BUILD Your Own LED METER

Electronic MUSICIAN

APRIL 1988

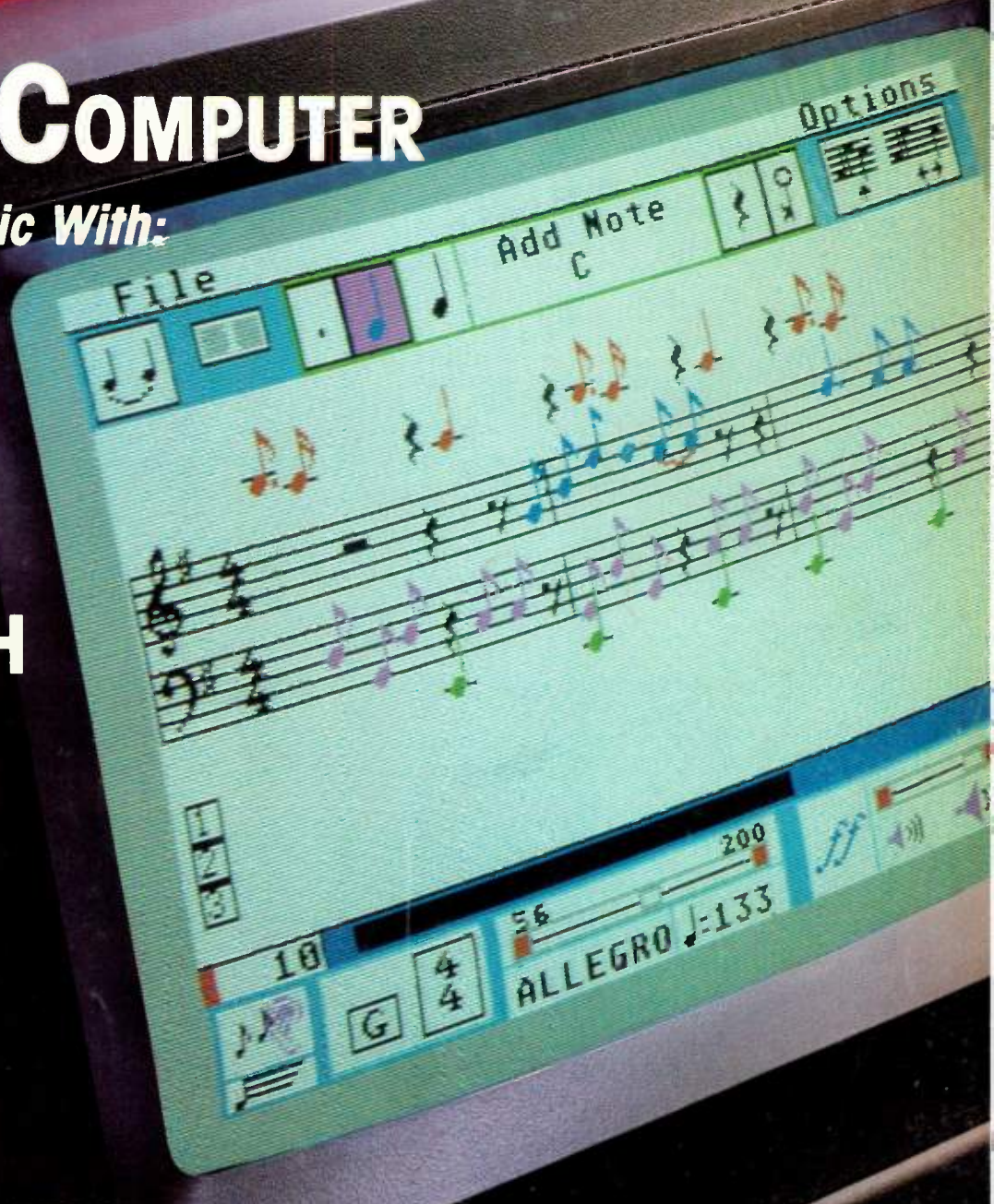
A MIX PUBLICATION

U.S. $2.50/CANADA $3.50

THE MUSICAL COMPUTER

Making MIDI Music With:

- AMIGA
- ATARI ST
- IBM PC
- MACINTOSH



Kurzweil K1000 Keyboard • Akai MPX820 MIDI-
...er • Nady, Chandler, Bartolini Hi-Tech Fuzzboxes
...s Patch of Shades • Digital Music Corp. MX-8
...witcher • Book: The Complete DX7II

Our Specs Are More Importantly, So

At Korg, one premise guides digital engineering: technology doesn't really achieve anything unless it brings you closer to your music. No matter how innovative a design appears on paper, the specs don't add up to anything unless they produce an instrument with superior sound and feel.

The DSM-1 Digital Sampling Module

Our new rack mount DSM-1 Digital Sampling Module is a case in point. To take Korg sampling a step further, our engineers used the latest technology to set new standards of sampling accuracy and realism. The DSM-1 has extended memory (a full Megaword) and sampling rates of 16, 24, 32 and 48 kHz. With 16 fully independent voices, 16 individual outputs and a mix out. Plus multi-timbral, multi-MIDI channel operation for total flexibility.

With all of this, the DSM-1 is one of the easiest samplers to learn and use. The control format is thoughtfully designed to use familiar synthesis parameters, so you can edit sounds quickly and easily. Yet the logical design will take you as deep into the sample recording/editing process as you want to go. There's even a high speed RS 422 data port to give computer software quicker access to internal memory.

The DSM-1 stands out from the crowd of current samplers as a truly advanced sound creation tool, one that will strengthen any MIDI system. The perfect complement for the DSS-1, it can use any sounds from the already extensive DSS-1 sound library, as well as its own high capacity library disks. There are over 70 DSS-1 and

Impressive. Are The Sounds.

DSM-1 disks available now, with hundreds of sampled sounds and synth waveforms.

The DSS-1 Digital Sampling Synthesizer

The DSS-1 has been making giant strides of its own. New options let you double, quadruple or multiply internal memory up to eight times (as much as 2 Megawords of sample storage). You can access hundreds of sounds instantly, with a touch of a button.

Performance improvements include new, enhanced disk operating software that cuts the internal disk's loading time in half. And there's an SCSI (Small Computer Systems Interface) port that communicates with one to seven external hard disk drives. It lets you store up to 99 Systems per drive, then load any one in a few seconds.

The SG Sampling Grands

The name, the look and the crisp, positive weighted actions are the same; the sound is more realistic than ever. The *new* SG Sampling Grands have four times the memory of their highly regarded predecessors. That lets us use longer samples and more of them to create a sound that recreates the original acoustic and electric pianos with startling accuracy. The new SG sound is also available as a retrofit to your SG-1 or SG-1D. And there are now ten new SG voice cards available (many with split keyboard sounds) to expand your creative expression.

Korg sampling is for players who delight in the complexity of acoustic sounds — and in the unusual variations that conventional instruments can't produce. Only the DSS-1 and DSM-1 deliver the unique combination of advanced sampling and additive synthesis. So if you'd like to shorten the step from inspiration to expression, investigate the new high-performance DSS-1, the newly expanded SG-1D and the new DSM-1 at your Korg Sampling Products dealer. When it comes to creative sampling, studio efficiency and on-stage flexibility, there have never been digital instruments more musical than these.

KORG® Sampling Products Division

SAMPLING IS ONLY THE BEGINNING

DSM-1 features

- Memory: 1 Megaword (1.5 Megabyte)
- 16 voices assignable to 16 separate outputs + Mix out
- 64 split points
- Multiple Zones, Multiple Layers, 4-Way Velocity Switches and Cross-fades
- High Speed RS 422 port (SCSI interface option available soon)
- Linear and Equal Power Cross-fade looping
- Additive synthesis
- Media: High Speed, High Density 2 Megabyte 3½" disks. Reads DSS-1 disks

DSS-1 features

- Memory: 256 Kword standard
- 61 note velocity- and pressure-sensitive keyboard
- 8 voices, 2 oscillators per voice
- 2 programmable DDLs
- 32 Programs in memory, 128 on disk
- Velocity Switching
- Sample Editing: Mixing, Linking, Reversing, Truncating, Sample Address editing
- Autolooping with Normal and Back-and-Forth modes
- Program Parameters include Octave setting, LFO's, Noise generator sync, 12 and 24 dB/octave filters, Resonance, two Envelope Generators per voice, Unison, programmable EQ, extensive pressure and velocity routing

New DSS-1 Memory Update

- Optional Memory Expansions: 512K (2X), 1 Meg (4X), 2 Meg (8X)
- SCSI Data Port for communication with external hard disks (up to 120 Meg drives)

New SG Sampling Grand Features

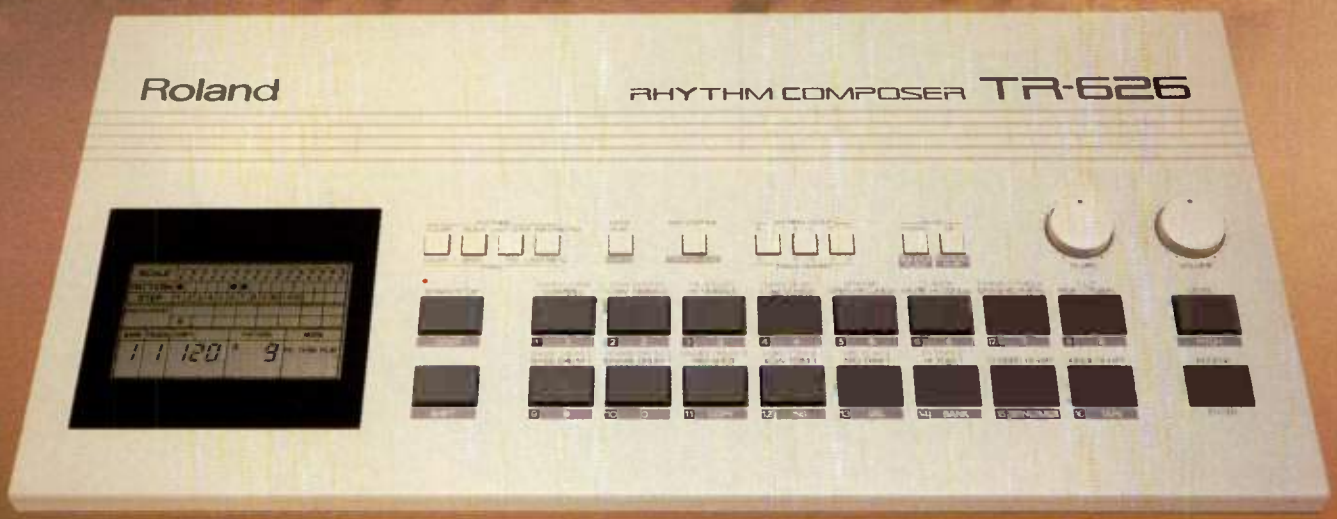
- 1 Meg memory
- 10 SG ROM sound cards available
- Superior audio performance with new, improved piano and electric piano samples
- MIDI Pitch/Mod wheels
- Local On/Off
- Retrofits available for SG-1 (76 note) and SG-1D (88 note) pianos

For a free catalog of Korg products, send your name and address, plus $1.00 for postage and handling, to: Korg USA, 89 Frost St., Westbury, NY 11590 or to Korg USA West, 7886 Deering Ave., Canoga Park, CA 91304

Exclusively distributed in Canada by: Erikson Music, 378 Isabey Street, St. Laurent, Quebec H4T 1W1

® Korg U.S.A. 1987

THE DRUM MACHINE WITH TODAY'S SOUNDS, TOMORROW'S FEATURES AND YESTERDAY'S PRICE



Assuming you haven't already heard its incredibly low price, the first thing that will impress you about the new Roland TR-626 Rhythm Composer is the sound. We went back to the studio to create all-new high-resolution PCM samples of the finest percussion instruments to give you the latest in today's sounds. And that's just what you'll find on the TR-626: round woody-sounding basses, tight full snares (even including a gated-reverb snare) toms deep enough to please a Phil Collins, clear, vibrant cymbals, and the most complete selection of latin percussion instruments that'll really add some spice to those dance tracks. Thirty digital samples altogether, and each one is tunable as well as level programmable.

Then, since we'd come up with all-pro sounds, we just had to balance it out with the state-of-the-art in pro-performance features: like the most musically-natural and accurate programming software anywhere — combining the best of real-time and step programming with visual accuracy through its sophisticated LCD Display Window. To make the rhythms sound as real as the samples, we've included shuffle, flam and accent features.

On the TR-626 you'll also find songs up to 999 measures, eight assignable outputs for separate processing of the instrument samples, stereo mix, tape sync, MIDI sync and trigger out. Finally, in a fit of nostalgia, we threw in a price so low it sounds like the good old days: just $495.00.* But probably the most important performance feature is one you won't find anywhere else — and it's an idea that makes the TR-626 the first drum machine that's really usable in live performance. We've added a Memory Card Interface that allows you to load-in stored songs and patterns as fast as you can push a button. Up to 18 songs worth of drum data can be saved and loaded in a flash from the credit-card sized M-128D Memory Card.

If you think all this sounds like the most exciting drum machine to come down the pike in a long while, you're right. Because while the idea of a drum machine isn't new, the idea of a drum machine with some really new ideas of sounds, features and price is positively revolutionary. See and hear the TR-626 today at your Roland Dealer. *RolandCorp US 7200 Dominion Circle, Los Angeles, CA 90040 (213) 685-5141.*

Roland®
WE DESIGN THE FUTURE

© 1987 Roland Corporation US

*Suggested Retail Price.

VOL. 4, NO.4 APRIL 1988

Electronic MUSICIAN

A MIX PUBLICATION

DEPARTMENTS

6 Editor's Note
8 Letters
13 What's New
116 Re:Views
119 Classifieds
122 Advertiser Index

COVER

Adding some notes of color to this month's cover is Activision's Music Studio composing/scoring/synthesis software, running on an Atari 1040ST. Designed by Audio Light, Inc., the program is also available for the Commodore 128, and Version 2.0 (for the Amiga and Apple IIGS) should be out this month. Photo by Tony Carlson.

Electronic Musician is published at 6400 Hollis St. #12, Emeryville, CA 94608 and is © 1988 by Mix Publications, Inc. This is Volume Four, Number Four, April 1988. *Electronic Musician* (ISSN: 0884-4720) is published monthly. Second Class postage paid at Berkeley, CA and additional mailing offices. All rights reserved. This publication may not be reproduced, quoted in whole or in part by mimeograph or any other manner without written permission of the publishers.

Subscriptions are available for $22.00 per year (12 issues). Single or back issue price is $3.50. Subscription rates outside the U.S. are $34.00 per year.

Send subscription applications, subscription inquiries and changes of address to *Electronic Musician*, PO Box 3747, Escondido, CA 92025 or call one of these toll-free numbers: in CA, 1-(800) 255-3302; outside CA, 1-(800) 334-8152.

Address all other correspondence to *Electronic Musician*, 6400 Hollis St. #12, Emeryville, CA 94608, (415) 653-3307, FAX: (415) 653-5142.

We are interested in receiving unsolicited manuscripts but cannot be responsible for them and cannot return them unless they are accompanied by a stamped, self-addressed envelope. We urge you to send for our "How to Write for EM" guidelines.

Display advertising rates, specs and closing dates are available upon request.

To the best of our knowledge the information contained herein is correct. However, Mix Publications, Inc., its editors and writers cannot be held responsible for the use of the information or any damages which may result.

ARTICLES

SPECIAL SHOW REPORTS

National Association of Music Merchants by Craig Anderton and EM staff **13**
Disneyland was right around the corner, but for the music industry, Tomorrowland was the January NAMM show.

Consumer Electronics Show by Peter Hirschfeld and Tim Tully ... **19**
Great-sounding musical electronics are finally available at consumer prices: EM reports on the latest.

COMPUTERS

Introduction by Craig Anderton **33**

Music on the Amiga by Dean Friedman **34**
Remember the tortoise and the hare? The Amiga 500 and 2000 are now making their bid, and Amiga owners may be holding a winning ticket.

Big Blue Does MIDI by Carter Scholz **46**
They're getting cheaper, more powerful, and—with some hot new music software—IBM PCs are moving out of the board room and into the studio.

The State of the Macintosh by Geary Yelton **56**
It started with 128K of RAM, no music software, and a closed architecture, but evolution and dedicated software developers have turned the Mac into a first-rate music computer.

The Atari Arrives by Jamie Kurtz **64**
Built-in MIDI ports and a recent spate of music software have made the ST the computer of choice for budget-conscious musicians.

Mac Power User = Power Muser (Part 1) by Christopher Yavelow **72**
When the muse visits, make sure your computer gives you the power to make her feel truly welcome.

TIPS

Insider Info: Tips from Our Readers **86**
Sync your tape, transfer your data, achieve success, tame your guitar synth, and modify your projects.

SOFTWARE

Chord—An Algorithmic Composing Program in Atari ST BASIC by Jim Johnson **22**
This program may not generate a platinum record for you . . . but then again, it just might.

DO-IT-YOURSELF

LED Bar Graph Peak Detector by Thomas Henry **80**
Build this simple, inexpensive, illuminating way to see what's going on in your circuits.

REVIEWS

First Take **88**
MX-8 MIDI Patch Bay, Patch of Shades, Book: The Complete DX7II

Akai MPX820 by by David Karr **94**

Attack of the High Tech Fuzz by Alan Campbell **104**

Kurzweil K1000 by Alan Campbell **110**

Editor's Note

Our last reader survey produced some very interesting results that we thought would be of equal interest to you. Here are some of the highlights:

Fifty-five percent of you are professional musicians (24% full time, 31% part-time). Thirty-nine percent are amateur musicians, and—get this—61% of you made a demo tape or record in the past year! That's a lot of recording activity out there, which we've already taken into account in our editorial mix.

Regarding computers, 81% of you own a computer, 60% use a computer at work, and 29% are computer professionals. Many readers own multiple computers, and the percentage of ownership breaks down as follows: 29% Commodore 64/128, 25% IBM PC or compatible, 20% Macintosh, 18% Apple II series, 16% miscellaneous, 12% Atari ST, 8% Amiga, and 5% Atari 130XE. Also, 46% of you belong to a telecommunications network of one kind or another (PAN and CompuServe were mentioned a lot).

Sequencers are the most prevalent type of software (44% currently own, 29% plan to buy in the next six months), followed by patch librarians (25% own, 29% plan to buy), transcription/notation (18%/25%), sampler waveform editors (10%/28%), sampling software (9%/25%) and educational (8%/11%).

