 5 gives a drilling template for a standard 19" x 1.75" rack panel. The template assumes toggle switches, although you can just as easily use slide or rocker switches with a few minor changes in the

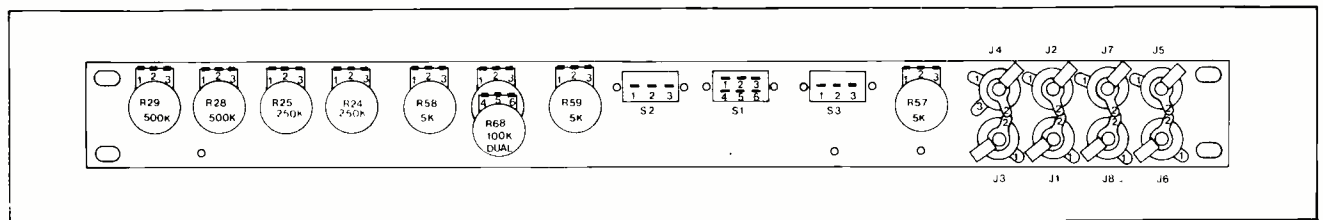


Figure 6. Orientation of switches, controls and jacks, as seen from the rear of the panel.

directly into IC8B's summing junction (inverting input), while the expander output passes into either the inverting or non-inverting input of IC8B, depending on the setting of S1B. S1B retains phase accuracy of the delayed signal, regardless of whether positive or negative recirculation is being selected. The mixer output then goes through R58, which sets the overall output level, and finally appears at J7 and J8, a pair of paralleled output jacks.

Well, that's quite an explanation! But then again, the H+C is not a simple circuit. Now, let's move on to construction.

layout. Figure 6 shows a recommended way of mounting the pots, switches, and jacks, viewed from the rear of the panel. The circuit board mounts along the lower edge of the panel.

Once you have the above components mounted on the panel, you need to connect wires between the circuit board and panel-mounted components. For best results, shield the wires going to the balance, input level, regeneration level, and output controls. Connect the circuit board ground connection (pad G10 on the circuit board) to the input-jack ground lug; finally, plug the various ICs into their respective sockets.

Oliver Lake

gene kalbacher



Oliver Lake has dropped his *garde*. That's not *guard*, mind you, but *garde* as in *avant-garde* — the lofty label affixed to art and music that is so new, so innovative, that it is cause for both celebration and chagrin.

Lake, a versatile reedman-composer who has recorded albums as a leader with several companies, is fed up with the *avant-garde* label and its limiting effects. He seems to accept, however grudgingly, that his alto saxophone playing with the World Saxophone Quartet (Julius Hemphill, David Murray and Hamiet Bluiett are the other members) may remain bound to some extent by the commercial shackles imposed on so-called "free" jazz. But Lake has formed another band, *Jump Up*, and in so doing has found a new outlet for his energies and that of his listeners. A reggae-fied funk-jazz quintet, *Jump Up* (Lake, saxophones/flute; Jerome Harris and Brandon Ross, electric guitar; Billy Grant, drums, and Pheeroan Ak Laff, drums) plays dance music that harks back to the halcyon days when swing was king and Duke Ellington and Count Basie held court. At the same time, *Jump Up* is a fresh, forward-looking band with a simple objective: fun. And to see Lake cavorting about the stage with *Jump Up*, his robe billowing, his dreadlocks tossing as he sings surprisingly effective lyrics, is to witness a musician who refuses to be

left behind simply because his sound is so far ahead.

Born and bred in St. Louis, Lake befriended high school mates (and future new-music stalwarts) John Hicks, Lester Bowie and Phillip Wilson and began his career playing in an assortment of r&b bands. (Interestingly, Lake's *Jump Up* band, which has recorded a self-titled LP for Gramavision, signals a full-scale return to dance music.) Lake formed the Black Artists Group (BAG), a cooperative of musicians, actors and dancers, in 1969. In 1973, he left St. Louis for Paris, where he taught at the American Center for Artists and Students. Returning to the States in 1976, Lake's recording activity intensified; he appeared, either as leader or sideman, with Anthony Braxton, Joseph Bowie and Billy Hart. On his own, Lake defied conventional composing formats on two albums in the late '70s for Arista: *Shine* and *Life Dance of Is*. Nineteen seventy-seven saw the emergence of the World Saxophone Quartet, a unit of like-minded musicians with whom Lake's control and range is enhanced, never daunted.

In March of '82, the World Saxophone Quartet appeared at the Dorothy Chandler Pavilion in Los Angeles as part of the L.A. Kool Jazz Festival. Though buoyed by being part of the first *all* *avant-garde*, or new-music, festival, Lake expresses cautious optimism about the musical climate of the '80s. Recently, *MR&M* caught up with Lake at his Brooklyn, NY, home.



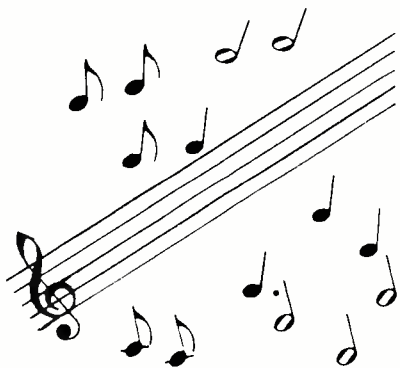
Modern Recording & Music:

Much of your music and that of the other groups at the Kool Jazz Festival—Air, Art Ensemble of Chicago, Muhal Richard Abrams, Lester Bowie's Roots to the Source, Anthony Braxton, Blood Ulmer—is termed avant-garde, but is actually very traditional, encompassing poly-rhythms, call-and-response and march rhythms. To many, avant-garde means distant, intellectual, unapproachable.

Oliver Lake: "We'll deal with you later...." We're often lumped into that strait jacket.

MR&M: Has it been difficult for you to cope with the injustice of such labelling over the years?

OL: It doesn't bother me as much as it did years ago. I've noticed that the programming in some of the clubs and audiences have gotten better in that they listen to all kinds of music—one style of music from one group and then a completely different style from another group—and enjoy *both*. In the book of poetry I've written, one poem addresses itself to this labelling thing. I talk about the fact that I play good music and that some of these labels separate people and scare people who've never really heard the music.



MR&M: In certain instances, labelling can be a tool, an economic or social weapon, to keep a product or artform so spread out that it can be glossed over or ignored.

OL: To me, the term avant-garde means ahead of its time. But for some reason, I get the feeling it means, "We don't really want to deal with you right now; we're gonna get to you later because you're ahead of us." And that's bullshit! The musicians they're referring to are *contemporary, today, now*, and should be dealt with *now*.

MR&M: In general, how much attention do you pay on stage before a gig to the microphones, PA system and so on?

OL: With the World Saxophone Quartet there's no problem, because we play acoustically. With Jump Up we have to do a sound check, and then it takes about an hour to check the vocals, check the levels, check the monitors. It's really a time-consuming thing with an electric group. With World Sax we don't use any microphones at all. We might use a mic' for announcing [a tune or the band members], but we play acoustically.

The majority of the best playing I've done is when I'm not thinking. I want to get a more spontaneous, kinetic feeling in my playing anyway, especially in World Sax.

MR&M: The World Saxophone Quartet can project well in clubs, but what about larger concert hall gigs in places such as the Dorothy Chandler Pavilion?

OL: In the large halls we may use one overhead mic' just to get a little more presence. We don't have to do sound checks.

MR&M: Considering that you're largely an acoustic musician, have you had problems amplifying your saxophones and flutes in Jump Up, the electric band?

OL: Oh, yeah. Definitely. The band is electric and I'm the only one who's going directly through the microphone. We often have to work a long time to establish my presence.

MR&M: In what ways do you compensate for this acoustic-electric imbalance or disparity, so to speak?

OL: One thing in the future for me to do is get a microphone that clips to my [saxophone] bell and to get me an amplifier. I'm thinking of doing it now, but I'm using a metal mouthpiece; before, I was using a hard-rubber mouthpiece. I still use both.

Hard rubber doesn't have as much edge as metal. I get more presence with the metal, and that helps me cut through with the electric sound a little bit more. What I plan to do is probably get an amplifier and microphone to travel with so I'm sure of my stage sound, rather than be at the mercy of some sound system I don't know anything about.

MR&M: Turning to World Sax, Oliver, let me ask you this: The quartet is comprised of four strong composer-players, each of whom is a leader in his own right. Yet the sound is extremely cohesive. What was the *raison d'être* for the group's formation and how much has it changed from its original conception?

OL: Actually...none of us thought of starting the group. It happened as a result of us doing a gig that was brought together by a guy named Ed

Jordan, who's a saxophone player in New Orleans. He invited each one of us there to form a group to play with a rhythm section in New Orleans. It went so great, and we played together so well, that we decided to keep it together after that initial concert. [At the first gig] we did pieces as a quartet and then we played with the rhythm section.

MR&M: So you learned right from the start that you could perform without a rhythm section?

OL: As a result of tours and as time went on, we developed a tighter sound and got into a group identity. It felt very good. We were all doing a lot of solo concerts and duo concerts and various combinations, so it wasn't strange for us to deal without a rhythm section.

MR&M: Each member of World Sax is a strong composer and player. In all candor, Oliver, has song selection been a major problem?

OL: Not really. Right now in the group, I think Julius has contributed most of the music. As I've said, the first two years were the most difficult times; we had to sort out each other's personalities and see how it would work. Now we have a good relationship and there's no problem with that.

When we've done several concerts, played some new music and we really have a good feeling for it, then when we have an offer to record, we go into the studio and we *know*.

MR&M: Before you enter the studio with World Sax, do you perform the tunes live extensively?

OL: I can't recall a situation where we've gone in with a new tune without working it live.

MR&M: The four of you play together with such cohesion and empathy. It's surprising that you don't compose together. Do you plan to do so in the future?

OL: We haven't to date. There are ideas thrown out. Someone brings in a tune and says, "Why don't we do the first part at the end instead of the beginning." Ideas like that, but not actual writing together or co-composing.

synthesizer player, just did a residency there.

I have a friend, an American composer who was also doing a residency there, who invited us to come and record. We went in there about three or four nights, at midnight, and stayed. They had all the latest state-of-the-art equipment there, even for acoustics. The studio was built with that whole thing in mind: research and the newest ways of trying to deal with sound.

The walls would turn a certain way and they have certain curvatures on the wall that move to get one sound, and if you want another kind of sound, the curvatures go flat and the

OL: No, not on this record.

MR&M: Let's move back to Jump Up for a moment. How much overdubbing was done on that record?

OL: Well, for records made in that [reggae and funk-jazz] style, not as much [overdubbing] as they would do. But we did some overdubbing—some of the voice and guitar parts, percussion parts, etc.

MR&M: Yet the record maintains an improvisatory feel. Did you fear that the overdubbing would reduce spontaneity?

OL: No. I usually don't do a lot of overdubbing when I do something with my jazz group. But with this group, I wanted to get into that. It was somewhat of a new experience for me to get into singing and then overdubbing the voice parts—and even using 24 tracks. This is the first time I've ever done that. With a quartet or quintet I use 16 tracks.

MR&M: Not having sung lead vocals before, did you have any trepidation about your voice?

OL: That was the first time (laughs). This is the newest thing for me—trying to get into vocals. I don't consider myself a vocalist, but I think I've gotten stronger since that recording. We've done quite a bit of touring this year and, as a result, it's gotten better. So I'm hoping (laughs) it gets better.

It was a gradual process. I was doing a lot of solo concerts where I recited poetry. So I was actually using my voice, and the poetry developed into singing. The more I did this reciting, the more I started singing the words and the sounds of the poems.

MR&M: When I first heard the name Jump Up, and before I heard that the music was funk and reggae-oriented jazz. I had presumed that the title Jump Up referred to the pre-blues vocal form of wordless lullabies called jump ups. Is there any connection?

OL: No, none at all. As used in the Caribbean, a jump up is a dance or party. I wasn't thinking about it the other way.

MR&M: Yet much of your saxophone playing—especially before and outside Jump Up—employs moans, groans, shrieks, hoots and hollers traceable to early vocal jazz. There must be some correlation.

OL: Oh yeah. Sometimes I've been asked if there's any confusion in me about playing in World Sax and then going to Jump Up. Actually, my

The first thing that comes to my mind when I think about tradition, whether this is the way it should be or not, is tune playing—Tin Pan Alley, the chord changes and standard show tunes.

MR&M: Has it been difficult for the World Saxophone Quartet to grow and develop musically with four leaders in one group?

OL: I think we ironed out most of our differences in the first two years. I think most of the difficulty happened then. We're in our sixth year now. After those first two years, it got to the point where we knew how to deal with each other and everybody's ego. It's workin'!

MR&M: Bluiett raves about the studio you used to record the new World Saxophone Quartet album for Black Saint (entitled *Revue*). I understand that the ceiling is mobile and that the entire room, not just the console, is computerized.

OL: Right. It's in Paris and it's called IRCAM. It's the research center that's part of the museum [Georges Pompidou Center] that caused all the commotion about five years ago because the pipes came outside and all that. [The recording studio] is part of that center. Pierre Boulez is in charge of the center, and they do a lot of computer music, computer research. I think George Lewis, the trombone player and

wall moves in and the ceiling comes down and, you know, it's weird (laughs).

MR&M: Was it difficult for you to resist the temptations to use all the latest innovations simply because they were there?

OL: In a way, because we kept getting these ideas that we could do this, we could do that. The engineer [David Wessel] who was working on it—I think we would have blown his mind if we had to use any more than we did. We were actually just trying to get a really natural sound, and we were able to get some nice natural echo in that room. That hasn't happened on any of the other records we've done, because you have to add it by the board. But in this room the acoustic sound was so good that we really got good overtone sound.

MR&M: Bluiett mentioned that it was the only session he could remember that wasn't marred by mic' leakage. Was it recorded live?

OL: Oh, yeah, definitely. There were no booths, no separation, no headphones.

MR&M: Was there any overdubbing?

saxophone is similar in both groups; it changes somewhat, but it's not a dramatic thing. Both groups are really based in the blues.

MR&M: Your alto and flute lines on the *Jump Up* album interweave nicely with the guitars, so much so that your playing takes on a guitar-like quality.

OL: I never thought of that, but I've always been attracted to the string instruments. I've done a lot of work with violins and guitars; over the last 10, 12 years I've had a guitarist in my various bands. I've recorded several things with strings, so I'm definitely attracted to string instruments.

MR&M: Has your love of strings affected your techniques on reeds, consciously or unconsciously?

OL: I don't know, because usually I'm just going for the *sound* of some of the things that happen with the violin and the guitar. Maybe it has, but I don't know. I don't think of myself as being a hell of a technician on the instrument.

MR&M: Are you able to replicate from your horn most of the sounds you hear in your head?

OL: No. Some of it, but a lot of times I'm surprising myself. If I can ever get it when I'm playing and I'm not *thinking* at all and something happens and then it kind of takes over, it's almost like something comes through me and takes my fingers and makes them do something. But when I'm practicing, I'm practicing consciously to try to make the sounds come out to be exactly what I'm thinking. Then, when I perform, I want to forget about that and just let something else take over. It's very rare when that happens, but when it does, it's great! Sometimes when I listen back, I say, "What! Did I do that?"

The majority of the best playing I've done is when I'm not thinking. I want to get a more spontaneous, kinetic feeling in my playing anyway, especially in World Sax. In *Jump Up* it's more key oriented and more within the sound of the tune or the key of the tune or the scale or whatever.

MR&M: So you're saying that, in your case, there is both conscious and unconscious creativity?

OL: Right, right. And I have the most fun when it's unconscious.

MR&M: One of the criticisms about *Jump Up* is that the rhythms, harmonies, meters and durations sometimes hinder the expansiveness of your playing. Whereas on your jazz

album, *Clevont Fitzhubert*, the absence of a theme-solo-theme format and a bassist allows for maximum freedom.

OL: I have the opportunity to do the type thing I did on *Clevont Fitzhubert*. I've done a lot of albums like that. I'm also playing in the World Saxophone Quartet. So to me, I didn't look at *Jump Up* as a restriction. I looked at it as something different...as a challenge. The *Jump Up* album isn't supposed to be like *Clevont Fitzhubert*. They shouldn't be compared. I wanted to do something completely different—not completely different, but somewhat different. [In *Jump Up*] we're dealing with more restricted harmonies, with one or two chords—and that's what I wanted to do. I'm trying to deal within that range, which is opposite from having a tune where I can go anywhere I want to go and where there are no restrictions about harmonies.

MR&M: Some people who've heard your work with World Sax and on "free" albums such as *Life Dance of Is* enjoy your unfettered flow and the collective improvisation so much that they've imposed those values, or the lack of those values, on *Jump Up*.

OL: Right. The next album I do with *Jump Up* is going to be even further, I might say, in the pocket. I'm shooting for that. So if it works, I'll have the best of both worlds.

MR&M: So your intention, Oliver, is to maintain World Sax and *Jump Up* as distinct and separate musical entities?

OL: I'd like to. If that'll be permitted. I don't know if the industry will let me do that. but... (laughs) That's a joke—I'm going to do it anyway! (laughs)

MR&M: Jazz is a highly individual artform, an artform that depends for its vitality and very existence on freshness, originality and change. Yet over the years, particularly with the saxophone and such masters as Charlie Parker and John Coltrane, scores of imitators have copied, rather than extended, the playing of these masters. The word "tradition," I believe, is often a euphemism for imitation or even cloning. What does the word tradition mean to you?

OL: The first thing that comes to my mind when I think about tradition, whether this is the way it should be or not, is tune playing—Tin Pan Alley, the chord changes and standard show tunes.

Maybe, several years ago, tradition might have been the Dixieland

sound. It may still mean that for certain people, but for me, when I hear that this club only hires traditional jazz, it means they're doing standards, whether it's the old, accepted jazz standards or the standards from show tunes or whatever.

MR&M: With each coming generation, the tradition may change to incorporate elements of the dominant styles just previous to it. Today's tradition also incorporates some of the so-called "free" or avant-garde music of the '70s loft scene in New York City, of which you were a force. Looking back, what gains in the '80s are traceable to the Loft Era?

OL: I don't know how to answer that. I really don't, because I can't separate that era from any other. For me, I've just been here trying to scratch and survive and continue to play music. So I can't really think about that period and say, "What did I get from that?" For me, it's been one kind of struggle to play an instrument and *only* do that, not to go work a day gig to support my family and all that. I've never really thought about trying to get outside of myself and say how I've benefitted from this or that.

I never really identified with that era of loft jazz. I could never figure out what that was. Then I was living in a loft and a lot of concerts were taking place [in lofts]. The music I played when I went into a nightclub was the same music I played in my house. I rehearsed the same music I played [on stage]. In Europe, I did some of the same tunes I played in Sam Rivers' place [Studio Rivbea, in New York]. Somehow, they came up with loft.

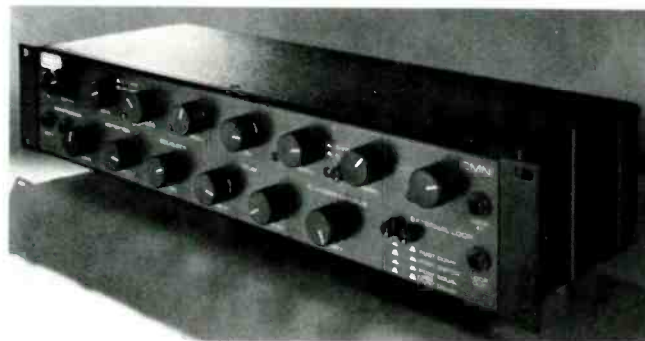
MR&M: What other projects, outside of *Jump Up* and World Sax, are you contemplating?

OL: Another project that was kind of offered to me was writing something for a string quartet. My label, Gramavision, just signed a string quartet, and the owner of the company [Jonathan Rose] asked me if I'd write a piece or some pieces for the string quartet to record. I've never written for the traditional string-quartet instrumentation; generally speaking, I've usually written for three violins and basses. But with the string quartet it will be viola, bass and two violins. I also have a project in the spring with the Brooklyn Philharmonic. I have a couple of side things, but they're mostly one-time things, and I'm putting all my energies into *Jump Up*.



The MXR Omni

By Craig Anderton



In a previous issue of *MR&M* (January, 1981), we looked at the Ibanez UE-400, one of the first multi-effect units on the market. Now, MXR, the company which was primarily responsible for bringing respectability to floor boxes in the early 70s, has introduced the "Omni," a multi-effect unit which is intended to replace standard floor boxes. The advantages of multi-effect units are

- **System-oriented design.** All effects are designed to a set of consistent standards defining signal polarity, signal levels, impedance, etc. to insure optimum performance.
- **No batteries!** Also, no patch cords between the various effects since they are mounted in one mainframe.
- **Convenient set-up.** You do not have bunches of effects spread all over the floor.
- **Cost-effectiveness.** Instead of having to buy, say, several different AC adapters for different effects, a multi-effect unit includes one good power supply which costs you less in the long run.

The main advantage of a multi-effect unit is that if

you don't like the sound of a particular effect, you'll either have to put up with it, or insert a different effect into your system (usually via some kind of external loop option; more on this later). For example, if phasers are a bit part of your sound, and you don't like a particular multi-effect unit's phaser, you might not choose the device as a result. If you only use a phaser from time to time, then you might find the device perfectly suitable.

WHAT IS IT? The Omni comprises six popular sound effects, with associated remote electronic switching and a cleverly designed effects loop option, in a 3.5 in. high rack mount package. The effects, which are connected in series, include sustain (compression), distortion, equalization (bass/mid/treble), analog delay, and flanger/chorus. (With respect to the latter, you cannot flange and chorus at the same time; it's one or the other.) Although clearly intended for guitarists, the Omni also works well with bass and other instruments.

The remote footswitch, which is fully detachable for

easy set-up, is an integral part of the Omni. Fortunately, this footswitch requires only a standard guitar cord (provided) to connect it to the mainframe—a definite plus, since this means you don't need special (read "expensive and prone to failure") multi-cable connectors. If someone rolls a stack over the footswitch cable, no sweat—any guitar cord, up to 50 feet long, will serve as a substitute.