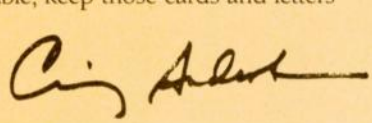
You also have a lot of equipment: 90% own microphones, 69% mixing boards, 80% VCRs, 36% 4-track cassette recorders, 39% CD players, and a surprising 21% own video cameras.

All of us were very gratified to see that 92% of you keep your issues indefinitely (so that's why we still get letters about stuff that appeared a year and a half ago), 4% clip certain articles, 3% pass the issue on to a friend, and less than 0.5% throw away the magazine when done.

Editorially, your wishes were clear: you like our reviews, especially because of their in-depth/hands-on nature often not found in many other magazines; if you want interviews, you'll buy other magazines that specialize in that; and you have little interest in video. Many readers expressed wholehearted support for do-it-yourself hardware and software articles, which we will certainly continue to run (and hopefully, we'll be able to include more of these in the future). Robert Carlberg's reviews were, as usual, controversial—the people who love his column really love it, and the people who don't were equally vocal. We took your comments into account, and now Robert has a new format that he likes better, and apparently, so do you.

The biggest complaint was that there weren't enough pages in the magazine. Some people even suggested that we publish every two weeks! Well, the number of pages is up to the advertisers—more advertising means more pages. As people buy more music gear, manufacturers have more money for advertising. We hope that February's 140-page issue—our biggest ever—is a sign of things to come.

Am I bullish on this magazine? You bet. Reading your comments and words of encouragement made us all feel that much closer to each one of you. We sure loved reading all the compliments on a job well-done (hey, who wouldn't!) but appreciated the many valuable suggestions too. In fact, several articles we've run in the past few months were due directly to your ideas. Your feedback has been invaluable; keep those cards and letters coming.



Electronic MUSICIAN

Editor-in-Chief Craig Anderton
Senior Editor Vanessa Else
Editor Tim Tully
Managing Editor George Petersen
Art Director Kathy Marty
Designer Deborah Villa
Production Alicen Armstrong, Gretchen Treuting
Computer Illustrator Chuck Dahmer
Office Manager Nancy Woodruff

Director of Advertising and Marketing
Peter Hirschfeld
Eastern Advertising Manager
Chris Albano
Northwest Advertising Manager
Harton Firmin
Southwest Advertising Manager
Ken Rose
Southwest Sales Representative
Dennis Gray
Marketing Assistant
Elise Malmberg

Publisher/General Manager Mark Gunther
Associate Publisher David Schwartz
Associate Publisher/Corporate Marketing Director Hillel Resner
Assistant to the President Rachel McBeth

MIX PUBLICATIONS STAFF

Editorial Assistants
Karen Dunn Linda Jacobson
Josh Gressel Steve Oppenheimer
Sales Administrator
Neil McKamey
Marketing Assistant
Jane Byer
Sales Assistants
Randy Alberts Carol McMurray
Production Director
Anne Letsch
Production Assistant
Kathy Badertscher
Advertising Traffic Coordinator
Donna Burriston
Typesetting
Connie Wiggins Linda Dierking Janice Leber
Classifieds Department
Lauri Newman, Robin Boyce, Yvonne Bennett
Circulation Manager
Nick Clements
Circulation Assistant
Cindy Lukk
Controller
Craig Kennedy
Credit Manager
Ann Cuadra
Accounting Staff
Cathy Boyum Linda Looper Lea Lewis
Mix Bookshelf
Craig Wingate Camille Coyne Paul Grover
George Keres Brad Smith Todd Souvignier
Office Manager
Barbara Kochiovelos
Receptionist
Jenny Hoogstrate

MIX PUBLICATIONS INC.

Chairman/CEO	Rudy Hurwich
President	David M. Schwartz
Vice-President Marketing	Hillel Resner
VP, Finance & Administration	Mark Gunther
Director	Penny Riker Jacob

NATIONAL EDITORIAL, ADVERTISING and BUSINESS OFFICES
6400 Hollis St. #12, Emeryville, CA 94608
(415) 653-3307, FAX: (415) 653-5142
SOUTHERN CALIFORNIA ADVERTISING OFFICES
(818) 709-4662/4

Works with the Akai S900™. Soon to be available for the E-mu Emax,™ Roland S-50™ and Ensoniq EPS™!

Creator

Advanced Sequencer for the Atari

Whether you're purchasing your first sequencer or preparing for your next album, Creator™ will allow you to work faster than you ever thought possible. With features like multitasking, which—among other things—lets you load a sequence *while another is playing*. Or "Pseudo Events" recording, which allows you to record on-screen operations like tempo changes and mutes right along with your music. Enhanced graphics let you flip between screens so quickly, you'll think someone installed an accelerator in your ST.

And Creator knows that musicians change their minds. So all quantizing is performed in real-time, leaving your original data unaltered. Tracks that have been merged can always be unmerged. There's even an undo command.

If you're into numbers, Creator will dazzle you. Recording on over 1,000 tracks. Simultaneous playback of up to 64 tracks. Looping with up to 16 overdubs. Assignment of up to 64 individual MIDI channels (for use with the Export™ MIDI Expansion Interface).

See Creator at your nearest Digidesign dealer—then bring your Atari ST up to speed.

Runs on a 520, 1040, or Mega ST; monochrome or color monitor.

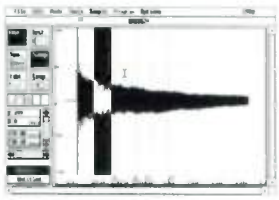
Developed by:

C-LAB SOFTWARE

© 1988 Digidesign Inc. Creator and Export are trademarks of C-Lab Software.

SampleVision

Sample Editing for your IBM



At last—a full-featured waveform editing/digital signal processing program for your IBM PC! SampleVision™ is endorsed and distributed by Digidesign, the leaders in sample editing software.

Using SampleVision's mouse-driven graphic user-interface with variable resolution waveform display, you can edit waveforms with up to 1/50,000th of a second accuracy. Sounds can be analyzed using the three-dimensional FFT frequency analysis, then modified using SampleVision's digital equalizer. Loops can be created easily using SampleVision's visual loop editor and crossface looping feature. You can even create your own sounds using SampleVision's digital mixing and merging capabilities. And SampleVision comes with full-color graphics!

Requirements:

- A true IBM-compatible computer (PC/XT/AT) with 640K memory.
- Dual floppy disk drives or hard disk (recommended).
- Graphics adapter such as Hercules or IBM Enhanced Graphics.
- Roland MPU-401 or comparable MIDI interface.
- MS-DOS or PC-DOS 2.1 or later.
- A mouse and hard disk are not required, but strongly recommended. Digital Research GEM System is included.

Developed by:

turtle beach softworks

Turtle Beach and SampleVision are trademarks of Turtle Beach Softworks.

digidesign

1360 Willow Road, Suite 101, Menlo Park, CA 94025. (415) 327-8811

Who Was That Masked Piano?

I really enjoyed your review of *Lisztronique* in the August 1987 issue. It may have been a contributing factor in the decision for the Columbia Record Club to pick it up and feature it, and for that, I thank you. However, there was one inaccuracy. Steve Birchall, who wrote the album's liner notes, focused so much attention on the Kurzweil 250 that many were led to believe that it was the piano instrument used. In fact, I used the Kurzweil very little on the Liszt recording; the piano used was a Roland RD-1000.

Jeffrey Reid Baker
New York

Life as an Independent

I want to sincerely thank you for hitting a rather big nail right smack on the head in your December '87 editorial (concerning the importance of copyright for artists)—specifically, your comments about distributors and their "inability" to pay independents on time. This subject has been nagging at me for the past few months and I was seriously starting to wonder whether I was just guilty of Complainer's Syndrome. Apparently not; this subject seems to be on a lot of people's minds these days.

I run my own label that is dedicated to putting out my own music, as well as projects of other artists with whom I am closely involved. As an engineer/producer I also work with a number of other independent labels (Rabid Cat, Mordam, Homestead, Alternative Tentacles, and in the recent past I did an enormous amount of work with SST). So basically, all of my income is derived from payments by distributors to either the labels I work with or to myself directly. Need I say more? Yes.

There is a glut of independent releases these days on vinyl and cassette and, to a lesser extent, CDs. It does seem as if CDs are taking priority and, of course, you know the wide-ranging implications of that. Considering this and the rising costs of advertising in some of the independent music journals (some of which tend to have irregular publishing schedules), I think that the "Independent/Alternative Music Industry" will soon split into two sub-industries which would consist of:

1. The larger independents who can afford to put out "continuous" product, pay the higher costs of advertising, and attend those wonderful semi-annual "New Music (spelled m-o-n-e-y) Seminars," and...

2. Everyone else who cannot afford the above, but still believes in the theories of free enterprise and open markets.

Now, consider that independent artists from Sonic Youth to The Texas Instruments to Wendy Carlos to Mojo Nixon to Holly Near to Klaus Schulze to Christy Moore to ad infinitum are competing for airplay and sales within what is basically the same marketplace. As the economy tightens, so will "alternative" playlists. Perhaps what tops it all off is the fact that most distributors also operate their own in-house labels, and that can be a serious problem. It's standard procedure for an independent label to include the names of its distributors in advertisements; this practice tends to increase a label's visibility and therefore, attract those retailers who might not otherwise buy the releases.

So, the big question here is, are we smaller independents paying out of our own pockets for the privilege of funding and advertising another company that will, in turn, allow us the additional privilege of not being able to collect on accounts payable within a reasonable amount of time from when they come due?

Shortly before I read your editorial I began discussing some of these issues with a few of the magazines I advertise in (*Sound Choice*, *Puncture*, *Option*) hoping to generate some interest in the idea of seeing in print a comprehensive article about distribution from the distributor's point of view. They probably have their own problems, and we need an article based on information rather than accusations.

Anyway, I think I've made my point. By the way, I thoroughly enjoy EM. It's informative; has a solid, sober point of view; and maintains a sense of humor. Keep it up!

Glen M. Lockett
Texas

Attention Mail Order Buyers

I have subscribed to your magazine since its birth, and I would just like to say "hats off" to you and your entire staff of writers. You have turned MIDI and computer music into something that we can all understand and enjoy, and made this "new" technology available to all of us in your wonderful articles and editorials. Thanks a million (bytes)!

Now I would like to address my problem/remedy to your readers.

I own and operate a post-production studio in Burbank, CA, and have made a considerable investment in software. Unfortunately, very recently, I was "burned" for the very first time in a mail order software scam. I realize that your magazine is not a forum for mail order rip-offs, but I would like to share my experience with your readers in the hopes that it will save them the frustration I have just experienced.

The first rule is *caveat emptor*...let the buyer beware. With so many incredible products on the market, sometimes even some of the most experienced of us can fall for an advertising scam. I recently received a top quality pamphlet in the mail advertising "The Best Emax Samples on the Market." This brochure claimed E-mu factory approval, a lifetime warranty, and praises by such artists as Stevie Wonder and Tony Banks. Well, maybe I should have phoned Stevie or Tony myself, or at least had the sense to contact E-mu. After sending the company a check for over $100, I received five homemade, hand-labeled, terribly useless sample disks—one of which was completely blank! After returning these disks with a letter explaining my dissatisfaction and demanding a refund I now realize that they not only intend to not make good on the disks, but also to keep my money. I have received no response after several follow-up letters, and five phone calls to their answering machine, all of which were unreturned. Months have passed. The company seems to have vanished into thin air.

I did not send this letter to discredit anybody, but to give all of your readers a set of rules that I believe will minimize their chances of being taken advantage of, as I was, in this new age of computer music. The three "safe software purchase commandments" I suggest are:

1. *Don't believe everything you see in print.* Never take for granted that everything you read in an advertisement is absolutely true! There are individuals out there just waiting to take advantage of your trusting nature. They know that you are very excited with your new machine and want the best programming that you can get. They will tell you everything that you want to hear, but not necessarily the truth.

2. *Have patience when making a purchase.* I know it's hard when you first get a new toy, but be patient with mail order inquires. Many legitimate programmers offer a "demo" of their patches/samples for a small fee (sometimes for free). A $5 investment in a demo disk or tape can save you from making a wrong purchase.

3. *Try before you buy.* If at all possible, get a hands-on demo of the product(s) you are considering for purchase. Make sure that "what you hear is what you get!" This is the safest way to insure yourself against bad purchases.

There is a lot of great software out there just waiting to complement your musical works, but remember that just like all the other

ILLUSTRATION BY LANEE LA'SHAGWAY

products that you purchase on a day-to-day basis you must use caution.

Larry Dunn
Talance Recording
California

Larry—Thanks for the warning. Most mail order concerns are reputable, but every now and then a crook surfaces. When we receive a reader complaint about a company, first we see if the problem is resolvable. Many of these small companies are not models of efficiency; orders go out late, mistakes are made, and so on. Sometimes the problem lies with the consumer. I remember one company that received cash in the mail from someone who forgot to include their name and address! Only after getting an irate letter did the company finally find out who had sent the money, and the problem was solved.

If we receive more than one complaint about a company, we do a little investigating of our own. If we feel a company is not acting in an ethical manner, we will not allow them to advertise in the magazine. Beyond that, there's not much we can do; we're a magazine, not a legal firm. However, for legal remedies the Better Business Bureau can guide you in the right direction, as can the Federal Trade Commission, which has spelled out very clear and, in my opinion, fair guidelines concerning mail order purchasing. Again I'd like to stress that the unethical operators are the exception rather than the rule; it's highly unfortunate that one or two bad guys out there can cast a shadow of doubt over the conscientious companies that are proud of their work and take good care of their customers.

Making More Sense Out of Cents

As a follow-up to Walter Daniel's wonderful article and Wendy Carlos' response, I would like to add the following:

The Yamaha DX7II series uses 1,024 equally tempered micro-intervals per octave, yielding a conversion from cents to Yamaha intervals of 1,024/1,200 (64/75). This yields the conversion formula $Y = C \times 64/75$, where **Y** is the Yamaha interval and **C** is the offset in cents.

Wendy's formula for converting cents to ratios could be equivalently expressed as $R = 2^{C/1,200}$. For the Yamaha replace the 1,200 with 1,024 yielding $R = 2^{Y/1,024}$. The inverse of this formula allows ratios to be converted to cents or Yamaha offsets: $C = 1,200 \times \ln(\text{ratio}) \div \ln(2)$ or $Y = 1,024 \times \ln(\text{ratio}) \div \ln(2)$.

An interesting book exploring Hindu, Arabic, and Chinese tuning systems is Alain Denielou's *Introduction to the Study of Musical Scales* (Indian Society, 1943). To explore the tunings and orchestrations of Bali I would suggest Colin McPhee's *Music in Bali* (Yale University Press, 1966). One of the first scales presented in the book is remarkably similar to one encountered in Wendy's Balinese cut on her album *Beauty in the Beast!*

With this information all you DX7II users have no excuse not to get out those calculators and computers and *go to it!*

Craig Paul
Kansas

Additions and Corrections

A review of Agent and Courier 1.21 software, "Silicon Strollin' Through Telcom Terrain" (November '87 EM) was missing a few screen dumps. Also, there have been some changes in the program and pricing since the article was published. Those who would like an updated copy of the author's original manuscript can send a self-addressed, stamped envelope with 90 cents postage, along with a written request for the author's updated manuscript, to "Silicon Strollin' Through Telcom Terrain," c/o *Electronic Musician*, 6400 Hollis St. #12, Emeryville, CA 94608.

In the "First Take" review of Upward Concepts' Mirage Multi-Temperament Disk (August 1987, page 16) a couple of the scale names were spelled incorrectly. The correct ones are Van Zwolle and Werkmeister.

Fig. 7, the schematic for the "MIDI Switcher Primer" (August 1987, page 27) shows pin 11 of IC1 going to ground which is incorrect; it should show pin 10 connecting to ground instead. You can verify this by looking at Fig. 8, the IC pinouts, which indicates that pin 10 is the ground connection for IC1.

In calculating equivalent resistance (page 74 of October 1987) the equation for resistances in parallel is incorrect as given; it should read:

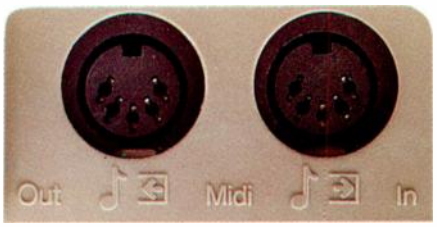
$$\frac{1}{R_{equiv}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \cdots + \frac{1}{R_n}$$

therefore

$$R_{equiv} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \cdots + \frac{1}{R_n}}$$

At the end of the article "Alternate Scales on the Commodore 64: A Tuning Demonstration Program" (October 1987), the sentence just before the sub-heading "Conclusions" (page 43) should read, "See Reference 1, below, for details of the SID chip."

OK everyone—write these corrections into your back issues so everything will be accurate and up-to-date, and you'll never need to wonder if you missed any changes.



THE DIFFERENCE BETWEEN A COMPUTER THAT MAKES MUSIC, AND ONE THAT MAKES TROUBLE.

Of all the personal computers you can buy to make music, none makes it easier than Atari computers.

That's because, unlike the others, the Atari 512-kilobyte 520ST™, 1-megabyte 1040ST™, and 2- and 4-megabyte MEGA™ computers have more of what you need already built-in.

Here's what we mean.

MIDI. The Key to Electronic Music.

As you may already know, the MIDI interface is the key to electronic music.

If you're unfortunate enough to not be working with an Atari, you'll have to buy an interface separately.

And make sure it's compatible with the rest of your equipment, not to mention your software.

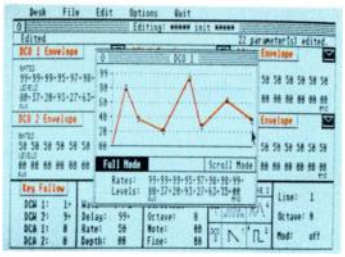
And then you'll have to make sure everything is installed correctly.

What's that like?

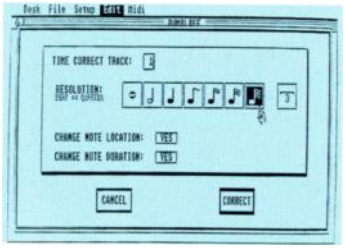
You know the song, "What are you doing for the rest of your life?"

Atari ST™ and MEGA computers, on the other hand, have a MIDI port built right into the back of the computer.