The most important footswitch button is the master bypass switch. This lets you set up a combination of several of the effects by pressing their associated footswitches, and then bring the combination in and out with the master footswitch. This is certainly better than quickly switching each desired effect in and out should you want more than one effect at a time.

The individual effect footswitches switch fairly quietly (although under some conditions, you can hear clicks), and each footswitch also has an associated red LED right above it to indicate the status of the effect. When the LED is off, the effect is de-selected. With the LED at half-brightness, the effect is selected, but not yet placed in the signal path. Pushing the master bypass switch places any selected effects in the signal path and lights the selected effect LED(s) to full brightness. Unlike the other switches, this is a latching switch that gives a solid click to let you know when you've pushed it in or out and has an associated green LED. Another set of LEDs on the panel duplicates the function of the footswitch LEDs, except that the panel LEDs glow dimly until the effect has been selected by the master bypass.

As you might expect, the Omni is AC powered from a three conductor cord; however, it does not include an on-off switch. (This is no big deal to me, as I drive all effects from a barrier strip and an on-off switch tends to get in the way anyway.) When you first send power to the unit, the panel LEDs glow briefly to confirm that all is well. Should power become interrupted, the unit instantly reverts to bypassed mode upon resumption of power, so that your signal goes directly from input to output. This is another considerate feature which, hopefully, you will never need to appreciate.

Mechanically speaking, the Omni is well put together and offers good value. The circuit board is epoxy glass, the parts are all of good quality, and the case is well constructed and easy to disassemble for servicing.

Of course, all this doesn't mean much if you don't like the sound of the effects, so let's plug in the Omni and check out each effect to see what we come up with.

PRE-FLIGHT FOR THE OMNI. The Omni is simple to install. Plug your instrument into the input jack (thankfully, all jacks except for the footswitch jack are located on the front panel), and plug Output 1 into your amp. A Master Level (output) control adjusts the signal level coming out of Output 1. Output 2 is a stereo jack which offers some interesting options. The tip signal carries a 180 degree inversion of the signal present at Output 1 for creating stereo effects with two amps. However, like all devices with "synthesized stereo," any time delay effect (flanging, chorusing) becomes less dramatic, or disappears entirely, if the sound is played back in mono. The ring signal carries an isolated output from the delay line. This can be useful for special applications (such as having echo in a

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separate channel for stereo spreading, or creating processed echo while recording a sound in stereo). After connecting the footswitch unit to the mainframe, find an AC outlet, plug in, and you're ready to go.

Check that the master bypass switch is in the out position (its associated green LED will be on) and play; you will hear the straight sound of your instrument. When first turned on, the Omni defaults to all effects in the "out" position. Let's start off by selecting the sustain and listening to that... simply press the Sustain footswitch, and then the master bypass, to bring it in.

EVALUATING THE SUSTAIN. The sustain section features two controls: Sustain and Level. With Sustain fully counterclockwise, only the peaks of your playing are compressed. Turning this control farther clockwise introduces compression at ever-lowering signal levels, producing more sustain. The Level control compensates for variations between various settings of the Sustain control.

While compressor/limiters tend to be noisy, the Omni sustain is quiet at all but the most extreme settings. It has a smooth compression action that is virtually free of "pop-at-the-beginning-of-notes" effects (except with super-heavy compression). Another plus is that the attack and release times vary automatically from 0.5 to 25 ms, thereby giving fast response to transients and a slower response to continuous signals (which minimizes distortion). About the only problem I detected was a minor loss of highs upon introducing more sustain; while some may consider this an

advantage because, when used with fuzz, the sound will be smoother, those who prefer more of an "edge" can always use the Omni's equalizer section to compensate.

EVALUATING THE DISTORTION. The Distortion section includes two controls, Drive and Level. Drive sets the amount of distortion and, to a certain extent, sustain; Level compensates for variations between various settings of the Sustain control. Evaluating the sound is a little tricky, since how a musician reacts to fuzz is very subjective, and I have yet to meet a guitar player who has found "the perfect fuzz." However, the fact that you can precede the fuzz with compression, and either precede *or* follow the fuzz with equalization, lets you obtain a wide enough range of sounds that you're bound to find something suitable. On its own, I think the fuzz is a fine "general-purpose" fuzz—but introducing compression and equalization really makes it sing.

EVALUATING THE EQUALIZER. This section includes three controls: bass (10 to 460 Hz response, peak at 60 Hz); treble (2.1 kHz to 15 kHz response, peak at 7 kHz); and midrange (300 Hz to 6.1 kHz range, peak at 1.3 kHz). The bass and mid controls can boost or cut by 12 dB at their respective frequency ranges with the treble control boosting or cutting by 9 dB. The center position is flat. The equalizer section provides a function similar to the tone controls found on better guitar amps, with the outstanding exception that it can be switched before or after the distortion. When

switched after the distortion, you can boom out the bottom, take the edge off the top, or add presence with the midrange. When switched before the distortion, the effect is more subtle, but very useful musically. For example, by boosting the treble and midrange while cutting back the bass, it is easy to get that "screaming Tele" sound which was first popularized on later Yardbirds records. Conversely, boosting the bass and pulling back on the treble (while leaving the midrange flat) gives a more rumbly, heavy metal sound. The only negative thing I could say about the equalizer is that it does not include an overall level control, so if you use extreme equalization settings, you'll end up boosting the signal quite a bit. Of course, this is what many people want, but for studio work, where you don't want to peak out the meters, you may have to diddle with the Omni's Master Level control to compensate.

EVALUATING THE DELAY. This SAD4096-plus-compander analog delay spans a range from 30 to 300 ms and includes three controls, Delay, Mix, and Regeneration. Delay controls the amount of delay, Mix, the ratio of dry to delayed sounds, and Regeneration, the number of echo repeats. Like other analog delays, the bandwidth is quite restricted (2 kHz in this case), and a certain amount of noise is audible if you go looking hard enough for it. Generally, though (speaking as someone who often likes to roll off highs anyway with delay to give a more natural effect), in the context of a multi-effects unit, the delay is certainly adequate—especially for guitarists who want to add some spaciness to their fuzz sound. If you desperately need wide bandwidth, you can plug a digital delay into

ALL YOU NEED IS EARS

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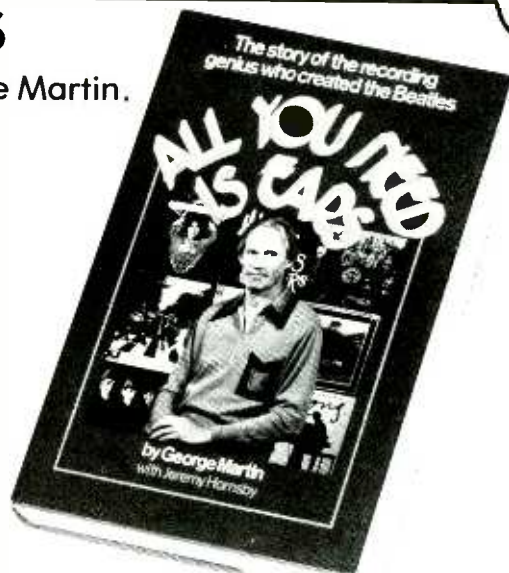
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the external loop instead (although a good digital delay will cost you almost as much as the Omni).

EVALUATING THE FLANGER/CHORUS. Based on an SAD1024 analog delay line, this is a useful effect, but I do have one minor reservation: there's a volume boost when you cut it in, which is desirable in some—but not all—instances. A switch selects between flanging and chorusing, and there are three controls. Width controls the amount of LFO modulation. Rate, the speed of the LFO modulation from 0.08 to 8 Hz, and Regeneration, the sharpness of the flanging effect (the latter control is disabled when chorusing, as I feel it should be). One particularly nice aspect of the flanger is its 20:1 sweep range, substantial enough to give a solid, dramatic effect. The chorus has a 5:1 sweep range—probably more than you need for this application: but it's nice to know you've got the extra width if you need some good sci-fi effects. There's some residual noise that's just audible at the lower end of the flanging range and throughout the chorusing range, but, again, the unit is companded so that this noise is not really a limiting factor. (Note that with effects such as delay devices, noise will be more apparent with instruments having weak outputs. The Omni can handle a pretty hefty signal, so you might as well take advantage of that to minimize noise—in other words, keep your guitar up at full blast, and vary levels at the Omni.)

EVALUATING THE EXTERNAL LOOP. The existence of a footswitch-selectable loop is recognition that some people have favorite special effects that they will want to use with the Omni, like a cherished wa-wa pedal or perhaps some complex unit like a pitch transposer. While the loop is intended for relatively low-level devices, this shouldn't be too much of a problem, since most rack mount units have provisions for accommodating various signal levels. Both loop jacks are located on the front panel, which lets you experiment with adding different effects much more easily than if these jacks were on the back. Of course, you can plug a number of serial effects into the loop; you are not limited to only one effect.

The loop may be assigned after the sustain, distortion, equalization, or delay by pushing two pushbuttons in different combinations. Thus, if your external effect needs some equalization, you can assign it accordingly. Or, if you want to distort the output from something like a ring modulator, insert the ring modulator before the distortion section.

One bonus of a loop is that the Send jack can also serve as a signal take-out point. For example, you could switch the loop between the fuzz and equalization and use the send jack to send the fuzz output to one channel (or amp), with the Omni's master output sending the fuzz plus equalization sound to a second channel (or amp) for stereo effects. Another option is to tap off after the compressor and feed a tuning device.

APPLYING THE OMNI. The Omni can be used with musical instrument amps, or with power amps which lack a preamp/control section. It is most suited to live applications, since studios generally have most of the effects found on the Omni; the packaging also seems to suggest live use. Personally, I would mount the Omni at about shoulder level for two

reasons: one, it's easier to adjust the controls that way, and two, if you have to look down on the Omni, the knobs obscure the control names. I like units where you don't have to bend down to adjust the controls, and the Omni, with its rack mount construction and remote footswitch, falls into this category.

OVERALL EVALUATION. For those musicians who are tired of patch cords, batteries, and design inconsistencies between various effects boxes, the Omni is an excellent multi-effect unit. The price is comparable to an equivalent number of effects purchased separately (\$725 list, but available discounted from most music stores), and you have all the advantages of a unit designed from a systems standpoint.

One caution: If you try this out in a music store, there is a great temptation to crank everything up to see what will happen. This is not the fairest way to treat an Omni. For example, because the Omni can deliver lots of sustain and the fuzz can give lots of gain, if you turn these both full up you're going to get a fair amount of noise. I would suggest restraint; even though the Omni fulfills its promise most eloquently with multiple effect combinations, be patient and first check out each effect individually, *then* try out various combinations. After all, you are dealing with an effects *system*, and if you're using multiple effects, changing the control on one effect can also influence the sound of subsequent effects. It's best to have an understanding of how each effect works individually before you start combining them.

The Omni cosmetics are quite tasty from an "industrial design" point of view, but practically—especially for those of us with less-than-perfect eyesight—the control designations are too small to be seen easily under dim stage light conditions. I wish all effects manufacturers would sacrifice some of their good-taste graphics for more blatant lettering located at the side of a knob (not above or below!) for maximum visibility. Thin white letters may look great in the store, but big ugly yellow letters on a black background are more legible "in the trenches."

How a musician reacts to the sound of a particular effect is, of course, highly subjective. But I think it's fair to say that the Omni delivers what you would expect, and possibly more, for the price. Sure, the delay isn't as good as a costly digital delay line, and the equalizer is not exactly a multi-band parametric. The important thing to remember, though, is that companies are under tremendous pressure to be cost-competitive in today's market, and since they cannot produce products which are all things to all people, they are forced to make design compromises. The question then becomes, "*Did the company make the right tradeoffs?*" I think that the Omni has done very well in that respect. The unit is clearly intended to stand up under the abuse of the road, is simple and logical to operate (there's also a block diagram of the signal flow on the back in case you totally lose your bearings), includes the effect world's "greatest hits," has a high input impedance (500k), low output impedance (470 ohms), intelligent use of footswitching, and so on. I see the Omni as a hard-working piece of equipment for hard-working musicians, with enough fancy touches and extras (such as multiple outputs) to appeal to those who may also need more sophistication.

Ambient Sound

By Len Feldman

Where Quality and Reliability Still Come First

An interesting story is told about Willi Studer, the founder and sole owner of the Studer and Revox Companies whose headquarters are based in Switzerland. On the occasion of his 70th birthday, his hundreds of loyal and dedicated employees were hard-pressed to come up with a suitable gift for their boss who, it was felt, lacked nothing in the way of personal possessions and was not the sort who craved useless luxuries or gadgets. Finally, someone came up with a great idea. It was decided that the greatest gift they could give Dr. Studer was to put in a couple of hours of extra work at the plant—without any extra pay.

Dr. Studer, who is in the habit of arriving at his office in Regensdorf at around 6:00 a.m. or even earlier, made no exception to this rule on his birthday. When he arrived upon the scene, he was at first angered at the thought that someone had left all the lights on in the production areas of the buildings the night before. It was only after he entered the building in which his own office was located and was greeted by throngs of employees wishing him happy birthday that his frown turned into a warm smile as he realized that his workers had, indeed, presented him with the finest birthday present of all—further evidence of their dedication to the success of the company which Dr. Studer had founded way back in 1949, with a staff of three people.

To recording engineers in the U.S. and, for that matter, around the world, the name Studer conjures up images of Swiss precision and craftsmanship, total reliability, and the ultimate in quality performance. Indeed, I know of one radio station in the U.S. (one of the best classical music stations, incidentally) that has several *dozen* Studer and Revox recorders scattered about its several studios and control rooms, and wouldn't think of using any other brand. By way of clarification, the Studer name is applied to professional machines, while the Revox trade name is applied to products intended for consumer use. During a recent visit to several of the Studer/Revox facilities in Switzerland and West Germany, the fine line between Studer and Revox design and production became

rather blurred, since much of the same painstaking quality control and precision workmanship was in evidence in the manufacturing processes of both product lines.

Total Manufacturing

In the course of several years of writing about audio companies and products, I have had many occasions to visit production facilities in many countries throughout the world. By latest count, I have been to Japan at least 17 times! I must confess, therefore, that the prospect of visiting four Studer and Revox factories in two days (one in Regensdorf, the Swiss headquarters of Studer/Revox, and three just across the Swiss-German border in the Black Forest towns of Loffingen, Ewattingen, and Bonndorf) was not terribly exciting. After all, thought I, when you've seen one electronics plant...

Was I in for some surprises! The first major difference between the Studer/Revox operations and other electronic manufacturing firms I had visited was the fact that Studer/Revox actually *manufactures* just about everything that they use in the finished products. Such precision items as capstan and reel motors, tape heads, voice coils for loudspeakers, raw printed circuit boards and much, much more are not only designed by Studer/Revox engineers, but actually made from a "cold start" by some of the most complex yet precision machinery I have ever seen. When I say that motors are made in-house, I mean *every* part of the motor—even the deep-drawn shells which house the motor rotors and stators.

I saw a huge, complex chassis base which looked, for all the world, like a large metal casting. I was told that it is a chassis for a newly designed series of reel-to-reel tape decks that will be produced in the near future. But the chassis was not a casting at all. Rather, it was a fully machined part, fabricated from a solid block of metal. All machining operations had been programmed on punch-tape. Tolerances of the finished machined and drilled chassis can be held to as little as 40 microns! If you've ever wondered why Studer machines operate so smoothly, for so long, and with as little wow-and-flutter as they do, some of the reasons may be found by examining these kinds of machining operations,

which apply right down the line from basic chassis to capstan shafts, motor shafts, turntable platter machining and balancing (in the case of Revox products), and the like.

Another major distinction between conventional production and the type of production that I saw at Studer/Revox had to do with the production lines and workers themselves. In all my travels I did not see what could be described as a long assembly line. In general, production and assembly was done in fairly small sized areas or rooms. Each worker proved to be something of a specialist in his or her skills, and was responsible for many more different operations than might typically be the case in a moving assembly-line type of operation. I learned, too, that many of these workers can handle several such major assignments, so that even if several workers are absent because of illness or other reasons, quality of finished products does not suffer.

Don't get the idea from this description that production at Studer/Revox is a throwback to antiquated "little old Swiss watchmaker" techniques which, perhaps, were responsible for the untimely demise of the Swiss watchmaking industry. Far from it. For all the customization and hand craftsmanship involved in the manufacture of Studer and Revox products, quality control and testing methods are among the most modern I have seen anywhere, employing computerized testing procedures, extensive burn-ins of finished products, and computerized final testing procedures which rival, and in many instances exceed, those used by mass-production electronics firms of the Far East.

As for actual production at the Studer/Revox facilities, it covers all fields of metalworking, galvanizing, electrical engineering and electronics. Where there is no process for producing a particular component, they develop the required technology and build the necessary manufacturing equipment and test facilities to implement it. Electronically controlled winding machines, for example, wind coils for transformers and motors. Since the printed circuits, too, are produced by the company (as opposed to being purchased from outside sources), a computer-controlled photo plotter is used to produce the print layout from the design stage. In one sequence that we observed, a machine produces the production platter for the circuit board, creates a punch tape for the automatic drills, and sets down the final layout for the circuit board printing, which will later enable a service technician to trace a component or to find a fault in the finished PC board. The most up-to-date computer-controlled multi-spindle drills are used to drill the holes required for insertion of components into the finished, etched PC boards. Insertion of parts at the main factory in Regensdorf is done in two ways. The components are first threaded up or put onto spools in the right sequence for insertion. Then, robot-like devices insert the parts into the PC board by computer control. Since not all circuit parts can be inserted automatically, some PC boards are still partially "stuffed" by hand.

Certain highly complex boards (mainly those involved in digital control techniques) are so complicated that it becomes impractical to use conventional printed circuit board techniques for connecting up all of the

contact points required. Such circuits are wired by a wire-wrap technique, in which all contact points are miniature rectangular pins. An automatic wire-wrap machine wraps the previously stripped wire ends around a pin and then conveys it to the next contact point where the wire is again stripped and wound around the next pin. The wires criss-cross the circuit board many, many times, and the number of connections that can be made in a small area is far greater than would be possible with a conventional etched PC board.

Total Quality Control

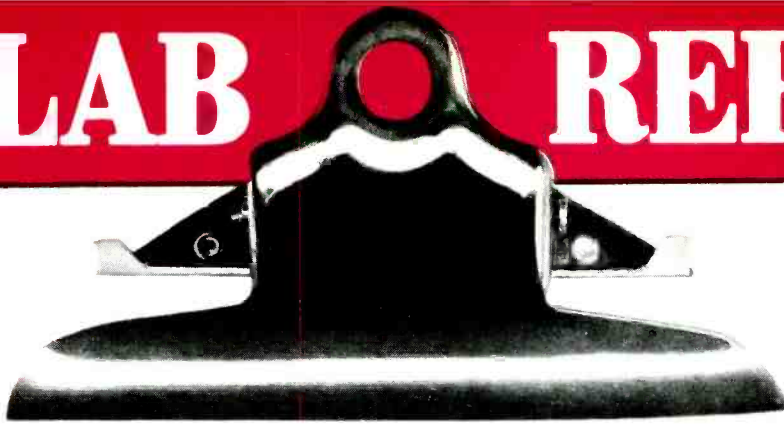
I was surprised to learn that one out of every three workers at Studer/Revox is involved in some phase of testing and/or quality control. That's an unheard of ratio in the electronics industry and, as far as I know, in any other industry as well.

Another statistic worth noting: Studer/Revox expends some six percent of its gross sales in research and development. By way of comparison, typical expenditures for R&D for the industry range from around two to three percent! For all of this engineering effort, however, it is interesting to note that Studer new-product introductions are not a semi-annual event or even an annual one. For many years after the cassette deck had gained world-wide acceptance as a home tape recording product, Revox refrained from producing its own version of this product, which was certainly a natural for the company. Only within the past three years or so has the company finally delivered its version of a state-of-the-art cassette decks, the Model B710, which we tested for *MR&M* last year (November, 1982).

Professional Studer studio products, such as large multi-track units, are highly customized and built on what amounts to an individual basis. From what I was able to observe, countless hours are spent checking and adjusting thousands of variable controls until the engineers are satisfied that the console or multi-track recorder meets the customer's specific requirements as well as those of the Studer engineering and design departments.

Where Pricing Is Secondary

While I had always admired Studer and Revox products, I had wondered why those products were almost always priced higher than those of competing products which had the same published specifications. My trip to the Studer/Revox facilities helped to answer that for me and, I hope, for those readers who have always wanted Studer/Revox products but wondered if they weren't over-priced. The answer has to do with product longevity and reliability. If you are interested in a product that, several years later, will perform as well as it did on the first day you turned it on, the extra pains taken by the people at Studer/Revox will help to insure just that kind of performance. But, for that longevity and dependability, you must be prepared to spend more. That's not easy for those who are interested primarily in this month's or this year's bottom line profit margin. But, there are evidently enough far-sighted people around in the recording and broadcasting business to enable Studer/Revox and similarly minded companies to succeed and expand.