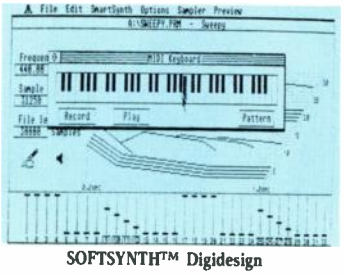
So you can connect all kinds of equipment—synthesizers, samplers, drum machines, SMPTE controllers, pitch-to-MIDI converters—as easily as plugging into an amp.



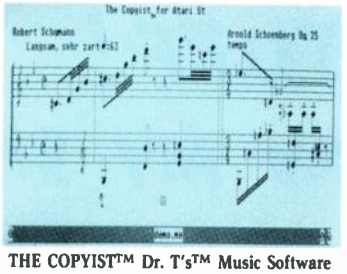
CZ-ANDROID™ Hybrid Arts™



MIDISOFT STUDIO™ Passport™



SOFTSYNTH™ Digidesign



THE COPYIST™ Dr. T's™ Music Software

A Musician's Music Box.

No other computer company has made the commitment to music and musicians the way Atari has.

That commitment, by the way, doesn't end with our hardware.

We're working in harmony with all the major music software houses to produce the software you want to make music with.

And building a distribution network of music dealers—not computer dealers—who know electronic music well enough to help you, no matter how much you know.

This Should be Music to Your Ears.

The Atari ST and MEGA computers are just parts of a full system. So there are lots of things you can add when you're ready.

Like our MEGA File 20™ 20-megabyte hard disk for storing your magnum opus.

And our SLM804™ laser printer for publishing it.

Plus one of the largest libraries of music software in the industry.

But perhaps the nicest thing about an Atari is how little it costs.

With what you save on an Atari, you could buy yourself a synthesizer. And some software.

Want to learn more? Write or call for the name of the Atari music dealer nearest you.

ATARI®

Atari Corporation • Attention: Music • 1196 Borregas Avenue • Sunnyvale, California 94086 • Tel: (408) 745-2367

ATARI, the ATARI logo, MEGA, MEGA File 20, Power without the Price, SLM804, ST, 520ST, and 1040ST are trademarks or registered trademarks of Atari Corporation. Other brand or product names are trademarks or registered trademarks of their respective holders. © 1987, Atari Corporation. All rights reserved.

GOOD STUFF!
BLOWS AWAY MY SM-87/85's
WITHOUT CONDENSER PROBLEMS*

If you are a vocalist who performs in front of a live audience, chances are you use a hand-held microphone within three inches of your mouth, then "work" the mic to enhance your sound.

The 457 is ideal for this kind of use. On the market only a few months, it's already on its way to becoming the world's premiere concert microphone. Its carefully contoured frequency response gives you full, rich sound without boominess. And you'll enjoy its excellent off-axis rejection with gain-before-feedback that's 6 dB better than "world-standard" designs. And its rising presence peak that sends clean, crisp sound all the way to the back rows.

Try the 457 in your next concert. It's tailored to your kind of close-up vocals. The Warm-Grip™ feels good. The sound "feels" even better.

Electro-Voice®
EV®
a MARK IV company

To learn more about N/D Series microphones, see your Electro-Voice dealer or write Electro-Voice, Inc., Dept. N, 600 Cecil Street, Buchanan, MI 49107.

**An actual comment made by N/DYM user Ken Freeman, San Diego, CA. All user comments quoted in advertising are on file at the Electro-Voice corporate headquarters, Buchanan, Michigan.*

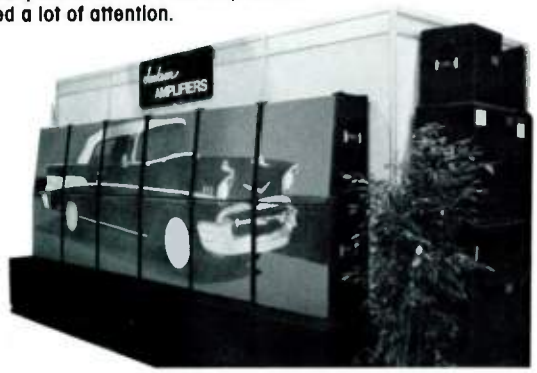
Special Report:

WINTER '88 NAMM SHOW

THE NATIONAL ASSOCIATION OF MUSIC MERCHANTS holds two trade shows a year, where products are introduced to music store retailers while the press carefully monitors the action. NAMM is where fortunes rise and fall, trends become evident, and rumors are both started and finished.

So what does all this mean to musicians? Here's a view of What's Hot and What's Not, with the standard disclaimer that we didn't get to see everything.

With heavy metal on the rise, amp stacks garnered a lot of attention.



WHAT'S HOT

1U rack mount units. Everybody's trying to squeeze stuff into a single-space rack format. Roland even had a 1U sampler with a 3.5" disk drive in it.

Heavy metal and guitars. Maybe it was just the venue—Los Angeles is the heavy metal center of the USA—but I saw more denim jackets, teased hair, and flashy guitar players per square inch than at any NAMM show in the last few years.

Uncertainty. The stock market crash and the weakness of the dollar threw some monkey wrenches into the standard NAMM equation. Price increases were the order of the day for Japanese and European products, and companies didn't seem too eager to spend lots of money on lavish exhibits or incredible new product rollouts.

Infinite sustain for guitar. Sustainiac is no longer the only game in town. Kramer had a guitar with a built-in infinite sustain driver for under $200, and Greg Heet, the inventor of the E-Bow, showed a prototype *polyphonic* infinite sustain device (the Kramer grabs only one note if you play a chord).

Permutations and combinations. Yamaha put a keyboard on the TX81Z and called it the DX11. Roland repackaged LA synthesis into several new products; Casio combined their MIDI guitar technology with a built-in sound generator; Kurzweil took the "greatest hits" sounds from their upscale K250 sampled keyboard and stuffed them into far more affordable packages; and *everybody* had a new rev of software.

Yamaha's DX-11— basically a TX81Z with a keyboard.

The consumer market. A lot of companies are going after the millions of "potential musicians" who want to play music, but haven't yet discovered MIDI and how it simplifies the music-making process. Typical products for this market include consumer-oriented electronic pianos (see the "Piano-ISM" sidebar), inexpensive software, Roland's turnkey sequencing system for the PC, and so on.

Systems and packages. All-in-one units like the Roland D-20 and Ensoniq SQ-80 combine synthesized sounds, a sequencer, and drum sounds for an all-in-one MIDI production center. Korg also introduced a series of integrated products designed to comprise a MIDI workstation.

Compatibility and porting. Being able to have your stuff talk to other people's stuff is considered a good thing, and between MIDI, the AES/EBU interface for digital audio, the MIDI Sample Dump standard, the MIDI Sequencer File Format standard, products that read SMPTE directly (the new Korg workstation products supposedly do this), and format converters that convert one format of digital audio to another (Yamaha showed two of these), we might be able to get all this stuff to work together after all. Even Simmons got into the act, by announcing a device designed to transfer digital sounds from the Sony PCM-F1 digital audio recorder to samplers that support the MIDI Sample Dump standard.

Miniskirts, microskirts, and nanoskirts. I know this isn't a tech item, but if it's true that trends start in L.A. and move eastward, we're going to be seeing a lot of legs this spring and summer.

HOT OFF-CAMPUS PRODUCTS

The NAMM show was too big for the Anaheim Convention Center, so a lot of companies set up suites in the neighboring hotels (in some cases in addition to booths on the floor). The off-campus products mentioned most often to me were OpCode's *Sequencer 3.0* (although everyone said you need a magnifying glass to read the icons and numbers on the screen); Coda's *Finale!* transcription program; the Buchla 700 (described in almost devotional terms by one showgoer); the Zyklus *MIDI Performance System*, a sequencer optimized in rather creative ways for studio *and* live performance sequencing; and the *MidiStar* MIDI wireless system from Gambatte! Inc. of Atlanta, Georgia.

Mellotron's *Studio Symphony*, also shown outside of the main

floor, boasted 16-bit, 24-voice, stereo sampling with 41.6 seconds of sampling at 48 kHz. Their audio design philosophy is stated as "cost is no object," but to those for whom cost is an object, Symetrix showed a system called RADAR (Random Access Digital Audio Recorder). Although the company called their sampling baby a "product concept" with no firm delivery date and a very tentative price point of $4,000, this black box uses a Motorola 56001 digital signal processor (controlled by a Macintosh), and offers SMPTE In and AES/EBU digital In and Out.

WHAT'S COLD

MIDI 2.0. People still haven't run out of ideas for what to do with MIDI 1.0 yet, so it's not surprising that discussion concerning any "MIDI 2.0" was non-existent at the show. The fixes and additions that have been made to the original spec put the need for a new spec much further off in the future.

5.25" disks. The 3.5-inchers are everywhere, and with Fairlight not at the show, 8" disks were nowhere to be seen.

Subtractive synthesis. Aside from the synthesizer that comes with Akai's EWI, no one seems all that interested in standard subtractive synthesis anymore.

Imported products. Due to the aforementioned state of the dollar, all of a sudden it seemed that American products were a lot more cost-effective than some of the imported alternatives.

PICKED TO CLICK

The AES/EBU digital interface. This digital audio interface promises to do for digital audio what MIDI did for digital data. Roland has made a heavy commitment to the AES/EBU interface; several other companies (in particular, Yamaha) also had products with the AES/EBU interface. And when both Roland and Yamaha get behind something, well....

Hard disks. Hard disks are a natural for high-density, fast storage—as Emulator II HD and Emax HD sampler owners already know. Sequencer files eat up memory pretty fast, as do samples, so the growing cost-effectiveness of hard disks is welcome for those applications too. Many programs virtually demand a hard disk, and prices are falling; to add further fuel to the fire, IBM recently announced a way to increase hard disk density by a factor of 50—are optical read/write drives dead in the water before they even got started?

Amiga software. This comeback is all the more surprising given that in the last show report, the Amiga was listed in our "What's Cold" section. But Intelligent Music was porting *M* over to the Amiga, Sound Quest showed their innovative and strikingly efficient Amiga editor/librarians, and Dr. T has now ported all of Bob Melvin's editor/librarians, along with the *Keyboard Controlled Sequencer*, over to the Amiga. The latter two emphasize the Amiga's multi-tasking capabilities—quite an advantage over other lower-

IN SEARCH OF THE PERFECT GUITAR CONTROLLER

ALTHOUGH I REALLY LIKE my Roland GM-70 MIDI guitar synth setup, I'm always up for something that will do an even better job of translating vibrating strings to MIDI. So once again, I found myself at a NAMM show searching for the Perfect Guitar Controller.

At a private dealer meeting, Yamaha finally showed the MIDI guitar they kept telling me didn't exist. According to rumor, it's a dedicated controller with equal-diameter strings; but since I didn't get to play it, we'll just have to wait for the official introduction before giving any kind of evaluation.

Casio showed a guitar with on-board sound generators (there's also a MIDI Out built into the guitar). Tracking seemed on a par with the GM-70, although I should mention that I didn't get to "tweak" the pickups on any of guitars I tried. For those who want to pick up a guitar, plug it into a standard guitar amp, and get instant synthesized sounds that track your playing reasonably well, this is a good bet for the price (around $1,400).

Passac's *Sentient Six* ($1,245) retrofits an existing Strat-style guitar, and recognizes the difference between up and down pick strokes; these can even be sent over different MIDI channels. There's an on-board sequencer, and the unit senses where on the string you pluck a note. It doesn't track perfectly either, but for those who like the sound of strings along with their MIDI and the unusual controller capabilities, this is well worth investigating.

Zeta showcased the *Mirror 6*, a MIDI guitar/rack combo for $1,495 that offered quite good tracking (it did an *excellent* job with string bending). Yet, like all the other MIDI guitars I have tried so far, it had a hard time dealing with the string muting techniques I love to use.

For bass players, the Valley Arts *MB-4* MIDI bass uses wired frets (string bending is therefore not detected), with extra pickups that sense velocity; get a complete MIDI bass for $2,695, a fret-wired neck for $1,975, or a retrofit for your existing bass for $1,695. You also get a cute little half-rack controller box thrown in.

Next stop was to see the Stepp *DGX*, the closest so far to the perfect controller. It's like the Stepp DG-1, but without the DG-1's sound-generating synthesizer. Since the DGX is a dedicated controller, tracking is very good; at $3,400 the DGX is far from being the people's MIDI guitar, but this is one class act. It plays well, looks elegant, and sports an informative LCD.

The *Beetle* guitar, though, was different from anything else at the show. For $1,295, you get a guitar with a MIDI Out jack, and exceptionally good tracking. The Beetle is a dedicated controller that uses sonar principles to measure where a string is being fretted. I don't know the exact theory of operation, but I do know that it tracked my style of guitar playing! This looks like an extremely promising development in guitar controllers.

So what does all this tell us? I'm sorry to say, not much. After all, before considering something the ultimate MIDI guitar, we need to know what it looks like going into a sequencer, whether it holds up after a while, whether not being able to mix in string sounds is a problem, and so on. We're currently setting up reviews for some of the products mentioned above; stay tuned to these pages for further developments.

Stepp DGX.

AFTERTOUCH™
OFFICIAL NEWS FROM THE YAMAHA USERS GROUP APRIL, 1988.

Drum machine gives musicians new creative license.

With the announcement of the RX7 Digital Rhythm Programmer, Yamaha has provided musicians with a powerful tool for writing.

The RX7 comes with 100 built-in PCM samples, providing access to a range of drum sounds, from acoustic to electronic. It offers a wide choice of percussion instruments and cymbals (including ¼-open and pedal hi-hat sounds)—as well as an assortment of instrument samples, such as electric guitars, basses, clavinet, marimba and brass.

Individual voices are assignable to any of the RX7's 24 keys, and can be edited for pitch, volume, pan and decay. There's also an effects feature that lets you add up to 3 delayed repeats of the sound, each with its own pitch, level and pan setting. There are 10 "drum kit" preset key assignments that can be called up instantly, including 5 that are user-programmable.

YAMAHA RX7 DIGITAL RHYTHM PROGRAMMER.

The RX7 lets you assign a single voice to be played in pitch over the top row of 12 keys. And it offers 8-note polyphony per voice, so notes that you've played aren't cancelled by successive drum hits. If you connect the RX7 to a MIDI keyboard like the DX7II, volume on each RX7 voice is controllable by key velocity. Voices also respond to pitch bend information from a MIDI controller.

In composing, you can create up to 100 patterns (99 measures in each), 20 songs and 3 chains. You can insert gradual tempo and volume changes into songs, and mark any part of a song for instant location. Plus, you're free to save all your patterns, songs and chains to cassette, RAM4 cartridge or computer.

The RX7 is available now at a suggested USA list price of $895.00 at authorized Yamaha Digital Musical Instrument dealers.

Hot Tips

Using the DX7IIFD to store data from an RX5. The RX5's bulk data dump is larger than the 20K buffer of the DX7IIFD. So it isn't possible to directly download RX5 bulk data onto a disk in the synthesizer. There is, however, a simple alternate method.

Save the memory of the RX5 onto a formatted RAM4 cartridge, then put it into the cartridge slot on the DX. Enter Edit mode on the DX and call up the Disk function via button #16. Select the CRT disk library and save the contents of the RAM4 cartridge to disk—effectively bypassing the DX's internal buffer.

To use your stored data from disk, just put an RX5-formatted RAM4 cartridge in the DX and transfer the file you want from disk to cartridge. Then use that cartridge in the RX5.

Questions

I have a QX1, and I'm using Step Time Entry to type in music that's beyond what I can play live. But how do I get it to sound more like a person and less like a computer?

The most obvious approach is to make alterations in your QX1 Banks after you've entered them in Step Time Record. Use Edit mode to make small changes in the Clock value for some of the notes. Just keep in mind that "human" feel isn't easy to define, and it may take a number of tries to find the approach that works best for you. Whatever you do, make sure you copy your original, unedited tracks. That way, you can always compare. And if you have to, you can create new copies for further experimentation.

AFTERTOUCH is a monthly newsletter filled with the latest on Yamaha products. Get a year's subscription free by writing to: AFTERTOUCH, P.O. Box 7938, Northridge, CA 91327-7938.

YAMAHA

Yamaha Music Corporation, USA, Digital Musical Instrument Division, P.O. Box 6600, Buena Park, CA 90622.

THE DOZEN MOST-MENTIONED ITEMS AT NAMM

Roland's D-20 is an all-in-one MIDI workstation.

AS I WALK AROUND A SHOW, people are always saying "you gotta see (fill in the blank)." There wasn't so much of that this time; the products and demos weren't all that incredible. Nonetheless, here are 12 that did make the cut.

Blank Software's Alchemy. The hype is that it's easy to use and does everything you want a sample editor to do; for $495, it should. I was sufficiently impressed with what it does for an Ensoniq Performance Sampler that I ordered a copy of the program on the spot.

Ensoniq Performance Sampler. Speaking of the EPS, this $1,995 sampler got high marks from showgoers. Quite a few people didn't particularly care for the feel of the keyboard, but seemed willing to cope with it for the sake of polyphonic aftertouch.

Tascam squeezes eight tracks on a standard cassette.

Tascam 8-track cassette. Can you believe *eight tracks* on a narrow little cassette tape? Tascam has done it, and added a bunch of convenience features as well, for $2,295. Sound quality is about the same as a regular Portastudio; the tape runs at twice normal cassette speed, and the response extends out to around 15 kHz. I still can't quite believe it, but it's true.

The Airdrums and E-mu demos. The Airdrums demo was pretty impressive—they seemed more like an "Airchestra," with inventor Pat Downes using these motion controllers to play drums, DX7 chords, and bass. The first part of the E-mu demo used a modified Teddy Ruxpin doll; the E-mutians had sampled the control track that affected the facial movements, and made some pretty bizarre substitutions. Sure, the equipment sounded great, but that's not why people were flocking to the demo.

Korg workstation products. The M1 Music Workstation features an on-board library of stereo, 16-bit sampled sounds, along with built-in digital effects, drum machine capabilities, and an 8-track sequencer. Other products in the line include the Q1 MIDI Workstation (a hopped-up sequencer) and S1 Production Workstation (a 16-bit sampling drum machine combined with the Q1).

SMPTE City SMPTE-to-MIDI converter. This Michael Stewart invention (he designed Kahler's "Human Clock" and authored the popular "Feel Factor" article in our October '87 issue) was described to me by one attendee as doing "about ¾ of an SBX-80 for about 1/3 the price." That seemed like a pretty fair description.