NORMAN EISENBERG AND LEN FELDMAN

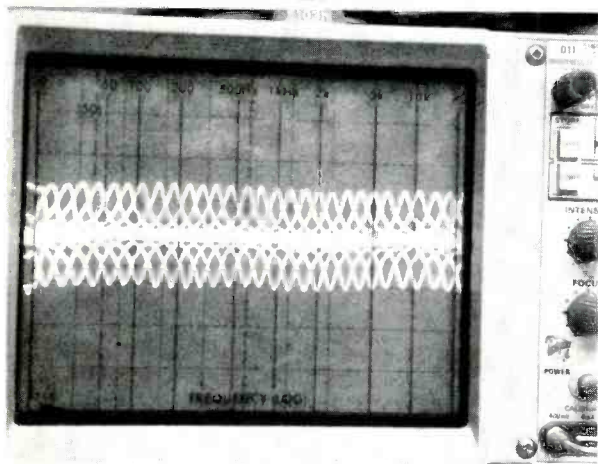
Klark-Teknik DN30/30 * Stereo Graphic Equalizer



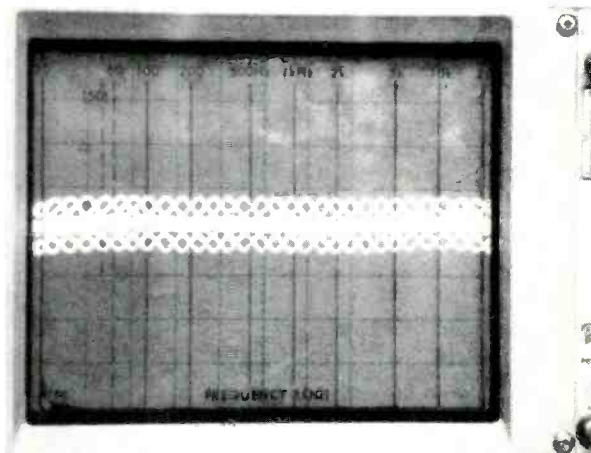
General Description: The Klark-Teknik DN30/30 Graphic Equalizer is manufactured in England and distributed by its U.S. subsidiary, Klark-Teknik Electronics, Inc., located in Farmingdale, NY. The DN30/30 is a two-channel, one-third octave graphic equalizer with a total of sixty slide controls (thirty per stereo channel) spread across most of the upper and lower portions of its neatly laid out front panel. While

most third-octave equalizers we have encountered in the past sport from 24 to 27 filter bands per channel, Klark-Teknik has seen fit to extend the frequency range of control by about two-thirds of an octave at the bass end (providing filter bands at 31 Hz and 25 Hz) and by an extra third of an octave at the treble end (with a filter band whose center frequency is at 20 kHz). Whether these extra bands are actually needed

***Late Bulletin:** As we go to press—Klark Teknik informs us that the DN30/30 designation has been changed to DN 360, bringing it into closer alignment with the company's well known 300 series.



A



B

Fig. 1. Spectrum analyzer multiple sweeps show full boost and cut range of each of the DN30/30's thirty filter bands in the 12 dB mode (A) and in the 6 dB mode (B).

in the real world of professional sound equalization or not is something we will leave up to the user. As for ourselves, we have not encountered any instances we can remember that required response adjustment at these high and low frequency extremes, but there's certainly no harm in including these extra few bands in an equalizer.

Of greater benefit, perhaps, is the incorporation of a choice of maximum cut and boost ranges in the DN30/30. Maximum excursion of each slider control can be switched so that it affords either 12 dB or 6 dB of maximum boost or cut at the designated center frequency. A switchable sub-sonic filter is also incorporated in the equalizer's circuitry, as is an overload LED indicator and wide-range input level controls for each channel. Input and output connections are made via 3-pin XLR connectors which may be wired for balanced or unbalanced operation.

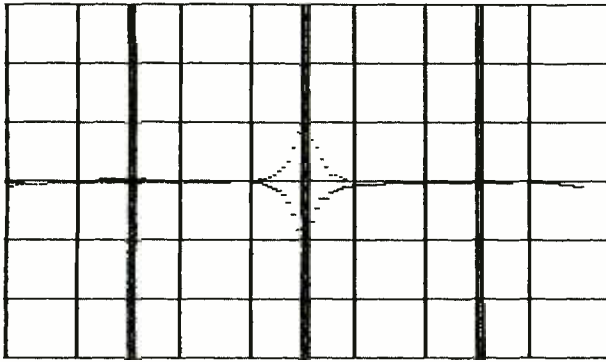
Controls & Switches: The two sets of slider controls are mounted above each other so that similar

settings for each channel (if desired) can easily be made by the operator. The sliders are oil-damped and have well-defined center-detent positions. Center frequency markings appear between the two rows of sliders and nominal calibration markings are screened on the front panel to make things a bit easier for the operator.

To the right of the slider controls is a three position "scale" switch, for choosing maximum boost/cut ranges of either 6 or 12 dB (the center position serves to bypass equalization entirely), the sub-sonic filter on/off switch, an input level control and the overload LED indicator light. Each of these items is duplicated for each channel. A power on/off pushbutton and an associated power indicator light completes the front panel layout.

Test Results: As we have mentioned in previous discussions of equalizers, there are relatively few lab measurements that need to be made. A great deal more can be learned about the quality, performance, and

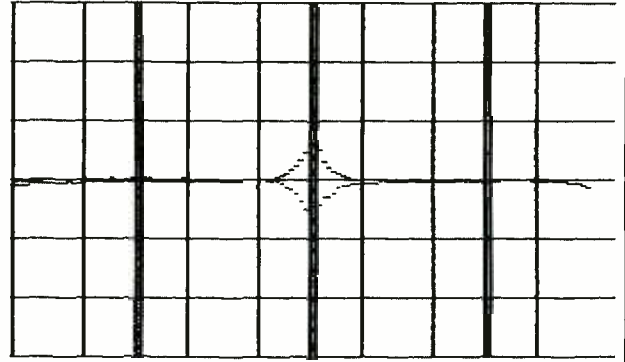
FR



10dB/D L-12.1dB R+12.3dB 1.00kHz

(A)

FR



10dB/D L+ 6.1dB R- 5.9dB 1.00kHz

(B)

Fig. 2. Detailed view of boost and cut range of one filter-band (1 kHz) in the 12 dB (A) and 6 dB (B) modes.

flexibility of this type of audio component by hands-on experimentation in a real sound-reinforcement or studio environment. The few measurements that we made in the lab are summarized in the VITAL STATISTICS table accompanying this report. In addition, we used our spectrum analyzer to carefully plot the boost and cut characteristics of every one of the thirty filters. The plots, shown in the storage 'scope photos of *Figures 1A* and *1B*, are of amplitude versus logarithmically swept frequency, which enables us to see how evenly spaced the center frequencies of all these filters are set.

We examined a single filter band (having a center frequency of 1 kHz) using our Sound Technology 1500A audio tester, and the results for the 6 dB and 12 dB boost and cut ranges are shown in *Figures 2A* and *2B*. For this particular filter, maximum boost measured 12.3 dB while maximum cut was -12.1 dB, when the range selector was set to the "12 dB" position. We measured 6.1 dB of boost and -5.9 dB of cut when the range switch was switched to the "6 dB" position. You couldn't ask for much more accuracy than that.

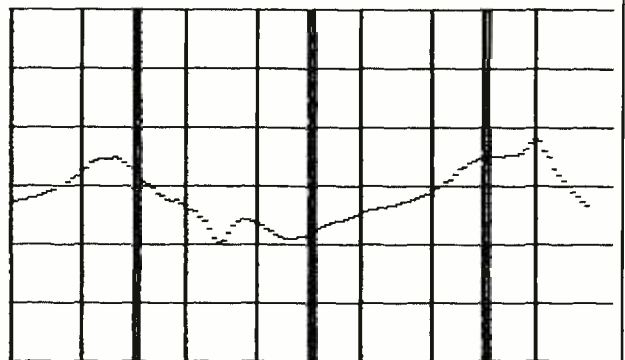
To illustrate the fine tuning of response that is possible with such a third-octave stereo equalizer, we set up a fairly complex (but not untypical) response curve, which is shown in *Figure 3*. Both gradual boost and cuts as well as notches and boosts at specific narrow bands of frequencies are illustrated in this arbitrary response curve.

Comment: One feature of the Klark-Teknik DN30/30 which I haven't mentioned up until now is something that their well-written and well-illustrated owner's manual calls an "earth lift" switch, located on the back panel of the instrument. Activating this switch connects or disconnects signal ground to and from supply and chassis ground. (In England, of course, the connections or disconnects are made to "earth.") This feature is especially useful if ground loops (or even earth loops) are encountered during a specific installation.

Another welcome feature discovered only after we started to use the unit is the delayed turn-on. (Like you, we usually read the owner's manual only as a last resort, or we would have been aware of this feature earlier.) Finally, should a loss of power to the DN30/30 occur during operation, inputs are automatically connected to the outputs, bypassing the equalizer completely, so that there is no loss of system sound.

It is these well-conceived and executed extra features, as well as the precision response-shaping capabilities of this equalizer, which tend to offset the rather high price asked for this excellent product. I am not suggesting that every equalization chore you're going to run into demands the use of an equalizer as elaborate or precise as this one. Still, it's nice to know that when you are faced with a really touchy and demanding equalization problem, that there's a unit such as the Klark-Teknik DN30/30 around to solve it. Well done, chaps (and all that)!

FR



10dB/D L- 8.0dB 1.00kHz

Fig. 3. Typical response curve obtained using the Klark-Teknik DN30/30.

KLARK-TEKNIK DN30/30 GRAPHIC EQUALIZER: Vital Statistics

SPECIFICATIONS

Filter Center Frequencies

Center Freq. Accuracy

Max. Boost or Cut

Sub-Sonic Filter

Maximum Output Level

THD at 1 kHz, +4 dBm

THD, 20 Hz-20 kHz, +18 dBm

Equiv. Input Noise

Crosstalk

Input Impedance

Frequency Response

Output Impedance

Power Requirements

Dimensions

Net Weight

Suggested Retail Price: \$1500.00

MANUFACTURER'S CLAIM

25, 31, 40, 50, 63, 80, 100, 125, 160,
200, 250, 315, 400, 500, 630, 1k, 1.25k
1.6k, 2k, 2.5k, 3.15k 4k, 5k, 6.3k, 10k,
12.5k, 16k, 20k

Better than $\pm 5\%$

± 12 dB or ± 6 dB

-3 dB @ 30 Hz, 18 dB/oct

+21 dBm/600 ohm load

Less than 0.01%

Less than 0.05%

-90 dBm, unwt'd

Less than -80 dB @ 1 kHz

47 kohms, balanced

20 Hz-20 kHz, ± 0.5 dB

Below 60 ohms, balanced

110/120/220/240V, 50-60 Hz

19" w. x 5 1/4" h. x 8" d.

11 lbs.

MR&M MEASURED

Confirmed

Confirmed

See *Figures 2A and 2B*

-3 dB @ 28 Hz, 18 dB/oct

Confirmed

0.006%

0.03%

83 dB (91 dB "A" wt'd)

Confirmed

Confirmed

20 Hz-20 kHz, +0, -0.3 dB

Confirmed

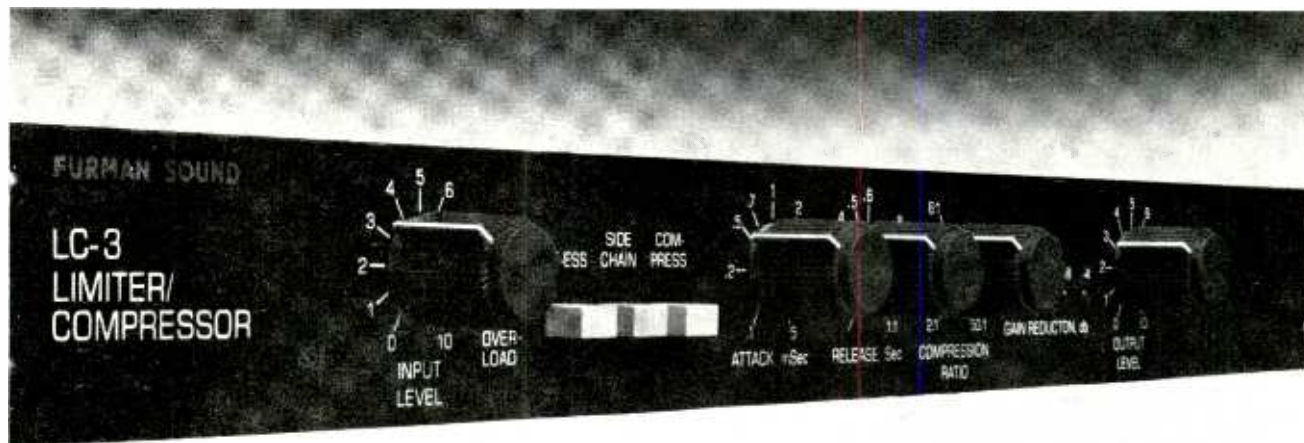
(Specified with order)

Confirmed

Confirmed

Circle 42 on Reader Service Card

Furman Sound LC-3 Limiter/Compressor



General Description: The Furman Sound LC-3 is a limiter/compressor intended for use in professional applications such as recording studio or broadcast studio operations. As the owner's manual points out, the difference between compression and limiting is a matter of degree. Furman Sound defines compression as any signal processing in which a change in input level is reflected as a change in output level 1/10th as great or more (a compression ratio of 10:1 or less), whereas limiting is defined as compression in excess of 10:1. Since the LC-3 covers a very wide range of compression ratios (anything from 2:1 to 50:1), it qualifies as both a compressor and a limiter. The input/output characteristics of the device are shown in

Figure 1, in which various degrees of compression are shown. Note that when the most extreme compression ratio is used (50:1), further increases in input level beyond the threshold point result in virtually no increase in output level.

Whether the unit is operating as a compressor or as a limiter, the point at which the output ceases to increase linearly with the input is known as the threshold of the device. In the case of the LC-3, this threshold is determined largely by settings of the input level control. Higher settings of this control will produce a more compressed output, regardless of the compression ratio.

A block diagram of the LC-3, shown in *Figure 2*,

serves to explain some of its functions and its method of operation. The LC-3 consists of six distinct circuit sections: input, voltage-controlled amplifier (VCA), output, detector/control, overload, and power supply. The switch labeled "De-Ess," shown at the lower left of *Figure 2*, provides an interesting function. Sometimes, the objectionably loud peaks that require limiting are all in one range of frequencies. More often than not, problems occur with sibilant sounds of speech; consonants such as "S," "T," "C," etc., which contain a great deal of energy above 4 kHz. By selecting the De-Ess function, a high-pass filter is inserted into the LC-3's detector input circuit. This has the effect of allowing only high frequencies to trigger gain reduction, or limiting. Peaks at frequencies below 4 kHz are not limited or compressed, regardless of whether they exceed the threshold or not.

Other frequency ranges may also be selected through the use of the Side Chain input. In such cases, an external filter or equalizer may be used to specify any required frequency range. The Side Chain feature can also be used to control the gain of program material which may be completely unrelated to the controlling signal. For example, if you were preparing a recording of a narration with background music, the narrator's voice could be fed into the Side Chain input while the LC-3 is processing the music track. In this way, a recording could be produced in which the music track's volume is decreased at those times when the narrator is speaking, even though the narrator's voice is not present on the music track itself.

Control Layout: The input level control of the LC-3 is located at the left of the rack-mountable front panel. An overload indicator LED nearby flashes to indicate that the signal at one or more points in the LC-3 signal path is close to or exceeding clipping level. Three function pushbuttons come next. These are the De-Ess input, the Side Chain input and the normal Compress input. Three rotary knobs near mid-panel control attack and release time and compression ratio. Attack time is variable from 100 microseconds to 5 milliseconds. Release time is variable from 50 milliseconds to 1.1 seconds. Compression ratio, as

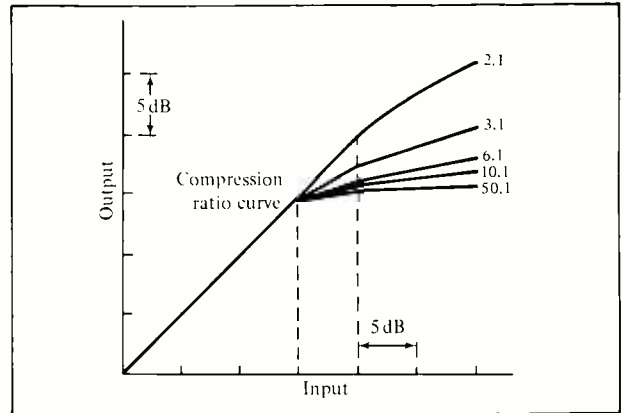


Fig. 1. Input vs. output characteristics of LC-3 at various compression ratio settings.

mentioned earlier, is continuously variable from a 2:1 ratio to a 50:1 ratio. The LC-3 also contains special circuitry to achieve Program Adjusted Release Time. That is, when average program level is high, release time will automatically be increased to some degree, in order to prevent unnecessary gain changes which would be perceived by listeners as excessive "pumping and breathing."

A string of five LEDs serves as a bar-graph meter and indicates by how much the gain is being reduced at any instant. An output level control and a power on LED indicator complete the front panel layout. The on/off switch is located on the rear panel, in keeping with Furman's avowed philosophy that it is better to leave power applied to the unit at all times (it only consumes a few watts) than to have someone inadvertently flick off the power switch from the front panel at a critical moment in a recording or broadcast session.

The sample we tested was equipped with the balanced input and output option and therefore, in addition to standard 1/4-inch phone jacks for inputs and outputs, there was also a pair of XLR connectors on the rear panel. In addition, there are a pair of 1/4-inch phone jacks for the Side Chain input and output feature as well as a 1/4-inch stereo link output jack which allows the user to link a pair of LC-3s together for use in a

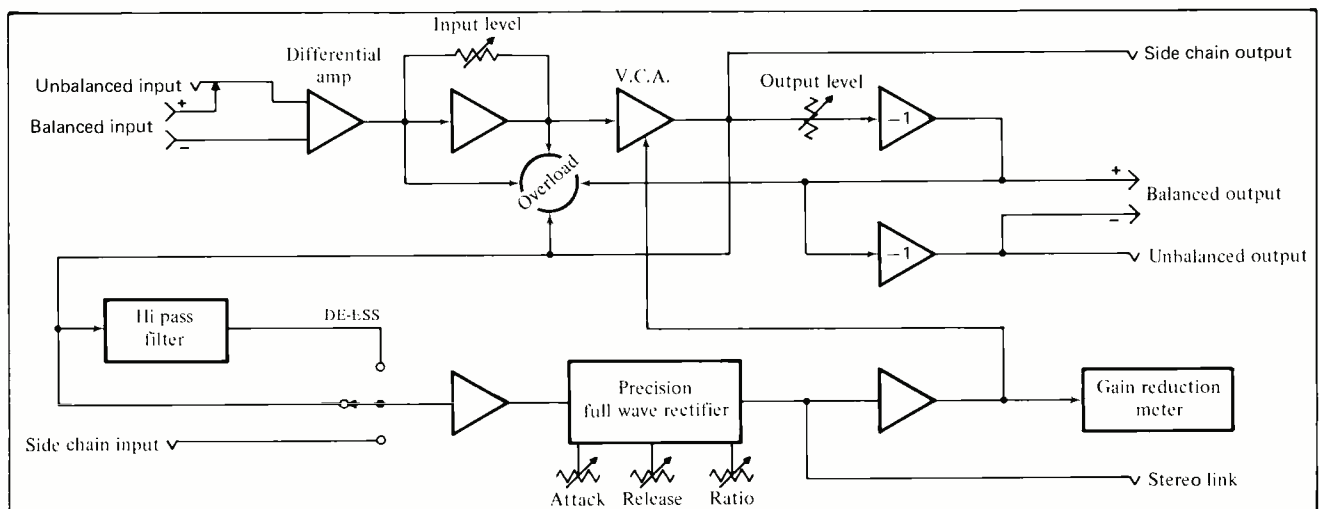


Fig. 2. Block diagram of the LC-3.

stereo setup. In such a setup, a signal peak in one channel will result in the same amount of gain reduction in both stereo channels, providing that Input Level, Output Level, Attack and Release controls are adjusted in accordance with instructions provided in the owner's manual.

Test Results: Only a few bench measurements were needed to be made for the LC-3, and the results of these tests are summarized, along with other pertinent data, in our VITAL STATISTICS table at the conclusion of this report. In order to demonstrate the range of compression that is possible with the LC-3, we adjusted our spectrum analyzer so that it was independent of frequency and responded only to a 1 kHz test signal to which it was tuned. We then increased signal levels in 10 dB increments, manually, to create a sort of "stairstep" output-versus-input level graph, illustrated in *Figure 3*. In this 'scope photo, all frequency references should be disregarded, as the entire display is for a mid-frequency signal and only *amplitude* changes are of interest. During the first run, the compression ratio was adjusted to its minimum setting (2:1). Input level and input level control were adjusted so that the threshold was reached only for the last two steps of amplitude increase. With compression ratio set for 2:1, we see evidence of moderate compression for the last step, which is shallower than the earlier, lower-amplitude steps (each division on the 'scope face is worth 10 dB, vertically). When the compression ratio was increased to maximum (50:1), and the experiment was repeated, there was virtually no increase in output level for the last two increases of input amplitude, indicating almost total limiting above the threshold level.

General Info.: Dimensions of the Furman LC-3 are 19" wide (rack mountable) by 1 3/4" high by 8" deep. Weight is 4.6 lbs. Price: \$335.

Comments: I don't completely agree with Furman Sound's philosophy regarding positioning of the power on/off switch, but I won't make a big thing of it. I suppose if I wanted to turn the thing off for any reason, I could get behind the rack and do so, or, as they suggest, the entire rack could have its own master switch as so many rack installations do. Aside from

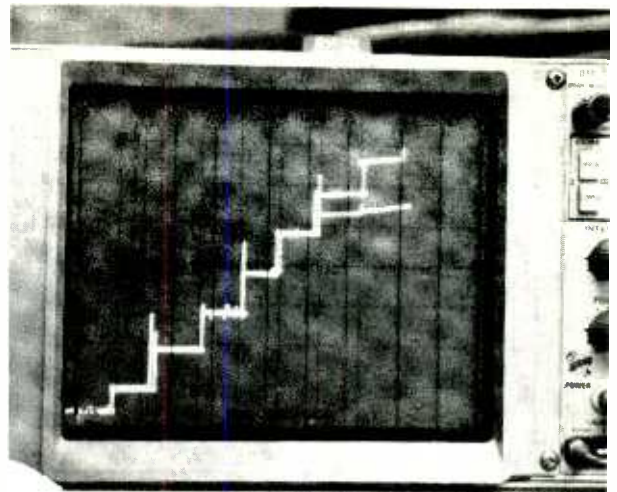


Fig. 3. Amplitude step test used to check action.

that minor matter, I found that the Furman Sound LC-3 performed very well, offering a tremendous range of adjustment—perhaps too much range for the inexperienced user. While you might suppose that the best attack and release times are the fastest, such did not prove to be the case in our experiments. For example, when loud bass passages occur in the music, setting too fast a release time will cause increased harmonic distortion because the circuit will interpret each alternation as a variation in loudness level and will try to modify the waveform. In the case of attack time, we found that it should be increased if program material contains vibrato effects that the LC-3 might otherwise try to follow.