Roland D-20. Apparently the success of the ESQ-1 has not gone unnoticed. Roland's combination of keyboard, LA synthesis sound generators, 64 drum sounds, on-board sequencer, and 3.5" disk drive—all for $1,795—makes for a potent "MIDI workstation" that will give the ESQ-1 and SQ-80 some heavyweight competition.

Beetle MIDI guitar. This is the product *I* was telling people to see; check out the sidebar on guitar controllers.

Casio VZ-1 synthesizer. People weren't getting very excited about synthesizers, but those who were mentioned this one. It's basically an extension of the Phase Distortion technology (only richer), there's a real nice LCD, and it sounds good.

Valley Arts MB-4 MIDI bass. Several people told me "hey, there's a MIDI bass that really works." And it does (see sidebar on guitar controllers).

Modus Novus drum set. From out of left field comes a $2,500 drum kit for stand-up drummers that uses an entirely different kind of pad shape—a cylindrical bar. The demo was pretty effective, and you can play these sitting down if desired. Don't expect to see a set in your music store tomorrow, though; the inventor, Douglas de Forest, makes them one at a time, and is looking for some kind of licensing agreement.

And now, for something completely different: the Modus Novus drum set.

Digidesign DSP board. Last, but most certainly not least, Digidesign—like many other high-end companies—has fallen in love with the Mac II. The result is a digital signal processing add-on: get ready to use your mouse to set up EQ and other special effects, and also, expect to see additional software that takes advantage of this intriguing product's capabilities.

cost computers. I've always liked the Amiga; I'm glad to see that it's finally getting some of the recognition it deserves.

Guitar synthesis. Given past history, this is a long shot. But I think that controllers are maturing to the point where guitarists will be able to accept them. Granted Jimi Hendrix was great, but that was almost 20 years ago. The world is ready for someone to make the transition from electric to electronic guitar, and I think quite a few guitarists are going to try. Will the musical trend for the early '90s be heavy metal guitar synthesis?

This report was written by Craig Anderton, with additional reporting from George Petersen, Vanessa Else, Tim Tully, Larry Fast, David Silver, David Karr, Geary Yelton, Laurie Spiegel, and "Deep Byte." Special thanks to Jamie Krutz for inspiring this format in the first place. EM

PIANO-ISM: MIDI FOR THE MASSES?

ROLAND INITIATED A STRONG PUSH into the consumer market with their *Piano-ISM* (Intelligent System of Music) program. What makes this interesting is that they're trying to revive the "home piano" market via MIDI. The heart of the system is an electronic piano, such as their *HP-6000*. This model uses "Structured Adaptive" synthesis, a Roland technique that produces very realistic piano sounds; but perhaps more importantly, the piano also includes MIDI In, Out, and Thru. By adding the *PR-100* 2-track sequencer, piano students can record their performances on a "quick disk," insert a lesson disk, or play back a good performance of a piece for analysis. The third element is an *MT-32*. This multitimbral LA synthesis expander module plays up to eight fairly realistic instrument sounds at a time (out of a total of 128, 30 of which are drum and percussion sounds), plus an internal reverb to spice up the ambience. This is being billed as a way to add your own backup band to the piano/sequencer setup. Some lesson disks are already available for the PR-100 so people can jump right into the Piano-ISM concept.

Roland is not the only company wooing the consumer market. It's very possible that MIDI will hook the consumer the same way hi-fi did in the '70s. If so, anyone connected with music will benefit, from the artists whose work will be appreciated by a larger number of people, to the "potential musicians" who finally get a chance to express themselves musically.

KALEIDASÜND

DIGITAL SAMPLES

FOR MORE INFORMATION CONTACT

KALEIDASÜND INC.

PO BOX 290410, TAMPA, FL 33687-0410

ATTENTION

DPX, E-II, EMAX & MIRAGE OWNERS

FULL SOUND LIBRARY

- Acoustic & Ethnic Instruments
- Electronic Instruments
- Sound Effects/Special Effects
- Special Samples on Request

SPECIAL OFFER

- 5-disk library $69.95
- 25-disk library $249
- 100-disk library $595
- Includes carrying case & shipping & handling

16-BIT SAMPLES

- 16-bit digital edited samples
- All voices cataloged and named
- Tuned to 440 Hz
- Edited for full amplitude

NEW PRODUCT! 25-disk EMAX library $249

(813) 229-5173

For a sample 5-disk library send $69.95 plus $2 postage and handling. 5-disk library purchases are credited toward larger libraries of same type when ordered. Add $5 for C.O.D.

LIBRARY DESIRED: ☐ DPX ☐ E-II ☐ EMAX ☐ MIRAGE

PLEASE SEND ME: ☐ 25-disk library @ $249
☐ 100-disk library @ $595

NAME _____

SHIPPING ADDRESS _____

_____

PHONE ( )

GET ON TRACK!

Whether you're recording original music scores, layering up sound effects, or synchronizing to video or film for audio-post sweetening, you need a tape recorder that's built especially for your new and exciting business. The MX-70 is the perfect multitrack for the synthesizer oriented studio tied together with MIDI.

The "70's" three-way design gives you 7.5, 15 and 30 ips in a 1" 16-track, a 1" 8-track, or a 1" 8-track prewired for 16. (An optional ½" 8-track is also available.) Noiseless, gapless, punch-ins and punch-outs provide quiet, inaudible inserts into pre-recorded program material. The MX-70's wide dynamic range makes for quiet, clean recordings. In fact, you'll find the "70" at 30 ips is so quiet that noise reduction just isn't necessary. And to complete this perfect package, you can add an optional autolocator to the standard full function remote for complete session control.

So if synthesizers with MIDI, or SMPTE with film and video, is part of your business, check the specs and don't settle for less than the MX-70. Call your nearest Otari dealer for **"Technology You Can Trust".**

Otari Corporation, 2 Davis Drive, Belmont, CA 94002, 415/592-8311, Telex 9103764890

OTARI®

© Otari Corporation 1986

WRH

Winter
CONSUMER ELECTRONICS SHOW
Digital Technology Seduces the Masses

BY PETER HIRSCHFELD

You dim the lights with the infra-red controller, flip the remote on the 50-inch high-resolution monitor, fire up your 600-watt surround-sound-stereo-complete-with-subwoofer, and hit "play" on the Super-VHS Hi-fi recorder/player. As the opening theme erupts from *Star Wars VII* (where Jabba the Hut discovers his father is really Ronald Reagan), you're much more interested in waiting for that last glass of Cabernet Sauvignon to heighten the reality, rather than considering all the different technologies involved in making this moment possible. Yet the digital sampling technology responsible for making many of the current synthesizers possible has also been the idol that audio engineers prayed to when developing the compact disc, and musical engineers quickly discovered that digitally encoded sound can be easily manipulated to create a host of signal processing tricks such as reverb, delay, and phase shifting.

One of the first marriages of musical engineering, consumer electronics, and digital technology was Yamaha's *DSP-1 Digital Sound Processor*, introduced last year amid glowing reports from the audio industry magazines. This innovative box features a 44.1 kHz sampling rate and 16-bit processing to accurately recreate the sound of 40 different halls and environments. Yamaha engineers set up mics in a variety of situations and then shot a pistol, recording all the associated reflections, reverberations, and phase shifts. This data was stored in ROM to recreate each effect with four speakers (two front and two rear). As a bonus, the DSP-1 provides decent Dolby decoding for surround sound video. Retailing for $895, the DSP-1 set the stage for more digital processors from professional musical instrument manufacturers.

This winter's show saw two very interesting product introductions from our old friends Roland and Lexicon (at least old friends to **EM** readers, as neither company was yet well-known within the consumer audio or video industries).

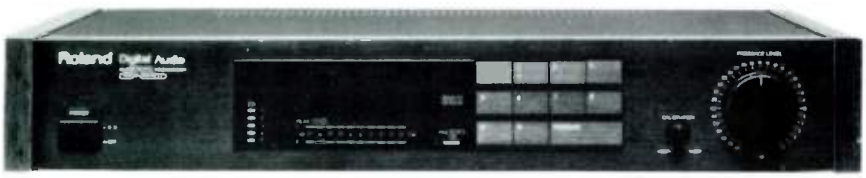
Technics' *SV-MD1* portable DAT recorder is designed specifically for use in the field.

Roland's *DSP-2000 Hi Presence Audio Processor* is designed to recreate the ambient atmosphere characteristic of a live performance. Employing two additional speakers facing the front wall and placed slightly outside of the main front speakers, the DSP-2000 uses the front and side walls to set up a series of reflections simulating a concert hall. Utilizing unique algorithms of properly phased and delayed signals, the Roland unit can turn your living room into 40 different listening environments. In addition, user-programmable parameters allow for some interesting (or strange) ambiences; if you've ever wanted to listen to "The Hall of the Mountain King" while inside a cave, perhaps this processor can give you the opportunity. Expected retail on the DSP-2000 is $1,500, complete with remote control. (Note that unlike many similar units, the DSP-2000 is designed solely as a high-quality music ambience generator, and has no provisions for decoding the Dolby surround sound on pre-recorded video movies.)

Lexicon, a name found in almost every recording studio, has applied its extensive signal processing experience to create a first-class consumer-oriented (but professional-sounding) digital audio environment processor, the *CP-1*. The CP-1 achieves its effects with up to eight speakers (left and right front, left and right rear, center dialog speaker, subwoofer, and left and right side speakers). You can use just the left and right front (main) speakers, but at least four speakers are recommended for best results. Among its many talents, the CP-1 generates the best Dolby surround sound decoding that I have ever heard; it incorporates a Pro Logic circuitry that dramatically improves the dialog intelligibility and stability compared to standard matrix-type surround sound decoders. If you've been waiting for the ultimate video hardware, this is it.

In addition to substantial video enhancement, the CP-1 incorporates 12 preset environments for recreating hall ambience, along with a stereo expander circuit similar to Bob Carver's "hologram generator." As a user of the Carver device, I can attest to the realism that this circuit provides, and the Lexicon promises even better fidelity. The CP-1 should be available for $1,200 list (including remote control) by the time this report hits the streets.

What would a CES report be without an update on the latest news regarding the ever-controversial DAT (Digital Audio Tape) recorders? (For a complete description of DAT technology, as well as the controversy keeping them out of this country, see the September 1987 **EM** as well as last month's "Editor's Note.") At this show, both Technics and Sony were actively demonstrating portable DATs as



Roland's *DSP-2000* Hi Presence Audio Processor can recreate any of 40 different listening environments.

MIDI For The Masses At CES

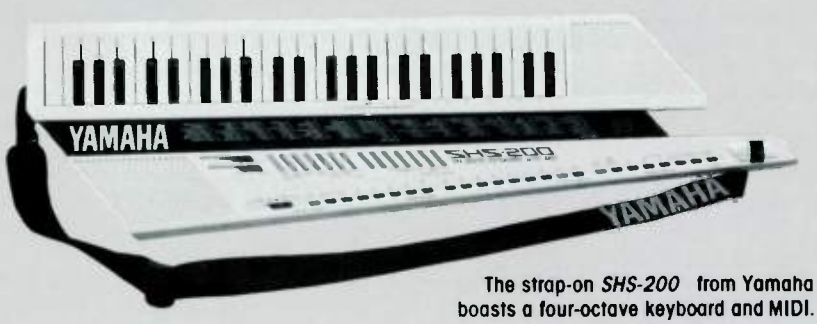
Casio's battery-powered *DH-100* Digital Horn.

ANOTHER NEW FACET of the consumer electronics world is a quantum leap in the amount and quality of the MIDI gear available for non-professionals. Both Yamaha and Casio—stalwarts in the pro and semi-pro fields—presented new lines of consumer-priced electronic musical instruments that will work with computers via MIDI. Both lines showed a degree of sophistication and musical flexibility surprising in such low-cost instruments.

Among the more impressive entries, the battery-powered DH-100 Digital Horn came out as Casio's entry on the growing list of Independent MIDI Performance Sources (IMPS) that cater to horn players. Though the DH-100 looks like the distorted reflection of a silver saxophone in a fun-house mirror, it's a very capable unit that features a breath-pressure-sensitive mouthpiece that allows crescendi, decrescendi and tremolo. It also includes portamento, a stack of woodwind-style keys that use recorder fingerings, and six on-board sounds as well as a MIDI Out port for playing another synthesizer/drum machine or for recording onto a sequencer. It has a built-in speaker (!) as well as an audio line out for playing through an amplifier, PA, or home stereo system. The DH-100 may find only limited pro applications, but at $179, this MIDI wind-IMPS will generate a lot of music for the MIDI tyro with any kind of horn chops. It's nothing to be sneezed at—or through.

For the keyboardist eager to MIDI on a budget, Casio's lowest-priced MIDI synthesizer weighs in at only $199.50. The MT-240 has 49 mid-sized keys, ten-voice polyphony, 20 surprisingly rich, 12-bit PCM sounds that can be combined (mixed) in 210 different ways, and 20 rhythm patterns. The 46 PCM percussion sounds are decidedly *not* the "ssss-tink, ssss-tink" we all know and loathe from the rhythm generators usually found on board low-cost synthesizers. There is also a free chord function, built-in stereo speakers and a line out. The $259.50 MT-540 has identical functions, but different sounds and a set of eight preset sound effects. Two models that use the same PCM sound technology but offer full-sized keys are the 49-key CT-460 ($329) and the 61-key CT-640 ($399). They also have more sounds (30) and combinations (465), and the CT-640 adds a MIDI Thru port to the MIDI In and Out of the other instruments.

Yamaha also presented MIDI capability on a bunch of its synths that almost anyone can afford, from the $199.95, strap-on SHS-200 to the $429.95 PSR-36 with 61 full-sized keys. Yamaha has put together a series of two-operator FM synths with various configurations of features that include real-time sequencers, programmable percussion (with *hot* PCM sounds), auto intros/fills/endings, and effects such as vibrato, reverb and chorusing. Other MIDI models are the 61-key PSS-680 ($319.95) that has 100 sounds, 100 rhythms, eight percussion hand-pads (drum pads right on the front of your synth rate a very high neat-o factor) and 32 percussion sounds. The PSS-480 ($239.95) is similar, but with 49 keys and nine keyboard percussion sounds. In addition to the MIDI synths, Yamaha showed the DD-8, a $99.95 four-pad drum machine with 12 assignable PCM sounds, and 30 preset rhythms.



The strap-on *SHS-200* from Yamaha boasts a four-octave keyboard and MIDI.

All these units have built-in speakers as well as audio outs, so they play on their own or through amplifiers.

If you've been looking for a first-time synthesizer, *especially* if you have eyes for using your home computer with MIDI to compose, play or score music, any one of these instruments would be a good place to start, and at these prices, you almost can't go wrong.

—Tim Tully

compact as a Nagra tape recorder (if you don't remember the Nagra, it's the Rolls-Royce of portable recorders and is about the size of a desk dictionary). As to whether there's a market for this type of product, let's just say that salivating engineers and musicians were offering bodily parts as partial payments.

Specs on the Sony unit were unavailable, but Technics thoughtfully provided complete technical information on their *SV-MD1* portable DAT recorder. Highlights include 2.5 hours of continuous 48 kHz, 16-bit digital recording using its built-in rechargeable batteries, and light weight (slightly over three pounds, complete with batteries, thanks to a unique half-size rotating drum). Technics also developed a special analog-to-digital converter that promises studio-quality recording and playback. At the moment the SV-MD1 is available only in Japan for about $2,500 (U.S.); any plans to bring it to the States will have to wait until the political climate is right.

Well, that's about all the time I have to write now—I need to change the CD...or is it flip the record...wait, maybe I need to turn over the tape...it might be the radio...no, no, it's a Beta Hi-fi recording...oh, why don't I have stock in Tower Records? EM

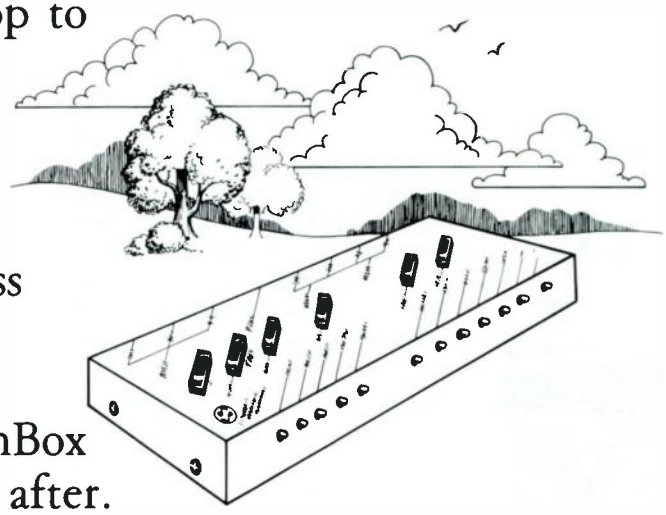
Peter Hirschfeld *is a self-confessed Audiofool with a three-disc-a-week habit. He likes tubes and fat cables in his stereo, and can occasionally be found watching dumb science fiction videos. He also likes to do a lot of other stuff that he doesn't have time to do any more.*

Once upon a time, Southworth Music Systems invented the JamBox/4™. Never before had a synchronizer done so much and cost so little. Not only did it let you SMPTE lock your MIDI sequencer to tape, but it let you position anywhere on your tape and lock up in less than a second, and stay locked for hours. As if that weren't enough it came with a built-in MIDI merger that let you record four MIDI instruments at the same time. And it let you filter out the MIDI you didn't want.

Everyone said the JamBox would only work with a fancy professional tape deck. They were wrong. It worked great with any tape recorder, even a home VCR.

But, alas it only worked with the Apple Macintosh™. The people using Performer™, and Q-Sheet™, and Cue™ and MidiPaint™ were all happy. But the people using the IBM PC, Commodore, Atari and hardware sequencers were all sad because they still had to spend thousands of dollars for a sync box that couldn't do nearly as much as the JamBox.

This made the people at Southworth sad too. So they worked night and day in their workshop to find a way to make a new JamBox that could work with any computer or hardware sequencer. They invented the JamBox/2. And it cost even less than the JamBox/4.