So, what we're really saying is that, given such a wide range of control, it is necessary to experiment with the settings of the attack, release and compression ratio controls for each type of program material being processed. In some cases it may even be necessary to change settings during a session as the demands of the music programming change. If you are willing to spend a reasonable amount of time learning how to most effectively use the Furman Sound LC-3, it can prove to be a valuable addition to any recording studio or broadcast studio's inventory of signal-processing equipment.

SPECIFICATION

Input Impedance

Output Impedance

Attack Time Range

Release Time Range

Compression Ratio

Frequency Response

Noise

THD @0 dBv

THD @ +20 dBv

IM Distortion

Dimensions

Weight

Power Consumption

Price: \$335.00

MANUFACTURER'S CLAIM

10K ohms, unbalanced
(20K ohm, balanced, optional)

47 ohms unbalanced
(100 ohm balanced, optional)

100 usec to 5 msec

50 msec to 1.1 seconds

2:1 to 50:1

20 Hz to 20 kHz, ±0.5 dB

-82 dB re 0 dBv

0.012%

0.05%

N/A

1 3/4" h. x 19" w. x 8" d.

4.6 lbs (2 kg)

5 watts

LAB MEASUREMENT

Confirmed

Confirmed

Confirmed

Confirmed

Confirmed

20 Hz-20 kHz, -1.1 dB

-77 dB re 0 dBv

0.016%

0.05%

0.035%

Confirmed

Confirmed

4 watts

Circle 43 on Reader Service Card



GROOVE VIEWS

MICHAEL FISHMAN
 ELLEN GOLDEN
 ROBERT HENSCHEN
 GENE KALBACHER
 JOE KLEE
 MICHAEL ROBERTS
 JEFF TAMARKIN
 NORMAN WEINSTEIN

POPULAR

DAVID BOWIE: *Let's Dance*. [David Bowie and Nile Rodgers, producers; Bob Clearmountain, engineer; Dave Greenberg, assistant engineer; mixed by Bob Clearmountain; assisted by David Bowie and Nile Rodgers; mastered by Bob Ludwig at Masterdisk, New York City.] EMI America SO-17093.

Performance: **Unflinchingly cool**
 Recording: **Everything in its place**

David Bowie teams up with funk master Nile Rodgers in a timely combination of two forces that, in separate but increasingly overlap-

ping musical territories, have proven monumentally influential. With honest eccentricity, Bowie set the mark for an infinite parade of pioneers and poseurs. Nile Rodgers believing that less is more, revolutionized funk arranging with simple, yet riveting instrumental and vocal lines that destroyed the boundary between melody and rhythm. Together, *Let's Dance*, with Rodgers guesting on rhythm guitar, offers a pleasant meeting of minds, less squeaky clean than Chic, but danceable and durable.

After a brief polyrhythmic introduction that seemingly indicates that we're about to enter a fringe world teeming with synthesizers, "Modern Love," the album's opening cut, suddenly becomes a simple, basic rock and roll charmer. The back-to-the-roots arrangement, complete with melodic sax, piano chording and high background vocals, could have

been some of the light-hearted fare streaming from transistor radios in the '60s.

On "China Girl," Nile Rodgers single-note wizardry is crisply apparent, with both keyboard and guitar projecting an oriental-funk motif. Here we begin to hear the art of recording Bowie. The power of his voice lies in its subtle potential: a thousand shades of tonal colors. Without delicate treatment in the studio, Bowie might well sound limp, nasal and ineffective. On this song, the trick lies in mic'ing Bowie closely enough to pick up every quaver, guttural sigh, smack of the lips, and seductive sibilance he utters. The final "sh-sh-shh" is phase-shifted, expansively drawn out.

Another way of presenting Bowie's voice is found on "Let's Dance," where lots of echo is applied, not only to the vocal, but to the guitar and horns which trade off on the deliberate riff that frames the song as well. In fact, the song moves along on rolling waves of echo, a conducive setting for Bowie's persuasive request to "sway under the moonlight, this serious moonlight," through which the percussion, in contrast, cleanly cuts; the congas resound, the full range of the distinctive envelope of their sound is here, and care was even taken to capture the after-tinkle of the tambourine used for an occasional accent. The correlation of the sharply defined percussion and the hazy interplay of vocal-guitar-horns is so crucial to "Let's Dance" that the

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horn solo never rises above them in the mix.

At times, Bowie's voice takes on the tone of a knowing, street corner patriarch, rigid with conviction. On "Ricochet," an insight into working-class travail, the omniscient quality of the vocal is doubly impressed; its megaphone tone gives it a distant, removed feeling, while its place in the mix (up front) assures its immediacy. Multi-tracking of the background vocal adds a men's glee club of cross-rhythm, and helps project a sense of the despair of regimentation.

On "Cat People," where Giorgio Moroder's music and Bowie's lyrics are combined in the hardest rocking song on the album, Stevie Ray Vaughn's guitar solo shines through, placed traditionally out front. As Bowie's force of vocal delivery increases, however, its volume remains the same, from its tranquil beginning to near-hysterical confession that he's been "putting out fire with gasoline."

Let's Dance (and you probably will) doesn't reach for any extraordinary goals, musically or lyrically. It's got clean, simple and appreciable lines, like a sailboat that has proven its worth on the open sea. SB

DAVE EDMUNDS: Information. [Dave Edmunds and Jeff Lynne, producers; Carey Taylor and Bill Mottrell, engineers; recorded at Maison Rouge, Eden and Wisseloord, Holland.] Columbia FC 38651.

Performance: **Relaxed**
Recording: **Consistent**

Counting solo albums, group albums, albums that he's produced for others and albums on which he's made merely a brief appearance, Dave Edmunds has tried just about every kind of rock, from the Phil Spector "Wall of Sound" to stripped down rockabilly to urban blues to straight pop. On his second album for Columbia, *Information*, he combines it all and again proves himself master of the eclectic.

Information has a more commercial sound than the usual Edmunds record (despite many hits in England, he has yet to have any sustained success in the U.S.); ELO mastermind Jeff Lynne was brought in to produce two cuts, most of the material was written by others, the hooks are more prevalent in the mix and the lyrics aren't quite as off-hand. But to

Edmunds' credit, he accomplishes all this without compromising his integrity, either as musician or producer.

"Slipping Away," written and produced by Lynne, could be a typical ELO song, with layers of charging synthesizers, guitars and drums. Edmunds' vocal is predictably distanced, and yet nothing takes precedence in the mix. The appeal lies not in any individual achievement but in the overall seamlessness of the production. This technique also works well on Moon Martin's "Don't You Double," which is more in Edmunds' style of updated '50s rock. His voice is mixed to melt in with the rest of the song, as are the rolling piano riffs. You know they are there—but not at the expense of anything else.

Edmunds' voice has always been a little thin, but he knows how to cover it up when necessary. On "Information," the vocal overdubs are so tight that it's hard to separate them from the lead. The level of the synthesized sounds on "The Watch On My Wrist" is equal to that of Edmunds' voice.



Dave Edmunds

and places the needed emphasis on the lyric.

The versatility of *Information* extends to Otis Blackwell's "The Shape I'm In." The cracks in Edmunds' voice, the jump in Geraint Watkin's accordion, and the overall ambient sound of the song make it sound as if it were recorded in an hour and a half (which it was). Throughout the album, there's a feeling that Edmunds is doing whatever he wants and still having fun

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doing it. So it doesn't seem to matter that he's covered some of this ground before. And, maybe, some more people will hear him this time. RH

ROXY MUSIC: *The High Road*. [Rhett Davies and Roxy Music, producers; Alan Boyd, engineer; recorded live at the Apollo Theatre, Glasgow, by Radio Clyde's Mobile 2.] Warner Bros./EG Records 23808-1B.

Performance: **Somewhat confined**
Recording: **Decent live job**

There was a time when Roxy Music was dashing, progressive, mysterious. Bryan Ferry was lyrically challenging. Brian Eno was one of a kind on synthesizers. Manzanera and Mackay were developing strong instrumental identities. The band was a step ahead, a cut above.

They can still be a cut above, and one exemplary cut on this 4-song EP might be "My Only Love." But for the most part, Roxy Music has become rather average...certainly not avant-garde. Ferry's pseudo-showman domination of the group has prompted a narrowing view of rock music. Even appearances here by such extras as Neil Hubbard, Andy Newmark, and Jimmy Maelen don't really put much depth back into the mix.

The aforesaid is not meant to fault the fairly good live recording job from Scotland. Actually, the band sounds quite competent within its shortened range, and the production is adept at emphasizing basic values. Ferry's "Can't Let Go" has a great rhythmic feel to it, if not much more. "My Only Love," while still on the simplistic side, contains several glimpses of what once made Roxy Roxy. Side two's cover tunes, "Like A Hurricane" and "Jealous Guy," are interesting selections, particularly the former. Although this is definitely a case of a song treatment passing from one monotonal singer to another, Roxy's version of Neil Young's "Hurricane" adds an impetuous element of cabaret funk that works pretty well...for awhile. "Jealous Guy" is right up Ferry's alley, and a noteworthy tribute to its composer John Lennon, but there's nothing staggering about the delivery.

The High Road seems to be an easy route for today's Roxy Music—too easy. The old low road, that dipped more indulgently into the respective creative pools within this band,



Roxy Music

traveled more panoramic musical terrain. Roxy Music cleared the way for Pre-Wave in the early Seventies. Times have changed. RH

NONA HENDRYX: *Nona*. [Nona Hendryx and Material, producers; basic tracks recorded at OAO Studios, Brooklyn, NY, Martin Bisi, engineer; overdubs, vocals and mixing at RPM Studios, New York, NY, Dominick Maita, engineer; remix on "B-Boys," "Transformation" and "Confidential" by Nick Martinelli and David Todd; mixed at Alpha International, Philadelphia, PA, Bruce Weeden, engineer; mastered by Howie Weinberg, Masterdisk, New York, NY.] RCA AFL1-4565.

Performance: **Fresh funk**
Recording: **Bright and bold**

Nona Hendryx, the changeling and soon-to-be darling of the punk-funk scene (if she isn't already), has given funk a fresh face. Unlike singer Angela Bofill, whose funk is sorely in need of a facelift, Hendryx has summoned her resources and that of her co-composers, the un-group group known as Material, and come up with her most outstanding solo effort to date.

Whereas Bofill's new recording fizzles, Hendryx's sizzles—with pride, passion and power. Hendryx and Material use the same instruments and effects as their funk confreres (echo/handclaps/throbbing bass/synths), but use them *differently*. The singer and her support cast

disavow the prevailing theory of the danceable dialectic: Move the feet and the mind will follow. *Nona* is kinetic music, to be certain, but not at the expense of intellect. For in the words of Ornette Coleman (whose spirit infuses this music), there's nothing wrong with "dancing in your head."

Style and substance are kept in proper proportion. The vocals and instruments, both electronic and acoustic, bear an organic, tonal relationship to one another; what's needed is what's done, what's not is not. Each instrument, mixed clearly and with minimal distortion, stands on its own yet jibes with the others. Hendryx, in keeping with Material's un-method method, owes allegiance neither to one style of music, nor to one group of musicians, nor to one record company, for that matter. The Material triumvirate—synthesist Michael Beinhorn, bassist Bill Laswell and engineer Martin Bisi—has assembled high-caliber players seemingly on a song-by-song basis. "Design for Living," for instance, features all women players, including such unlikely ones as Go-Go's drummer Gina Schock, Heart guitarist Nancy Wilson and avant-garde violinist Laurie Anderson. Another tune, the reggaefied "Steady Action," pairs the masterful Rasta drummer Sly Dunbar with the free-style cornetist-trumpeter Olu Dara. These combinations work splendidly.