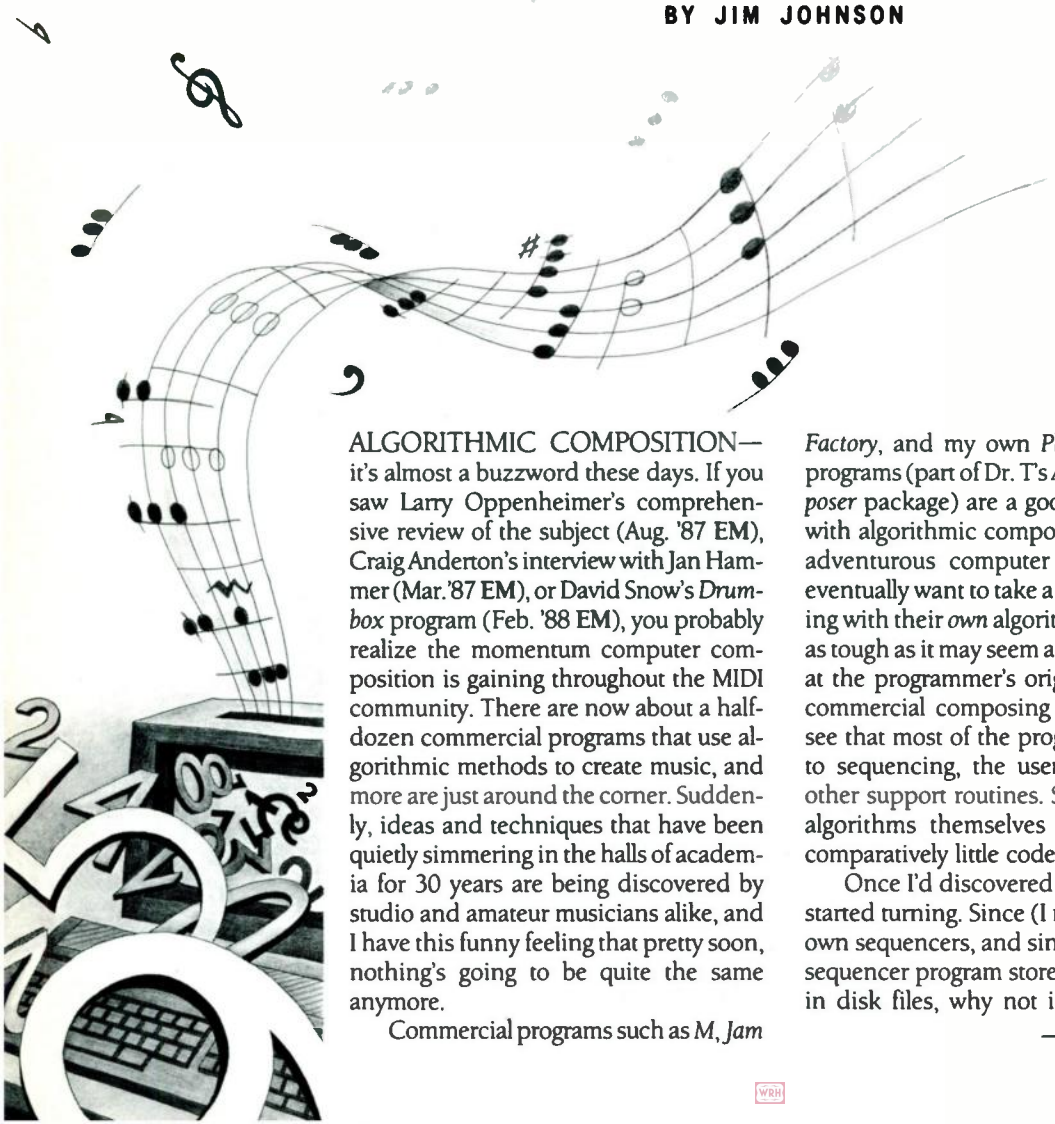
Pretty soon everyone had a JamBox and they all lived happily ever after.

SOUTHWORTH
MUSIC SYSTEMS INC.
91 Ann Lee Road, Harvard, Massachusetts 01451 USA
(617) 772-9471

Maybe Lady Luck has the chord progression you've been looking for all your life. Why not enter this algorithmic composition program into your Atari ST, and give her a chance to do some composing for you?

Chord—An Algorithmic Composing Program in Atari ST BASIC

BY JIM JOHNSON



ALGORITHMIC COMPOSITION—it's almost a buzzword these days. If you saw Larry Oppenheimer's comprehensive review of the subject (Aug. '87 EM), Craig Anderton's interview with Jan Hammer (Mar.'87 EM), or David Snow's *Drumbox* program (Feb. '88 EM), you probably realize the momentum computer composition is gaining throughout the MIDI community. There are now about a half-dozen commercial programs that use algorithmic methods to create music, and more are just around the corner. Suddenly, ideas and techniques that have been quietly simmering in the halls of academia for 30 years are being discovered by studio and amateur musicians alike, and I have this funny feeling that pretty soon, nothing's going to be quite the same anymore.

Commercial programs such as *M*, *Jam Factory*, and my own *Phrase* and *Series* programs (part of Dr. T's *Algorithmic Composer* package) are a good place to start with algorithmic composition. But most adventurous computer musicians will eventually want to take a stab at composing with their *own* algorithms. This is not as tough as it may seem at first. If you look at the programmer's original code for a commercial composing program, you'd see that most of the program is devoted to sequencing, the user interface, and other support routines. Surprisingly, the algorithms themselves usually require comparatively little code.

Once I'd discovered this, the wheels started turning. Since (I reasoned) we all own sequencers, and since every known sequencer program stores sequence data in disk files, why not imbed our algo-

—continued on page 24

ILLUSTRATION BY SALIM YAQUB

One good thing deserves another...

Sequencer Plus Mk III
$495

and another...

Sequencer Plus Mark II
$295

and another.

Sequencer Plus Mark I
$99

PC MAGAZINE EDITOR'S CHOICE

After three years of refinements, **Sequencer Plus** has become the most **powerful**, most **professional** and most **versatile** MIDI sequencing software available in the world today.

So how could we improve it? By making it both **more powerful** and **more accessible.**

Introducing, the **Sequencer Plus Series: Three new versions,** each with differing levels of sophistication offering a system that will *grow with you* instead of being outgrown.

Sequencer Plus Mark III (Sp3) is a *"No Compromise" powerhouse!* 64 music tracks with independent offsets, tempo track, song position pointer, chase mode, extensive and selectable MIDI Filtering, 17 transform functions, block editing of multiple tracks, 11 memory buffers and a list of additional features that reads like a computer musician's wish list!

Sp3 also transmits patch files created with **Patch Master,** our unique *MIDI network organizer/universal librarian* program that supports virtually every major synthesizer.

Sequencer Plus Mark II (Sp2) is the perfect production tool for just about all of your most demanding musical creations. 32 music tracks, tempo track, 6 memory buffers, programmable play range, Song position pointer, intricate MIDI data editor, individual track load/save, and more!

Sequencer Plus Mark I (Sp1), at $99.00, is the *least expensive PC sequencer on the market* and is the perfect way to ease into computer music. 16 tracks, each with cut and paste operations, merging, looping, quantizing, transposition, independent MIDI channel, MIDI program and solo/muting! Complete freedom of time signatures and polyrhythms, 3 memory buffers, extensive punch-in capabilities and more! *Enough music-making power to satisfy even a seasoned pro!*

The **new Sequencer Plus series** is the choice of demanding musicians, composers, producers, and recording studios around the world- backed by a company with over a decade of experience in producing quality electronic music products. Best of all, it doesn't demand that you be a computer programmer, just a musician...and isn't *that* a relief!

For a free catalog and the name of your nearest Voyetra dealer, please call or write.

VOYETRA *Computer Music Products for the IBM PC/AT and Compatibles*

Voyetra Technologies, Dept M, 426 Mt. Pleasant Ave, Mamaroneck, NY 10543 (914)-638-3377

IBM PC/AT is a registered trademark of International Business Machines Corporation.

rithms in a short program that creates a sequence file compatible with our favorite sequencer?

The result was *Chord*, a simple algorithmic composition program written in Atari ST BASIC that creates a chord progression according to some simple rules, then plays the progression over MIDI and optionally saves it as a sequence in the format used by Dr. T's *Keyboard Controlled Sequencer* (KCS). The program is written in modular form, which makes it easy to customize for your own uses.

Going over these programs will explain the logic behind the algorithms, as well as shed some light on the mysteries of MIDI programming on the ST. We'll also discuss some methods for writing data to a sequence file; so once you understand the operation of this program, you should be all set to start creating, refining and using your own compositional algorithms.

OUR THEORY

As a non-keyboard-oriented synthesist, one area in which I've always been weak is creating chord progressions that make a lot of musical sense. While browsing through an old music theory book one day, I came across a passage that described a "normal" harmonic progression, with some simple rules derived from a statistical analysis of a huge amount of Western music written before the 20th century. Stated in their essence, those rules are:

1. A Tonic (I) can be followed by any other chord type.

2. A Digression (II, III, IV, or VI) can be followed by a Tonic or an Approach to Tonic.

3. An Approach to Tonic (V or VII) must be followed by a Tonic.

For those unfamiliar with the delights of traditional music theory, the Roman numerals refer to a chord built up from that note of a given scale. For example, a *II* chord starts from the *second* note of a scale and, using only scale tones, adds notes a third apart to form a chord. In the key of C major, the II would be a D minor (or Dm7) chord. The three chord classifications (Tonic, Digression, and Approach to Tonic) can be viewed simply as groups of similar chord types, any of which may be used at the appropriate point in a chord progression. These rules provide some very broad guidelines for creating chord progressions that are useful in Western tonal music, but they are by no means adequate to specify fully the harmonic form of a composition.

In order to simplify the program and keep it to a manageable size, I added a few rules of my own to the three above:

4. The notes of each three-note chord will be chosen from a one-octave scale, entered by the user via an attached MIDI keyboard. Each chord will also contain a bass note, one octave below the root of that chord.

5. The progression will start on a Tonic chord, and end on an Approach to Tonic followed by a Tonic.

6. The progression will be a minimum of five chords long.

7. All chords will be one measure long.

Rule 4 prevents the creation of a string of boring root position triads, as well as giving the user a means to experiment with various scales. Rule 5 is a simple way to limit the length of the progression without putting any additional restrictions on its form. Rule 6 prevents the occurrence of simple I-V-I progressions that Rule 5 promotes, while Rule 7 allows me to sidestep the problem of creating meaningful rhythms. (This is left, as they say, as an exercise for the reader.)

THE BASIC APPROACH

Once a musical task has been described in this fashion—according to a series of rules—creating a program that implements the rules is easy as pi. Most programmers will agree that the best way to approach this—or any other program—is from the top down. That is, first determine what the program is supposed to do. Then break this down into a group of smaller tasks and write some code, then break *these* down into yet smaller tasks and write some more code, and so forth. These various tasks are called and executed by the main program loop. The main loop for *Chord* occupies only five

Chord: an Atari ST program by Jim Johnson

```
100   REM * Chord Progression Generator *
110   REM * 8/17/87 by J. Johnson *
120   REM
130   REM * Main Program Loop *
140   Start:GOSUB SetBuff:GOSUB DoScreen:GOSUB SetVar
150   GOSUB GetScale:GOSUB MakeProg:GOSUB MakeChords
160   GOSUB Play:GOSUB AskSave:IF A$ = "Y" THEN GOSUB SaveIt
170   GOSUB AskMore:IF A$ = "N" THEN END
180   GOTO Start
2000  REM * Set up variables *
2010  SetVar:DIM Scale(8),Chord(100,4),Prog(100),Type(7)
2020  I = 1:II = 2:III = 3:IV = 4:V = 5:VI = 6:VII = 7:Ton = 1:Dig = 2:App = 3
2030  Type(I) = Ton:Type(II) = Dig:Type(III) = Dig:Type(IV) = Dig
2040  Type(V) = App:Type(VI) = Dig:Type(VII) = App:RETURN
3000  REM * Set up screen *
3010  DoScreen:CLEAR:FULLW 2:CLEARW 2:GOTOXY 22,1
3020  PRINT "Chord Progression Generator":PRINT:RETURN
4000  REM * Set up MIDI buffer *
4010  SetBuff:Buffsize = 128:DIM MIDIbuff(Buffsize)
4020  Buffadrs = VARPTR(MIDIbuff(0))
4030  POKE 2560, Buffadrs:POKE 2564, Buffsize:RETURN
4100  REM * Get scale from MIDI *
4110  GetScale:IF INP(-3)<>0 THEN Dummy = INP(3):GOTO GetScale
4120  PRINT SPC(10)"Play a one octave ascending scale on your MIDI keyboard"
4130  Lstat = 0:FOR J = 1 TO 8
4140  GetStat:IF INP(-3) = 0 THEN GOTO GetStat:REM Wait for MIDI byte
4150  Stat = INP(3)+256:IF Stat<128 THEN IF LStat <>0 THEN GOTO Data2
4160  IF Stat>143 AND Stat<160 THEN Lstat = Stat:GOTO Data1
4170  Lstat = 0:GOTO GetStat
4180  Data1:Note = INP(3)+256:Vel = INP(3)+256:GOTO Check
4190  Data2:Note = Stat:Vel = INP(3)+256
4200  Check:IF Vel = 0 THEN GOTO GetStat
4210  Scale(J) = Note
4220  NEXT J:RETURN
4300  REM * Create Chord Progression *
4310  MakeProg:RANDOMIZE(0):Prog(1) = I:FOR J = 2 TO 100:Rn = (RND)**1.3
4320  IF Type(Prog(J-1)) = Ton THEN ON INT(Rn*6)+1 GOSUB T3,T4,T6,T5,T2,T7
4330  IF Type(Prog(J-1)) = Dig THEN ON INT(Rn*3)+1 GOSUB T5,T7,T1
4340  IF Type(Prog(J-1)) = App THEN GOSUB T1
4350  IF J>=5 AND Type(Prog(J-1)) = App THEN Prog(J+1) = 0:J = 100
4360  NEXT J:RETURN
4400  REM * Set the Chord Type *
4410  T1:Prog(J) = I:RETURN
4420  T2:Prog(J) = II:RETURN
```

continued on next page

Music—Patterns and Style, Richard P. DeLone (1971: Addison Wesley, Reading, MA), p. 98.

Chord: continued from previous page

```
4430  T3:Prog(J) = III:RETURN
4440  T4:Prog(J) = IV:RETURN
4450  T5:Prog(J) = V:RETURN
4460  T6:Prog(J) = VI:RETURN
4470  T7:Prog(J) = VII:RETURN
5000  REM * Make Chords from Progression *
5010  MakeChords:J = 1:WHILE Prog(J)<>0
5020  Root = Prog(J):Third = Root+2:Fifth = Root+4
5030  IF Third>8 THEN Third = Third-8
5040  IF Fifth>8 THEN Fifth = Fifth-8
5050  Chord(J,1) = Scale(Root)-12:REM Bass
5060  Chord(J,2) = Scale(Root)
5070  Chord(J,3) = Scale(Third)
5080  Chord(J,4) = Scale(Fifth):J = J+1
5090  WEND:RETURN
5100  REM * Play Chords *
5110  Play:J = 1:WHILE Prog(J)<>0
5120  FOR J1 = 1 TO 4:GOSUB NoteOn:NEXT J1
5130  FOR J2 = 1 TO 2000:NEXT J2:REM Delay
5140  FOR J1 = 1 TO 4:GOSUB NoteOff:NEXT J1
5150  J = J+1:WEND:Length = J-1:RETURN
5200  REM * Send Note On *
5210  NoteOn:OUT 3,Lstat:OUT 3,Chord(J,J1):OUT 3,Vel:RETURN
5300  REM * Send Note Off *
5310  NoteOff:OUT 3,Lstat:OUT 3,Chord(J,J1):OUT 3,0:RETURN
5400  AskSave:GOTOXY 21,5:INPUT "Save this progression (Y/N)";A$
5410  IF A$ = "Y" OR A$ = "y" THEN A$ = "Y":RETURN
5420  IF A$ = "N" OR A$ = "n" THEN A$ = "N":RETURN
5430  GOTO AskSave
5500  AskMore:GOTOXY 19,7:INPUT "Generate another progression (Y/N)";A$
5510  IF A$ = "Y" OR A$ = "y" THEN A$ = "Y":RETURN
5520  IF A$ = "N" OR A$ = "n" THEN A$ = "N":RETURN
5530  GOTO AskMore
5600  REM * Save Chords as Dr. T Sequence *
5610  SaveIt:GOTOXY 27,7:INPUT "Filename: ",F$
5620  F$ = LEFT$(F$,8)+".SEQ":OPEN "O",#1,F$
5630  PRINT# 1,CHR$(0);CHR$(0);:REM Version
5640  PRINT# 1,CHR$(0);CHR$(0);CHR$(0);CHR$(4*Length+1);:REM Length
5650  PRINT# 1,"RndChord";:REM Sequence name
5660  FOR J = 1 TO Length:FOR J1 = 1 TO 4
5670  IF J1 = 1 AND J<>1 THEN PRINT #1,CHR$(0);CHR$(96);:REM Event time
5680  IF J1<>1 OR J = 1 THEN PRINT #1,CHR$(0);CHR$(0);
5690  PRINT# 1,CHR$(Lstat);CHR$(Chord(J,J1));CHR$(Vel);CHR$(94);
5700  NEXT J1:NEXT J
5710  PRINT# 1,CHR$(0);CHR$(96);CHR$(0);CHR$(0);CHR$(0);CHR$(0);
5800  CLOSE #1:RETURN
```

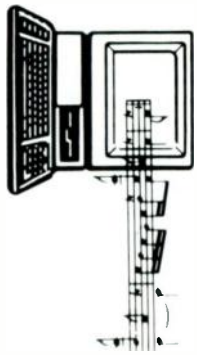
lines, 140 through 180. This loop consists mostly of calls to subroutines that do the actual work, as well as a few IF-THEN statements to control program flow. Since all new program sections can be written and tested separately, and then spliced into the main program loop with another GOSUB, the program is very easy to modify. This approach is called *modular programming*, and it should make this program as easy to understand as it was to write.

THE SUBROUTINES

SetBuff, the first routine called by the main program, changes the configuration of the ST's MIDI input buffer. While this is not necessary for this particular program, it is essential for many other types of MIDI programs, especially patch librarians. First, the DIM statement creates a new array of size *Buffsize*. This will be the new MIDI buffer. Buffsize can be any number up to 32767 (32K). Next we use ST BASIC's VARPTR instruction to find the array's memory location. The ST's operating system stores the location and size of the MIDI input buffer at locations 2560 and 2564, respectively; once the new buffer is established, all we have to do is POKE the new location and length into these locations, and the new buffer will be used as the MIDI buffer. Slick, huh?

DoScreen sets up the screen and prints a title, and *SetVar* dimensions the arrays and initializes most of the variables used by the program. One interesting quirk I discovered about ST BASIC is the fact that this routine must be run after SetBuff, or all the variables will be cleared when the MIDI buffer is moved.