As a result, the singer and her producers achieve a true fusion of music and musicians. The term

fusion usually connotes a combination of two dissimilar yet hopefully compatible elements: jazz-rock, punk-funk and so forth. Yet Hendryx and Material intermingle many musics—rock, pop, punk, funk, jazz, gospel and reggae—into a mosaic without obvious cracks. And Hendryx's voice is up to the task. Washed along by wavelike rhythms and fatback backbeats (not the martial 4/4 that comes from a can), Hendryx's voice takes on a satiny smoothness ("Transformation," "Steady Action"), gets down and dirty ("B-Boys"), and then takes on a pure gospel righteousness ("Keep It Confidential").

Hendryx's songs, most of which she wrote or co-wrote, look askance at the transitory music scene ("Cash a check/Change your sex," she sings in "B-Boys") without reflecting it. *Nona* presents sound not for the sake of sound, but sound for the sake of *music*. Play this music loud, and play it often. GK

DIRE STRAITS: *Twisting By the Pool*.

[Produced by Mark Knopfler; engineered by John Etchells; recorded at Jam Studios, Oct. 1-3, 1982.] Warner Bros. 29800-0-A (four song EP).

Performance: **Touching many historical bases**

Recording: **Functional**

MEN AT WORK: "Overkill."

[Produced and engineered by Peter McIan; recorded at AAV Studios, Melbourne, Australia, and Paradise Studios, Sydney, Australia; mixed at Westlake Studios, Los Angeles.] Columbia AS 1634 (single play demo).

Performance: **A haunting melody line**

Recording: **Fluid and intriguing**

"Overkill" is getting considerable radio air play these days, and quite frankly this is one of the most seductively entertaining recordings since, well, "Sultans of Swing" by Dire Straits. Colin Hay, composer and lead singer, has mixed vocal and instrumental lines well, and the saxophone lines by Greg Ham are faintly reminiscent of Raphael Ravenscroft's breaks in "Baker Street" of a few years back.

This is produced and arranged with a nice, light touch. The vocal line and instrumental line play well off each other, and are nicely balanced. What makes the recording particu-



Nona Hendryx



Men at Work

larly intriguing is the airy choir that backs up Hay's singing, reminiscent of the wall of sound of the late 1950s, but much more ethereal.

The main vocal is actually a duet that opens into the chorus effortlessly; the lead guitar line, synthesizer, and crisp, steady drumming blend nicely with the voices.

And the guitar line, with its echo-effect, also unfolds into a duet that fades away nicely with the "fade away" in Hay's lyrics.

One song does not make an album, but this song certainly has a lot to commend. If even half the album *Cargo* is as good as this track, then this Australian group will have a terrific second album.

Dire Straits, meanwhile, has recorded its homage to recent pop music history; whether the entire album will carry this idea remains to be seen.

What Mark Knopfler has done is fashion a rockabilly, a folk-rock, a twist and a cool jazz song collection. While no new imaginative ground is broken here, it is interesting to note how one of the late 1970s better known singer-songwriter-guitarists pays homage to earlier pop styles.

Knopfler throws in a lot of familiar embellishments here: growling scat singing in unison with a guitar line ("Badges, Posters, Stickers and T-Shirts"), a guttural guitar and organ line that sounds like Bob Dylan's movement into folk-rock ("If I Had You"), a saxophone and piano meshed behind the vocal line ("Two Young Lovers").

Only on a few occasions do these devices not work: his vocal line in "Twisting By the Pool," for example, just doesn't seem well-suited to the song, either as a straight work or a parody. (Would Dylan have sounded good on "Let's Twist Again"?)

The recording is workmanlike, without much razzle-dazzle, but then it doesn't have to be anything more than functional. The separation is balanced, and the vocal line remains prominent throughout. Particularly nice was the mic'ing of the percussion, on which these songs rely for their rhythm and drive. The saxophone is properly raspy in "Two Young Lovers," while the guitar line in "Badges, Posters" is subtle, sinuous and not unlike a Les Paul line of 30 years ago. In fact, Knopfler's approach on this song recalls the cool jazz of Europe in the 1950s, with minimal melody in the singing.

SR

The Jazz Story-Telling Tradition: Bobby Jones and Bennie Wallace

By Nat Hentoff

Though seldom written about, there is a distinctive tradition of regional jazz story-telling. It's the musical equivalent, in various ways, of the short stories of William Faulkner or Eudora Welty. John Benson Brooks and Moses Allison are among those who have composed in this subtly rich vein, and now, in *Hill Country Suite* (Enja), Bobby Jones has added a significant work to this heritage.

Jones, who plays tenor and clarinet in this set, worked with Ray McKinley and then with Charles Mingus, and it was that latter gig (1970-1972) that I expect most opened Jones to his potential as both a player and writer. Mingus, after all, was one of the most compellingly original storytellers in all of jazz.

In *Hill Country Suite*, Jones writes about the music, inner and outer, of the mountain people of Kentucky, Tennessee, and West Virginia. The scenes and rhythms range from "Bringin' in the Sheep" and "Old Jack Daniels" to "The Weddin' Dance." The lines are clear, deep, and flowing; the playing is full of song and memory. Bassist George Mraz and drummer Freddie Waits sound as if they were mountain people too.

Bobby Jones cautions that "the stark simplicity of this music may—upon initial hearings—alienate some jazz fans." I doubt it. I think jazz listeners are going to welcome these wondrously unpretentious tales that transcend present trendiness. The engineering is superb—much presence, but all of a balanced whole.

Bennie Wallace is from Tennessee, and while he has yet to record anything as extensive as *Hill Country Suite*, he comes on as a flavorful, natural storyteller in his new Enja album, *Big Jim's Tango*. Actually, that insinuatingly

attractive title tune is called "Big Jim Does The Tango for You"; among the other illuminations of ways of life and feeling in the set are "Monroe County Moon" and "The Free Will."

Wallace is a tenor saxophonist who sounds as if he's listened to the whole of the jazz heritage on that horn of power, has absorbed exactly what suits his way of going through life, and has built on all of that a sound and style that are his alone. Having spent much time in Europe in recent years, where he is a personage on the festival circuit, Wallace is not yet as renowned as he should be in the States—but he will be. The man not only has so much authority and command of his horn, but he is also possessed of rare wit and irremovable lyrical grace.

In this set, Wallace has top-of-the-mountain support—bassist David Holland and drummer Elvin Jones. It's worth listening to once, or more often, just to focus on how carefully these three players *listen* to each other. This is truly *collective* improvisation, and the engineering is sensitive to that continual interplay of mutually supportive surprise. The way this is recorded, you have to hear everything together, and that, after all, is the point of this music.

Congratulations to Enja for both of these really original sets, and to Polygram Classics for distributing them in America.

BOBBY JONES: *Hill Country Suite*. [Horst Weber and Matthias Winckelmann, producers; Heinz Gärtig, engineer.] Enja 2046.

BENNIE WALLACE: *Big Jim's Tango*. [Horst Weber and Matthias Winckelmann, producers; David Baker, engineer.] Enja 4046.

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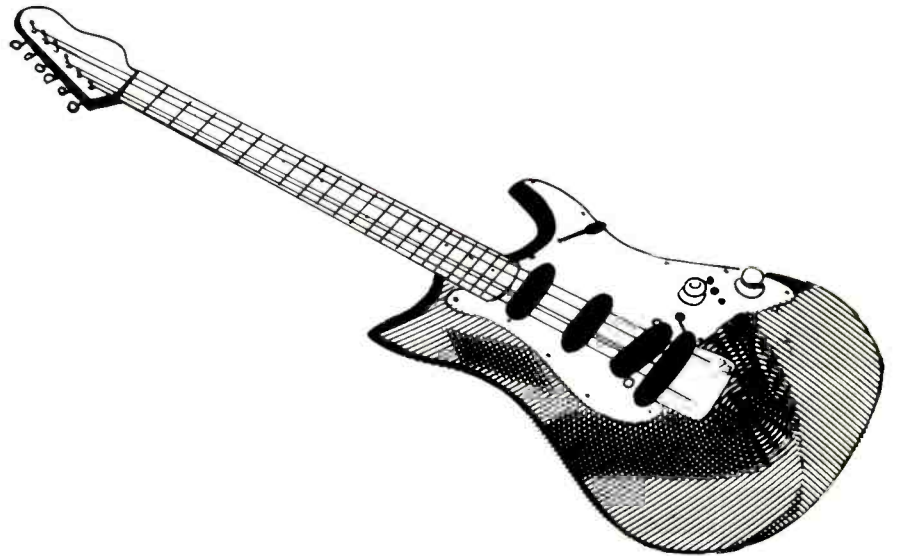
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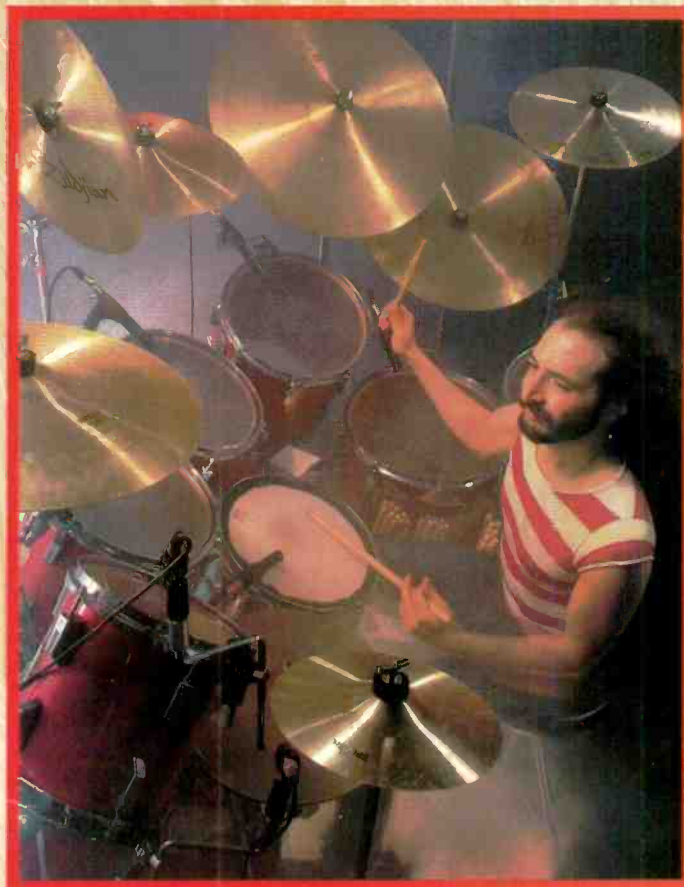
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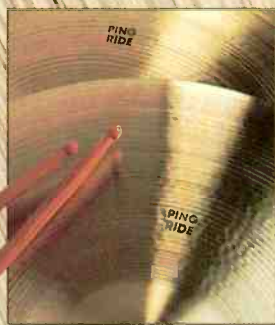
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