The *GetScale* subroutine at line 4110 prompts the user to play a scale on the keyboard, and places the scale in an array. The first line of this routine cleans out the MIDI buffer before the next line



Sound Quest Inc.

- D-50 Master Editor/Librarian
- DXII Master Editor/Librarian
- DX Master Editor/Librarian
- MT-32 Master Editor/Librarian
- CZ Master Editor/Librarian
- TX 81Z Master Editor/Librarian
- SQ-80 Master Editor/Librarian

All Packages Are "Musician Friendly"
And Are Exclusively Designed
For **The Commodore AMIGA.**

For More Information Contact:
5 Glenaden Ave. East
Toronto, Canada M8Y 2L2
(416) 234-0347

issues the prompt. At *GetStat*, the program waits for a MIDI Note-On status byte; when one is received, the program drops to line 4180 and processes the note and velocity bytes. *Lstat* allows the program to follow running status messages. If Lstat is not zero, succeeding pairs of data bytes are treated as note and velocity data. Lstat is reset whenever a status byte is received.

MIDI data is read from the MIDI buffer using the INP(3) statement. The reason 256 is added to each received MIDI byte is that the ST treats data from the MIDI port as a 16-bit number, with the upper eight bits set high. Adding 256 shifts this quantity into the 0-to-255 range that we crave.

The next subroutine, *MakeProg*, is the heart of the program. It uses the three rules I derived from the music theory textbook to create a string of chord types. After the first chord in the progression is set to a "type I" chord and the ST's random number generator is "seeded" with the RANDOMIZE instruction, the machine enters a FOR-NEXT loop in which the remainder of the progression is created. Since each chord in the progression depends upon the preceding chord, an IF-THEN statement determines which chord types are legal, based on the last chord type used. A random number, *Rn*, selects one of the legal chords using the subroutines T1 through T7. When it reaches the fifth chord in the progression, line 4350 starts to check for the final "Approach to Tonic/Tonic" sequence. When it finds that sequence, it exits the loop by setting counter J to its upper limit, and sets the next element of *Prog( )* to zero, to mark the end of the progression.

SKEWED RANDOMNESS

Those of you who are still with me may be wondering why I added the exponential term to the random number generator in line 4310. According to the Atari ST BASIC manual, the RND function generates a uniform distribution of numbers between 0 and 1. Raising each of these numbers to some small power skews the distribution so low numbers are more likely to occur than high numbers. (Don't believe me? Grab a calculator and see for yourself.) The advantage here is that now the first few subroutines in the ON-GOSUB statements in lines 4320 and 4330 are more likely to be chosen than the last few, which allows us to affect the probability that any given chord will occur by changing the order of the subroutines T1 through T7 in the lists.

MakeChords translates the chord progression created by MakeProg into a set of MIDI note values, all of which are elements of the Scale array created by GetScale. A WHILE-WEND loop here processes all the elements of Prog( ) before the end-of-progression marker is reached. Lines 5030 and 5040 transpose the third and fifth degrees of the chord down an octave if they fall outside our eight-note scale, and line 5050 creates the bass note.

The heart of the program uses three rules I derived from the music theory textbook to create a string of chord types.

LET'S HEAR IT

To hear these chords via MIDI, all we need to do is send each note in *Chords( )* to the MIDI Out port along with the appropriate Note-On status byte and a velocity byte. Fortunately, the status and velocity bytes from the last note in the scale were saved in Lstat and *Vel*, so they can be used for this purpose. If you understood the previous routines, the workings of the *Play* subroutine should be obvious by now. The subroutines *NoteOn* and *NoteOff* create and send the appropriate messages for each note, using the OUT(3) statement to send each byte to the MIDI Out port.

After the chord progression has been played once, the main routine gives the user the option of saving the sequence, *AskSave* and *SaveIt*, or creating another progression, *AskMore*. If the answer to both questions is "no," the program ends. If the answer to AskSave is "yes," the program calls SaveIt, which saves the chord progression as a sequence file.

In this version of the program, SaveIt creates a file that is compatible with Dr. T's Keyboard Controlled Sequencer. If you use some other type of ST sequencer, you'll need to write your own routine, using my routine and your sequencer's file format documentation as a guide. If this isn't included in the documentation that came with your sequencer, contact the publisher and have them send you that information. Many music software houses, such as Dr. T's and Opcode Systems, encourage the distribution of their file formats in the belief that this will benefit everyone, while a few others (who shall remain nameless) jealously guard this information under the mistaken impression that this will force musicians to buy all their software from them. In the absence of a standardized MIDI data file format, having a handle on how your sequencer stores data on disks is absolutely essential for *any* sort of experimental MIDI file manipulation program.

As an example of how to write your own *disk save* routine using your sequencer's file format documentation, here are the details on the Dr. T's version of SaveIt. According to the KCS *Programmer's Reference Guide*, a sequence file is stored in the following format:

Version (currently 0)—two bytes
Number of events in sequence—four bytes
Sequence name—eight bytes
Sequence data—(six bytes/event)*(number of events)

Each event in the sequence is stored in six bytes. The first two bytes are the time before the event (normally calculated at 24 PPQN), the next is the event type (the status byte for a MIDI event, or zero for a DE event—a feature of Dr. T's sequencers indicating *Delete Event*, always inserted at the end of a sequence to keep timings straight), and the last three are the note number, velocity, and duration of the note.

Once we have this information, SaveIt practically writes itself. The first step, in lines 5610 and 5620, is to ask for a file name, add the .SEQ extension required by the KCS, and OPEN the file. This operation also limits the file name to the first eight characters typed, as required by most ST programs, but it doesn't check for illegal characters such as punctuation

NEW!

THE ONLY SAMPLER™ THAT RETAINS MEMORY WHEN YOU POWER DOWN!

Up to 10 samples at your fingertips . . . INSTANTLY!

A technical breakthrough

The Akai X7000/S700 digital samplers now offer you an optional static RAM memory backup which allows you to retain up to 10 sound samples regardless of whether the unit is turned on or off.

This means you don't have to reprogram your favorite sounds every time you break down your equipment. Now you can finally spend less time programming and more time playing.

AKAI *professional*

Creative at Heart

NO MORE LOSING SAMPLES WHEN YOU TURN OFF THE POWER!

SPECIFICATIONS

KEY
- 61 key 5 octave C-C scale/velocity sensitive

VOICE
- 6 voice

SPLIT
- 16 split areas (with memory expansion P.C. board ASK70)

SYSTEM
- 12 bit digital sampling
- Sampling frequency: 4kHz-40kHz (MIN-MAX)
- Sampling time: 8 sec-0.8 sec (MAX-MIN)
- Frequency response: 25 Hz-16kHz

DATA STORAGE
- Built-in 2.8 inch disk drive
- Memory capacity: 128k byte
- Memory medium: 2.8 inch quick disk
- Internal memory: 16 sampled sounds

New EPROM now available to provide multiple auto loop settings and crossfade looping.

For more information contact your dealer or write to:

AKAI *professional*

P.O. Box 2344 • Ft. Worth, TX 76113
Phone: 817-336-5114
FAX 817-870-1271
Telex 163203 IMCTX UT

Send me a data sheet on the X7000 and the S700.

Name _____
Address _____
City _____ Zip _____
State _____ Tel. (___) _____

Think of it as the ultimate keyboard instrument.

You've seen it rehearsing, composing, recording and performing.

Even (as the song goes) taking care of business, working overtime.

We've got some serious connections in music. Like the very affordable Apple MIDI Interface.

There's no question that the Macintosh® personal computer has become one of the hottest keyboards in the music world.

And for very good reason: all kinds of musicians are discovering that using a Macintosh doesn't require any kind of genius.

It just tends to bring out whatever genius is within. After all, it can easily run the most advanced music software you'll find.

Like Professional Performer, for sequencing, which enables you to record as many MIDI tracks as you need. With full editing control right down to the briefest note.

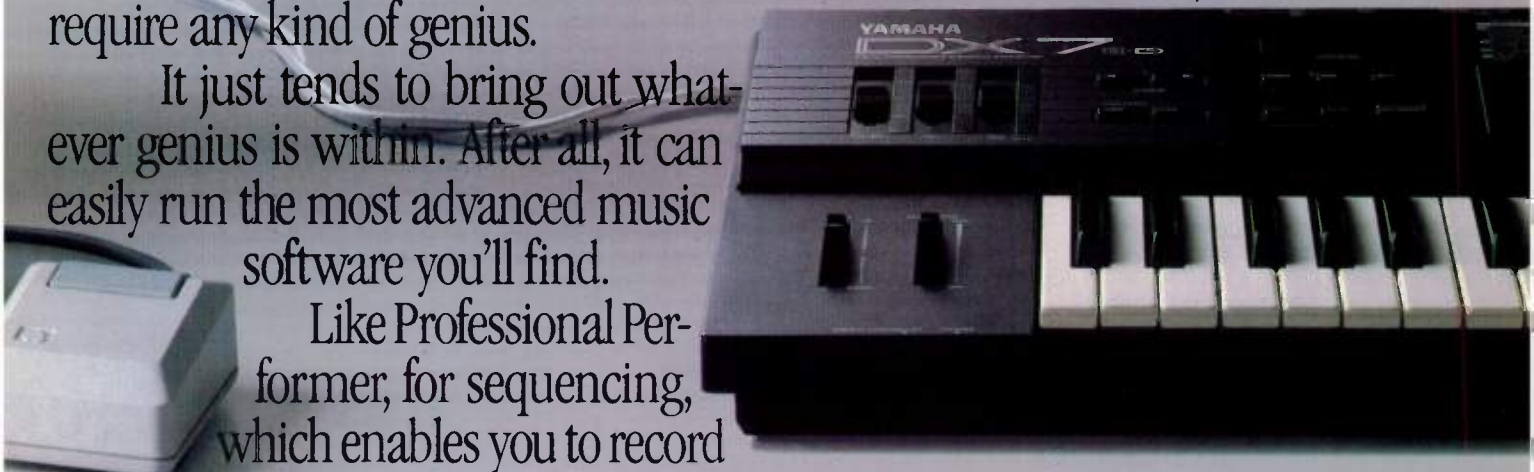
Professional Composer, which lets you write music like few musicians have written before. Legibly.

Sound Editor/Librarian programs from Opcode Systems, for customizing and storing sounds by the diskful–for almost every major brand of synthesizer on the market.

And Sound Designer, which lets you look at sampled sounds in a graphic form, then turn them into exactly what you had in mind.

Not to mention a full range of programs for more businesslike undertakings, from putting together bios and promo packages to designing logos and album covers.

Now rather than just read about Macintosh, why not visit your local authorized Apple dealer and try one for yourself.



For an exact address, just call 800-538-9696, ext. 750.

It doesn't have any knobs or sliders. But it could very easily help give you the performance of your life.

The power to be your best.™

© 1987 Apple Computer Inc. Apple, the Apple logo and Macintosh are registered trademarks of Apple Computer Inc. Professional Performer and Professional Composer are registered trademarks of Mark of the Unicorn. Sound Designer is a trademark of Digidesign, Inc.

Dedicate several **MICROVERB II's** to your reverb sends. One for vocals and leads, one for drums and percussion, one for background and rhythm instruments. Now you can create complex mixes with tremendous spatial depth. MICROVERB II is an update of the original MICROVERB. Still 16 bit, but now with an extended bandwidth of 15kHz. MICROVERB II's 16 new programs include the most popular reverb and ambience sounds in contemporary music . . . with a little of the Alesis magic thrown in for good measure. This is a refined classic.
STEREO $199

Dedicate **MICRO LIMITER** to vocals and bass during tracking to add punch and presence. To guitars and keyboards for silky smooth sustain. Use it in mixdown to get driving hot levels on tape. Automatic attack characteristics make this the most musical limiter ever. Audio dynamite.
STEREO. $125*

Dedicate **MICRO GATE** to the mixdown for absolutely noise-free fade outs. Use it in tracking for special effects like gated snare or reshaping the decay envelope of instruments and vocals. And, because of an advanced design, Micro Gate is super smooth.
STEREO. $125*

Dedicate **MICRO ENHANCER** to mixdown to add high frequency presence lost in the recording process. On individual tracks for crystalline high end. Put life in your sampler. Add fidelity to tape copies. Sweeter sounding than e.q. The effect is automatic, so there's no noise.
STEREO. $125*

They're all FULL STEREO. Easy to use. Thoroughly professional. And, like all Alesis products, made for music. See your Alesis dealer. He'll be glad to show you.

ALESIS
STUDIO ELECTRONICS

*Suggested retail price.

marks. Such entries will cause a disk error, so avoid them.

Data is written to the file using BASIC's PRINT# instruction, which writes ASCII characters to a sequential file. Unfortunately, we want to send numeric data to the file, not characters, so each byte sent must be converted to a character with the CHR$( ) function. The semicolons between the individual entries prevent PRINT# from inserting any spaces or punctuation in the file. All multi-byte numbers, such as the version number and sequence event count, must be broken into individual bytes before being processed by CHR$( ); I've taken the lazy way out and simply set the upper bytes to zero for such numbers, since I know that all the numbers I'm dealing with will be less than 255.

Lines 5630 to 5650 write the version number, sequence length, and name to the file. The sequence length is calculated as it is sent, on the basis of four events per chord and an extra DE event at the end for a spacer. With this done, a FOR-NEXT loop creates and then sends each event in the sequence. A time value of 96, which corresponds to one measure, is used before every chord except the first, and a duration of 94 is used for each note. Finally, a DE event is sent, and the file is closed.

ENTERING THE PROGRAM

To enter CHORD.BAS, boot your ST from your working copy of the Language Disk that came with the computer, and open BASIC.PRG. When the BASIC desktop appears, go to the Edit menu, select Start Edit, and then type in the program. Be careful to enter the program as written, since ST BASIC is very picky about spacing. Fortunately (at least in this instance) BASIC will alert you if any of these silly rules have been violated as you enter each line.

Once you've entered the program and saved a copy to disk, select Run on the menu bar, and follow the instructions presented by the program. Your synthesizer must be set to receive on the same MIDI channel as the channel over which your keyboard or other controller is sending MIDI data. Immediately after you play the eighth note of the scale, the program will play the chord progression and ask what you want to do with it. A few repetitions of this procedure will demonstrate that the rules I derived are less than perfect in defining "musically sensible" progressions, but that a certain amount of sense can be made of many of the progressions. Try playing different scales for the GetScale routine. Many unusual scales will lead to even more unusual progressions; some of which, I'm sure, will appeal to somebody, somewhere.

WILL I BE A STAR?

This algorithm, as it stands, probably won't crank out the harmonic structure for your next hit single, but it can serve as a framework for experimentation in that direction. There are any number of enhancements you could make to this program that might make the output more closely resemble a traditional piece of music. For example, try adding a routine to calculate a duration for each chord based on its chord type as well as that of the previous or next chord. You might also try creating an algorithm that creates a number of short progressions based on these rules, and then strings them together in some form determined by the algorithm. If you want to build on this rather simplified model of traditional harmonic motion, there's plenty of room for improvement in the basic algorithms used in this program. Better yet—just throw my ideas out the window, and take a shot at coding some of your own! EM

This algorithm probably won't crank out the harmonic structure for your next hit but it can serve as a framework for experimentation in that direction.

*Until recently, **Jim Johnson** was an engineer drone for a major electronics company. Then the example set by Craig Anderton convinced him to toss it all away for the freewheeling lifestyle of a freelance musician/writer/programmer. Currently, Jim is saving for a new pair of shoes.*

Dedicate

Dedicating yourself to your music often means working long hours at your mixer experimenting with effects. But, sometimes this can be frustrating. Like when you get the urge to add reverb to a vocal and you find yourself running around the back of your mixer fumbling with cables. Getting confused. While your concentration and your music suffer.

Serious studios solve this problem by connecting each effect send on the mixer to individual signal processors. Always plugged in. Ready when the ideas come. *Dedicated.* Turn a couple of knobs and you hear results. Instantly.

Until now, though, dedicated signal processing was only affordable in high budget studios.

Alesis has a solution. **The Alesis Micro Series.**

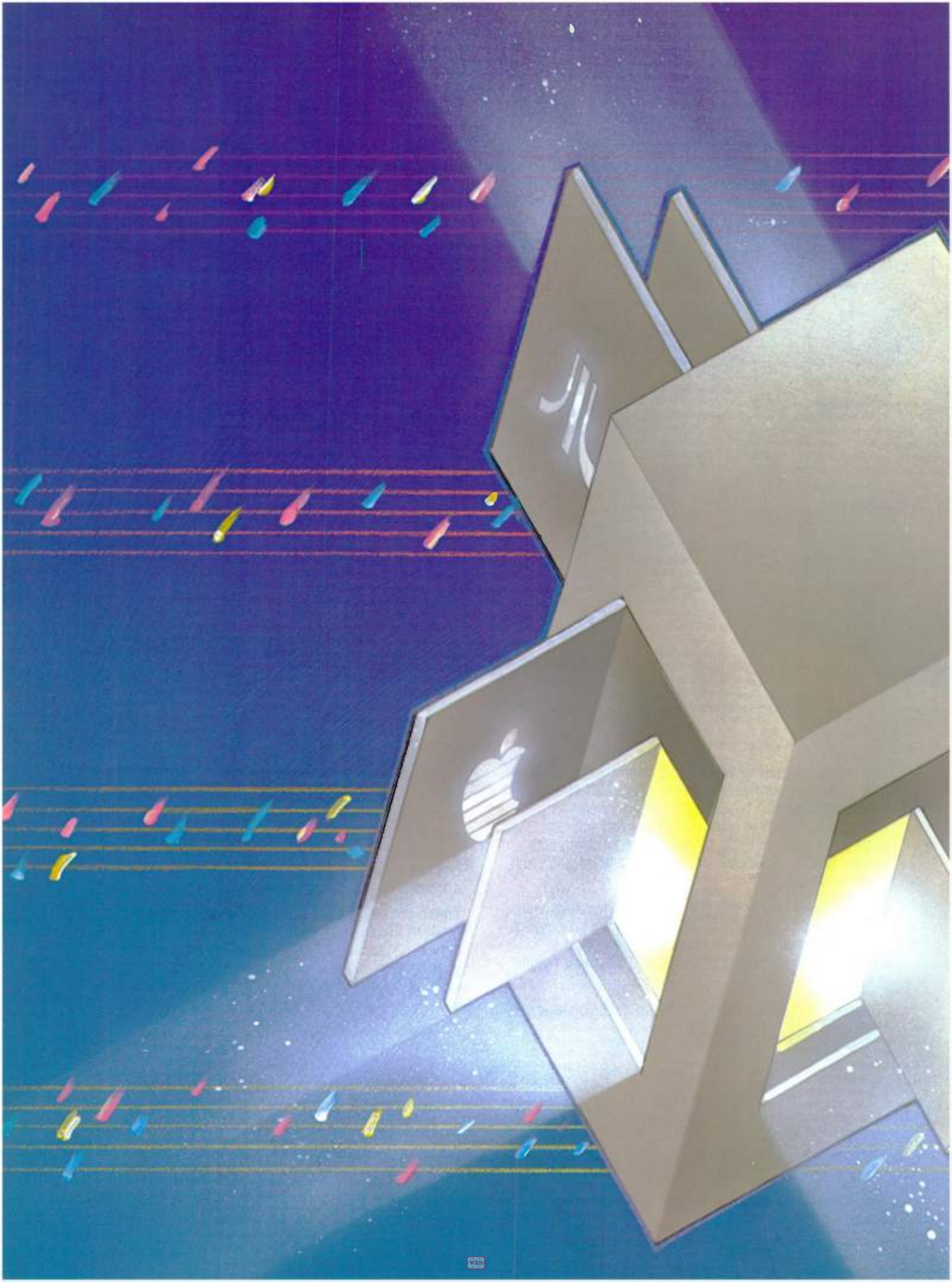
Led by the new MICROVERB® II, the Micro Series comprises the four most important signal processors in any recording rig: Digital Reverb, Limiter/Compressor, Gate, and Enhancer. Designed with the Alesis magic that combines totally professional features with ridiculous affordability, they're at home with 4 tracks . . . or 48.

These are the essential, required processors for modern music production. Whether it's records or demos, or serious fooling around, connect all four in your system and start making music as fast as your ideas come. Relaxed. Polished. Professional sounding.

The Alesis Micro Series belongs in your studio. Because it's as dedicated to music as you are.

ALESIS
STUDIO ELECTRONICS

LOS ANGELES: Alesis Corp., P.O. Box 3908, Los Angeles, CA 90078 **LONDON** 6 Letchworth Business Center, Avenue One, Letchworth, Hertfordshire SG6 2 HR



The MUSICAL COMPUTER

INTRODUCTION BY CRAIG ANDERTON

COMPUTERS, COMPUTERS, computers. In the space of less than a decade, musical computers have gone from esoteric to commonplace. Walk into a studio, go to a music store, even catch a live gig, and you're likely to see the ubiquitous monitor screen and typewriter keyboard that proclaim: Computers At Work.

The music world seems to have settled on four major computer families—Apple Macintosh, IBM PC and compatibles, Atari ST, and Commodore Amiga. Sure, there are plenty of C-64s still working out there in the field, but the main action is with the Big Four. The once-dormant Amiga is coming on strong, the Atari continues to refine its act with ever-increasing support, the IBM compatibles have turned into "one size fits all" machines that are just as happy running MIDI sequencers as spreadsheets (and they're cheap, too), while the Macintosh continues to be the choice for many of the more high-end developers.

The big question for musicians used to be "which computer should I buy?" With all these options, you might think the choice has gotten harder. Paradoxically, though, the choice has gotten easier: realistically speaking, *any* of the Big Four computers will run enough software to keep even the most avid computer musician busy for years, if not longer. There *are* some differences among the four though, and the four articles here will help delineate those differences.

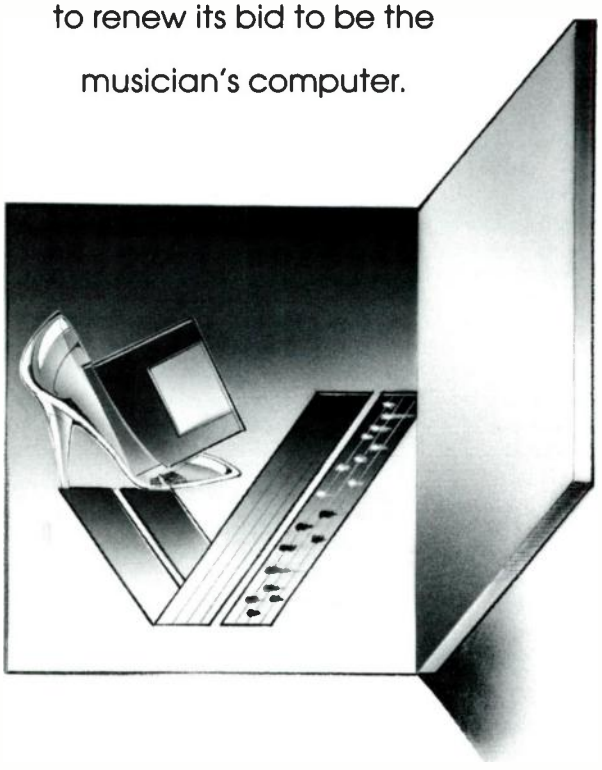
The Amiga, for example, excels at low-cost graphics, while the amount of third party hardware/software add-ons for the IBM PC family is huge. The Atari is extremely cost-effective, and the Macintosh is arguably the best-supported computer in terms of artistically oriented software: music, desktop publishing and graphics arts packages. Your budget, and the uses to which you expect to put your computer, will dictate the model that is best for you. Once in place, a computer becomes your "pet brain" that sequences synthesizers, stores patches, mixes down tape tracks, runs the business side of your company, creates promotional flyers, teaches harmony, entertains, stimulates, and so much more. It can be a composer's assistant, a never-tiring drummer, a printing press, a studio organizer, a window to the world—and who knows what else the future will hold?

If you're interested in the latest generation of computers, you couldn't have picked a better time. Welcome to our special report on the state of the musical computer.

ILLUSTRATIONS BY BUD THON

MUSIC *on the* AMIGA

Comeback of the year award? Thanks to growing sales of the entry-level Amiga 500, Commodore's Amiga family is back on track—and ready to renew its bid to be the musician's computer.



THIS IS A CINDERELLA story—of sorts. But here, Cinderella and her stepsisters are computers; the Fairy Godmother is a software developer; and you're Prince Charming. There's even a mouse in this tale, but I'm sorry to say it doesn't turn into a handsome steed.

I'm talking about the Commodore Amiga 500—*for my money, the most powerful* personal computer around for under $5,000. It lists at $699.95 without monitor; however the typical New York "street price" is around $599.

When the Amiga 1000 first came out, its main competition was the equally new Atari ST. The Atari ST won the first round in "core wars" hands down, but for reasons that had nothing to do with the quality of the computers.

How come? Three reasons.

1. *Price.* An Amiga system with no monitor cost in the neighborhood of $1,000. An ST, $599.

2. *MIDI port.* The Atari ST has one, the Amiga does not. Many software developers argue that the ST's dumb MIDI port, requiring *software* to be responsible for all synchronization, is a drawback. Nonetheless, it was a significant selling feature for the ST. (The Amiga can use either a dumb, $100 MIDI interface, or an intelligent interface like the Roland MPU-401.)

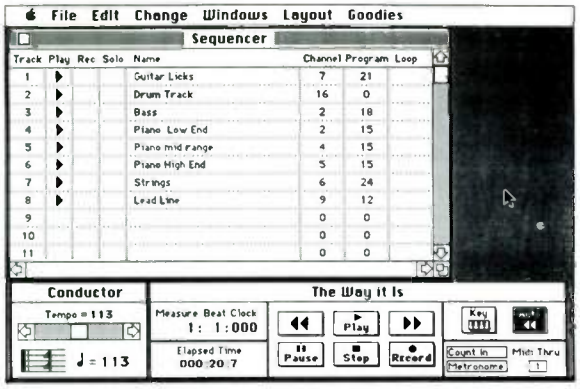
3. *The old chicken/egg syndrome.* Unless software developers are convinced a new piece of hardware is going to sell, they're not going to devote programming and dollars to generate software for it. Commodore's entire management staff was being replaced at the exact moment of the Amiga's release, creating an uncertainty that caused software developers to assume a long-term "wait and see" attitude regarding the survival of the machine and its company. That kind of

BY DEAN FRIEDMAN

"Your song sounds great, but . . .

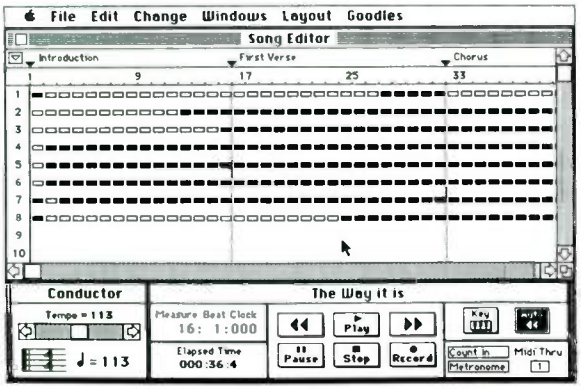
I'd like you to change a few things. The bass needs to be doubled or thickened up a bit, and repeat the horn-fill on guitar in bar sixty-eight. You went a little overboard with the pitch-bend in the middle of the solo, but I think it'll sound fine if you bring up the velocity on each chorus. Oh and by the way, I need it three seconds shorter, but don't cut anything. . . and I'd like to hear the changes by morning."

Demanding response like this from conventional Macintosh™ or Atari ST™ MIDI sequencers will guarantee you an all-night session. With Passport's MASTER TRACKS PRO™ for Macintosh™ or Atari ST™, you can tackle complex sequencing problems in **minutes**, not hours. That's because MASTER TRACKS PRO™ provides you with fast, visual control over your music unrivaled by any other sequencing system.



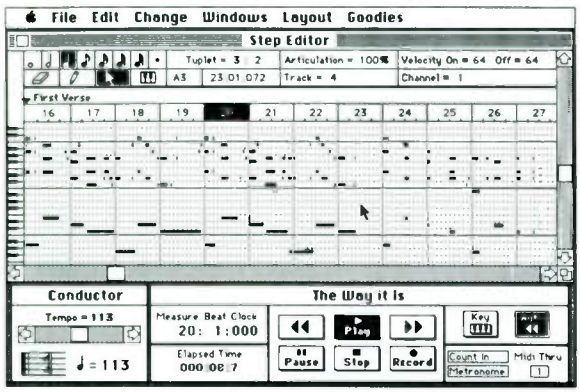
Multi-Track Sequencer

- Record or play from any point in the song
- Control sequencer using on-screen transport
- Sync to SMPTE via MIDI song pointer



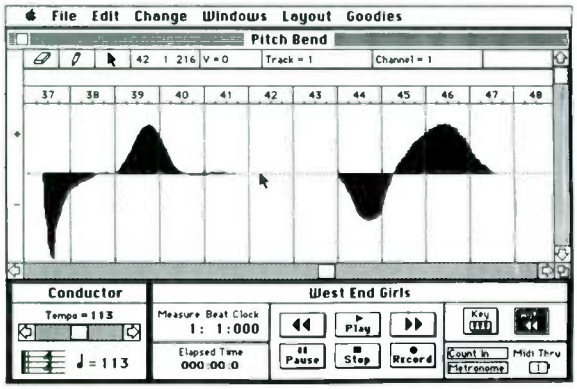
Song Editor

- See the structure of your song over time
- Select meter, tempo and beat for each measure
- Use cut, copy, paste and mix editing to build songs



Step Editor

- See and edit tracks of MIDI data
- Step input notes using mouse or MIDI controller
- Edit individual events or entire phrases



MIDI Data Editor

- Plot Pitch Bend, Aftertouch, Modulation MIDI data
- Zoom in and out on individual events
- Draw changes on screen to edit MIDI data

- 64 tracks for real-time or step-time recording
- Complete implementation of all standard sequencer features
- Extensive control over all MIDI events
- Visually display MIDI events over time
- 240 clocks per quarter-note resolution
- SMPTE sync via MIDI song pointer
- Independent track looping
- Data filtering on input or while editing
- Select areas to edit using mouse
- Change duration, velocity, channel, continuous, transpose
- Cut, copy, clear, paste and mix editing of all data
- Insert or remove time anywhere in a piece
- Display elapsed time of a given section
- Rebar any section to any meter
- Automatically adjust tempos to fit a given time
- Quantize while recording or editing
- Sysex librarian for MIDI system exclusive data
- Store presets, sounds, samples, drum patterns on diskette
- MIDI keyboard can control sequencer
- Windows scroll automatically on playback
- **Now reads and writes Industry Standard "MIDI FILES"**

This is only a sample of MASTER TRACKS PRO'S innovative and powerful MIDI sequencing capabilities. Check it out at the Passport Dealer nearest you or call (415) 726-0280 today to receive a complete catalog of Passport products.

Real music demands control . . . demand Master Tracks Pro from Passport.

Available now for Macintosh™ and Atari ST™.

Passport Designs, Inc.
625 Miramontes Street
Half Moon Bay, CA 94019 USA
(415) 726-0280

Passport International Distributors:

CANADA	AUSTRALIA	NEW ZEALAND
Musicware	Audio Logic	Tekram Agencies LTD.
416-785-3311	03-5872224	03-792-111

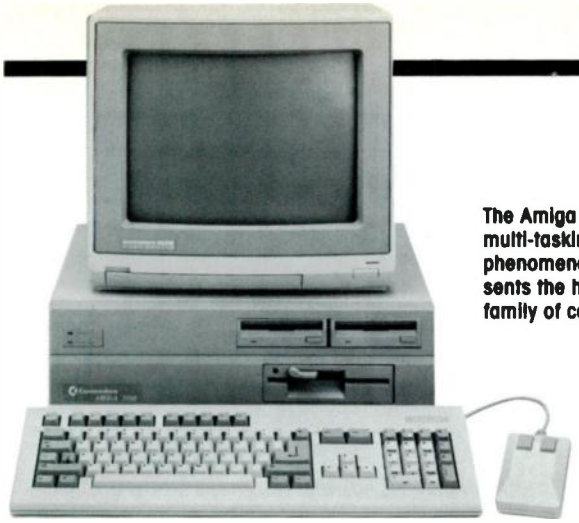
GERMANY/EUROPE	ITALY
MEV Musik & Elektronik	Music Pool
089/835031	02 738 6517

Requirements.
Macintosh 512, Plus or SE, or Atari 520 ST or 1040 ST, MIDI interface and MIDI instruments.

Passport® and Master Tracks Pro™ are trademarks of Passport Designs, Inc.
Macintosh is a trademark licensed to Apple Computer, Inc.
Atari ST is a trademark of Atari Corporation.

MASTER TRACKS PRO™

PASSPORT®
The Speed of Sound.™



The Amiga 2000 computer, with its multi-tasking operating system and phenomenal color graphics, represents the high end of the Amiga family of computers.

neglect usually *guarantees* PC oblivion for a new computer.

But the Amiga didn't disappear. People bought it and loved it, and ever so gradually, software developers began sticking their necks out to offer better and better product for the Amiga. About six months ago, computer retailers began noticing that Amiga sales had suddenly surpassed Atari ST sales. Cinderella finally got to go to the ball.

There are two reasons the Amiga survived in the computer jungle, even with all the computer chips stacked against it.

1. *Reduced price.* Commodore finally released the less expensive Amiga 500 for a strategic $599, containing the same microprocessor and operating system as the original 1000. It is basically the same as the 1000, only smaller and cheaper. (There's also the $1,995 Amiga 2000 which, with a bridgeboard, runs IBM MS-DOS software as well.)

2. *It's really good.* When I said the Amiga is the most powerful PC on the market, I wasn't just playing with my mouse: there isn't a computer system around under $5,000 that offers anywhere near the features available on the $599 Amiga 500. Let's check it out.

FEATURES

■ *Audio.* The Amiga is a four-voice digital sampler. It has four 8-bit digital-to-analog converters, two stereo outs, a practical sampling rate of 30 kHz, and can sample at rates as high as 100 kHz. This is usable, studio-quality sound.

■ *Video.* The Amiga comes with two custom chips that give it enhanced graphic capabilities—4,096 colors and 704 × 440 resolution—that blows away anything in its class or several classes above it. You would have to spend from $5,000 to $6,000 on a souped-up IBM or Mac II, with added-on hardware, to *begin* to compete with what the Amiga can do for $599.

■ *Multi-tasking.* Here's the real kicker. The Commodore Amiga comes with *multi-tasking* as an inherent part of its release philosophy and operating system. No other "mainstream" personal computer at any price includes this incredibly powerful feature—not the IBM, not the Mac, and not the Atari ST. Even without the four great-sounding digital audio channels and eye-catching color graphics, its multi-tasking features alone would be enough to warrant the Amiga's candidacy as the number one music computer around. (See the sidebar for a description of multi-tasking basics.)

THE BIG LIE

Let me set to rest, once and for all, a horrible rumor that may have done more than anything else to raise doubts in musicians' minds about the Amiga's integrity as a music computer.

A prominent music magazine (not EM!), in response to a reader's question about time discrepancies on a piece of Amiga software, claimed that something about the Amiga's multi-tasking system prevented it from being able to generate a reliable and stable MIDI clock pulse.

This is, politely put, an error; for Commodore, nearly a grave error. The fact is that the Amiga is *perfectly* capable of generating a consistent, steady and reliable MIDI pulse—or even SMPTE time code for that matter (see the section on Mimetics *Pro MIDI Studio*, below)—for days, weeks, months or even years on end, without a glitch, and without missing a fraction of a beat.

The reason Amiga's timing became an issue is that its unique multi-tasking operating system architecture made third-party programmers take longer than usual to learn to program the machine, and the

What is Multi-Tasking?

THERE ARE SOME COMPUTERS, like the Mac and the IBM, that allow you to run a program, stop it, pull down and run a second program, stop *it*, and then finally return to the original program without having to reboot the machine.

That is not multi-tasking. The two programs in this example are not running simultaneously. Rather, while one is running the other is not.

The Amiga, on the other hand, can run two, three or a dozen programs *simultaneously*. Start one program running, then another and then another. Each program continues to run, independently of and simultaneously with the others. Make sure you're seated the first time you see this in action, as you're likely to go giddy with delight.

So with an Amiga, you could: play back a MIDI sequence, run a 3-D animation graphics program—synchronized to the music—and edit the sounds of your DX7II in real time with a voice editor! This capability is unheard of in other personal computers. You may need some additional memory, depending on how much your software eats up, but not necessarily a lot. You can do what I just described with a single Megabyte of RAM. (With my 512K Amiga 1000 I use two half-Meg boards alternately: the *Alegra* [$229] from Access Associates and the expandable *StarBoard2* [$495] from MicroBotics Inc.)

There *are* software packages that enable other systems to do actual multi-tasking—Unix does this for IBM—but these programs come at an extra cost and are not inherent to the release philosophy or original operating systems of the machines. The Amiga's multi-tasking operating system is its *only* operating system and it comes with the machine, right out of the box, without costing hundreds of dollars extra, and is the focal point for all Amiga software development and accessory product design.

first few programming attempts failed to address the various time sources available in the computer. These failed programming attempts by independent software developers—not the machine itself—were the cause of the unfortunate rumors. Programmers now know how to program for the Amiga, and developers are putting their hours and money behind the machine. The best news is that their software can do a lot more than just generate steady clock pulses, so let's see what's available.

SEQUENCERS

The centerpiece of any computer-based music system is a sequencer, and there are a number of major Amiga contenders.

Texture by Roger Powell of Magnetic Music ($199, not including MIDI interface) has been one of the top three studio-quality IBM sequencing programs around. Its recently ported Amiga version is virtually the same as the latest IBM version, with the addition of pull-down menus and "click on" routines that take advantage of the Amiga's mouse.

Texture is a pattern-based sequencer that organizes songs much like a drum machine does. You can create 96 patterns of arbitrary length on 16 tracks, and then link them together into up to 2,304 independent sequences. It requires a hardware interface that plugs into the Amiga's parallel port, and a Roland MPU-401 interface to control timing.

One of Texture's most interesting features is that it will record in loop mode, allowing you to overdub track after track (much as you'd add instruments on a drum machine), without stopping playback. Among other things, this offers interesting live performance possibilities to synthesists who are quick on their fingers. It's fast, sensible and reliable, and is viable as a pro-level Amiga sequencer.

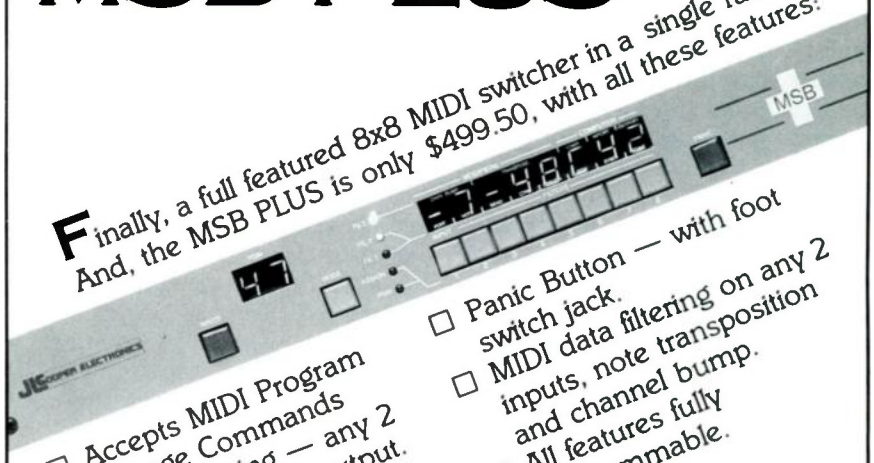
Pro Midi Studio by Todor Fay of Mimetics ($149), which includes the sequencer *SoundScape*, is a significant alternative.

Probably more than any other developer, Mimetics made a strong early commitment to delivering quality software for the Amiga, and it has succeeded admirably. But Pro Midi Studio and SoundScape have suffered from some of the very same misconceptions as the Amiga itself—mostly due to ignorance of multi-tasking.

Pro Midi Studio is not just one, but many programs—or *modules*—some of which can run simultaneously in the

MSB PLUS™

Finally, a full featured 8x8 MIDI switcher in a single rack unit. And, the MSB PLUS is only $499.50, with all these features:



- ☐ Accepts MIDI Program Change Commands
- ☐ MIDI Merging — any 2 inputs to any 1 output.
- ☐ Panic Button — with foot switch jack.
- ☐ MIDI data filtering on any 2 inputs, note transposition and channel bump.
- ☐ All features fully programmable.

The best MIDI tool available!

JLCOOPER ELECTRONICS

1931 Pontius Avenue • West Los Angeles, CA 90025
(213) 473-8771 • TLX: 5101001679 JLCOOPER

OUR BEST FEATURE
IS ALWAYS RIGHT BEHIND YOU

The new fashion in music retail these days is "service." Of course, that's easier to say than it is to do. At Reliable Music, service has been a way of life for over 25 years, from guiding you through product selection, applications and system integration to after-the-sale service and support. Reliable Music is so committed to customer satisfaction that we are **doubling** the manufacturer's warranty — at no extra charge — on every keyboard that we sell. Reliable Music invites you to compare this unique offer with anyone's service; we think you will agree it separates the men from the boys in the music business.

When you are ready for more than a box, give us a call.

Reliable Music
650 E. Stonewall Street
Charlotte, NC 28202
704-375-8662

Amiga's multi-tasking environment. This modular concept makes Pro Midi Studio perhaps the most powerful MIDI operating environment that exists.

The core of this MIDI environment is SoundScape, a full-featured multi-track sequencer that contains, among other sub-modules, a sampler that uses the Amiga's four audio channels, a program that turns your QWERTY computer keyboard into a MIDI keyboard, and a player piano module that lets you observe two channels of MIDI note data playback on a color-coded keyboard display.

One of the many unique features of the program is the way it routes MIDI data. The screen depicts a MIDI patch bay, made up of various icons (drawings) that represent inputs and outputs for MIDI clocks, keyboards, MIDI ports, the sampler, a mixer, and more. To route the incoming MIDI information among any of these, a couple of mouse-clicks on the appropriate icons connects them just as you'd use patch cords in a real patch bay. The patch connections you draw on screen with the mouse become the actual routings.

SoundScape and Pro Midi Studio take getting used to precisely because they take full advantage of the power of a multi-tasking operating system. Once a person becomes acclimated to the range of possibilities available at such a flexible workstation, it's hard to imagine running a music system any other way.

Because the system is modular, new features can be added all the time without making the original program obsolete. Mimetics released *Utility Disks* for Pro Midi Studio that demonstrate this. The last two contained the following slew of separate programs (modules) designed to work with the existing Soundscape software:

Mouse Bender turns your Amiga mouse into a MIDI controller, so moving it along an X/Y axis controls any of MIDI's 128 controller channels.

Mapper/Splitter allows you to filter or transform MIDI messages: Note On/ Off, Polyphonic Aftertouch, Channel Aftertouch, Controller Changes (continuous and on/off), Program Change, and pitch bend. It can create keyboard splits by MIDI note zones, strip pitch bend information from a recorded sequence track, scale key velocity, transpose notes, reassign patch numbers, or reassign a footpedal or other controller to control any continuous controller parameter.

Once a person becomes acclimated to . . . such a flexible workstation it's hard to imagine running a music system any other way.

FrameCounter creates a "hit list" or "cue sheet" for scoring film. It generates text files that show how the beats and measures of a music sequence match up to the frames and seconds of film. This enables you to adjust the tempo of your piece to force certain aural events to coincide with visual events.

SystemX allows you to save and retrieve MIDI System Exclusive data to and from disk. It's essentially a generic patch librarian for any synthesizer, sampler or drum machine that doesn't require a protocol handshake.

Echo is a great little MIDI note echo device that repeats notes several times at adjustable rates, times and decreasing or increasing volumes.

Slide Show is a powerful module that allows you to assign graphic events—pictures drawn with Amiga paint programs—to MIDI note numbers, and trigger them with a MIDI sequence. It even allows you to control the speed of color cycling (an Amiga color animation feature). The potential is here for creating complete music videos from scratch, recording them directly to videotape with simultaneous audio and video.

For those intimidated by SoundScape's vast routing possibilities, Mimetics even includes a simplified operating screen that emulates more standard sequence programs. *Fast Tracker* overlays the other running modules and takes complete control of SoundScape to provide a non-intimidating "front end," yet gives you access to the more complex (and powerful) hidden functions of the underlying modules. Mimetics says they are close to releasing a module that will read and write SMPTE and MIDI time code. A SMPTE generator on disk for under $200 is not bad.

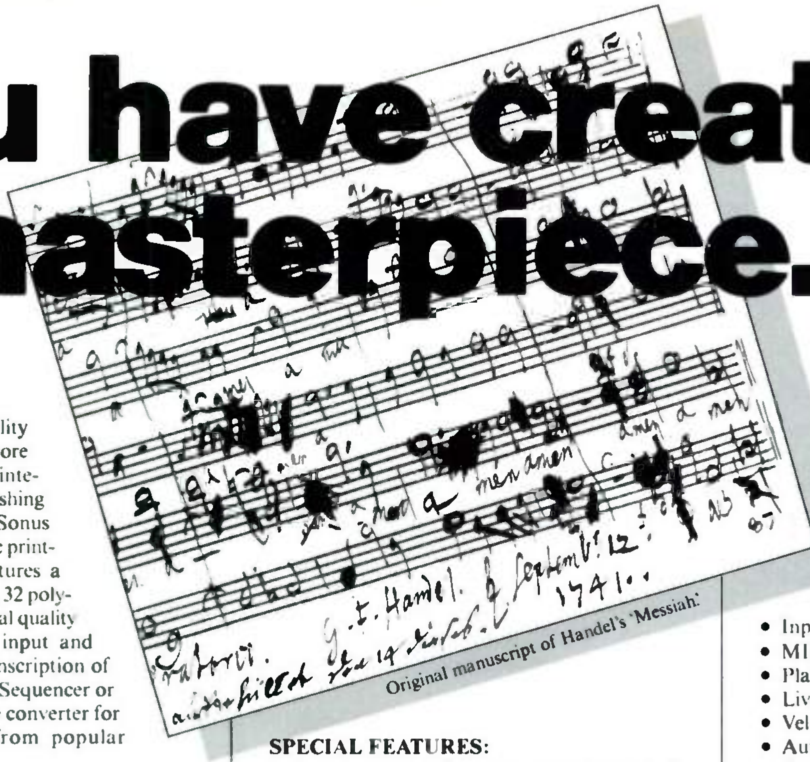
Finally, for anyone *still* concerned about the rumored timing problems, SoundScape offers a module called *Smooth Clocker* that completely replaces the original SoundScape MIDI clock with one whose reference is at least as stable as any dedicated sequencer or computer on the market.

Another sequencer recently ported over to the Amiga is Dr. T's *Keyboard Controlled Sequencer* (KCS), which lists for $225. Originally written for the Commodore 64, the power and flexibility of the somewhat idiosyncratic KCS have earned thousands of satisfied users.

Unlike the pattern-oriented Texture, KCS is something else entirely. Within a sequence, events trigger other events—notes, phrases, sequences—offering a

A performer plays instruments, visible only on the Amiga monitor, created by *Mandala*.

You have created a masterpiece.



Original manuscript of Handel's 'Messiah.'

Power, control and flexibility are at the heart of SuperScore for the Atari ST. A fully integrated desktop music publishing system, SuperScore from Sonus offers more than just music printing capabilities — it features a built-in 32 track sequencer, 32 polyphonic staves of professional quality scoring, text and lyrics input and placement, automatic transcription of MasterPiece, SST Super Sequencer or SuperScore files and a file converter for transcription of files from popular sequencers.

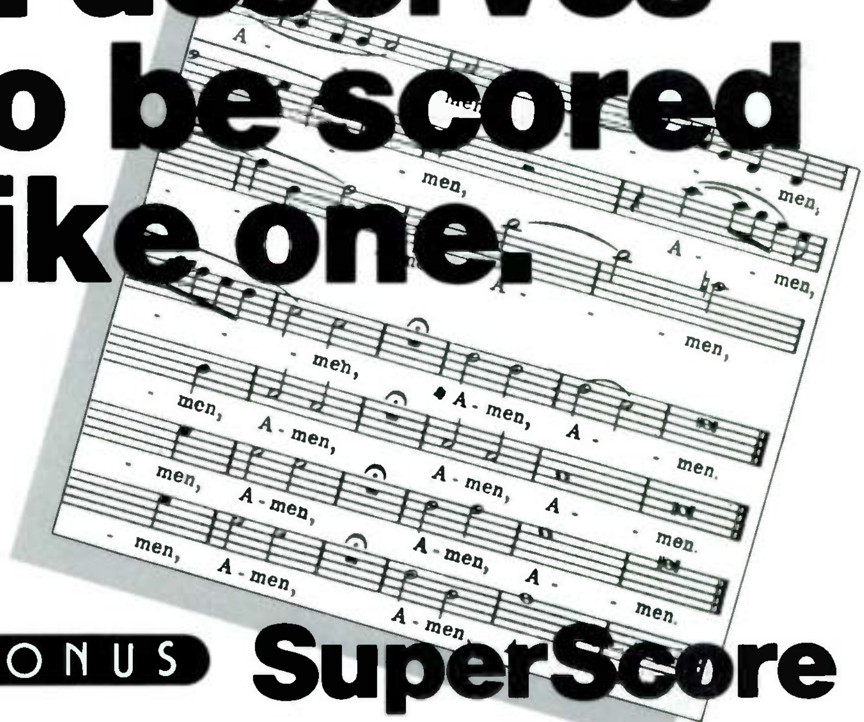
SCORING FEATURES:
- 32 polyphonic staves
- Full layout abilities for all score formats with special quick modes for the most popular types. Extendable library comes with layouts for solo, jazz ensemble, and orchestral formats
- Musical symbol palettes and drawing tools for complete paste up facilities — Draw crescendos, staves, curves, slurs and free hand lines
- Note spacing controls offering global control down to individual positioning of each note
- Treble, Alto, Tenor, Bass and Percussion clefs
- Chord symbols and guitar frames for any chord with extendable custom library of fingerings allowing the addition of your own chords and fingerings
- Lyrics with auto alignment
- Titles, labels, unique headers and footers on every page
- Text placed anywhere on page
- Load and Save icons from popular picture/paint programs
- All types of bar lines with and without numbers, including 1st, 2nd, 3rd endings
- All key signatures/Double sharps and flats automatically computed
- Key, Meter and Clef changes at any bar
- Horizontal or slanted beams
- Automatic pagination and staff spacing/pagination control — Automatically chooses optimum page layouts
- Variable staff sizes
- Hide individual staves of any system
- Print full score or individual parts (up to 3 staves) transposed to appropriate keys

SPECIAL EDITING FEATURES:
- Powerful mouse based screen editing providing the option to edit MIDI data in musical terms and symbols
- Supports cut and paste style editing and easy non-MIDI note entry
- Insert and delete bars
- Insert, delete, change and move notes and rests

SPECIAL FEATURES:
- Separate score and sequence quantize controls
- Automatic transcription of MasterPiece, SST Super Sequencer and SuperScore sequences
- Converts files from Hybrid Arts, Steinberg and other popular sequencers

SEQUENCER FEATURES:
- 32 Tracks, 24 Sequences
- Split tracks by pitch (for recording keyboard parts) or by channel
- Selectable count off
- Loop flag
- Sequence and track displays
- Multiple track selection
- Multiple meter selection
- Drum channel transpose protect
- Input filter selects
- MIDI data viewer
- Play thru/Captive play thru
- Live muting/unmuting (programmable)
- Velocity leveling
- Automated punch/live punch
- Quantization from a whole note to a 1/128
- 192 PPQN internal resolution
- Mod wheel to MIDI volume conversion
- Shift track left or right
- Specifiable exit data

It deserves to be scored like one.



SONUS **SuperScore**

HARDWARE REQUIREMENTS:
Atari 1040 ST, Monochrome monitor, Epson or IBM compatible printers.

Atari is a registered trademark of Atari Corporation, Epson is a registered trademark of Epson America, Inc., IBM is a registered trademark of IBM, Inc., Hybrid Arts is a registered trademark of Hybrid Arts, Inc., Steinberg is a registered trademark of Steinberg Research. © 1987 Sonus Corporation. All rights reserved. Photo courtesy of The British Museum.

Sonus Corporation: 21430 Strathern St., Suite H, Canoga Park, CA 91304 USA,
Sonus International, LTD.: P.O. Box 18 Wokingham, Berkshire RG11 4BP England
USA: (818) 702-0992 • Telex: 650-297-9928
FAX: (818) 704-0638
England: 44 0734 792699

Assured Excellence

Custom pressing, tape duplication and packaging.

1,000

7"-45$

including mastering, metal parts and processing, white sleeves, labels, pressing.

$439.00

12" Albums with jackets

including mastering, metal parts and processing, poly dust sleeves, labels, pressing and printing of full colour ultra high gloss board jackets from customer supplied process film.

$1,390.00

(F.O.B. DETROIT)

- 2 - 3 WEEK SERVICE
- VIRGIN VINYL
- HIGH GLOSS BOARD JACKETS
- $Cr0_2$ CASSETTES
- CUSTOM 7" SLEEVES
- INHOUSE ART & TYPESETTING

Call Toll Free Continental U.S.A.

1-800-263-7798

Canada's Largest Custom Producers

the custom record people **WORLD RECORDS**

BASELINE ROAD WEST, BOWMANVILLE, ONTARIO L1C 3Z3

MOVING?

Ensure that your **Electronic Musician** subscription moves with you!

(PLEASE ATTACH OLD ADDRESS LABEL HERE)

(PLEASE PRINT NEW ADDRESS BELOW)

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

Mail to: **Electronic Musician,**
PO Box 3747
Escondido, CA 92025

fluid approach to composition that's not exactly modular and not exactly linear. Although it's nontraditional in its approach, don't let that scare you; the program fills the role of a serious sequencer perfectly well and includes all the recording, overdubbing, and editing features you'd expect, plus several more you would not.

KCS is a good, solid, proven program that has evolved a great deal since it was originally introduced for the C-64, and the new Amiga port is the best version yet. I'm also happy to say that the power of the Amiga gives the good Doctor—or his associates—the chance to pay some more attention to the importance of high-quality graphics.

Like Pro MIDI Studio and Texture, the new Amiga version of KCS was designed with multi-tasking in mind; by the time this article reaches print, you can expect to see a slew of Amiga voice editors from the Doctor which will run *simultaneously* with KCS, for such popular units as Roland's D-50 and MT-32, the Ensoniq ESQ-1, Yamaha DX and TX synths, and Lexicon's PCM-70. *(Editor's note: Beta versions of these products have been released to selected users, including myself; my initial reaction is very positive.)*

Other pro sequencers on the horizon include *Music X* by MicroIllusions; this is a flexible multi-track sequencer with on-board editor/librarians (I saw a beta version that looked really good), and a rumored Amiga port of the Steinberg 24-track sequencer.

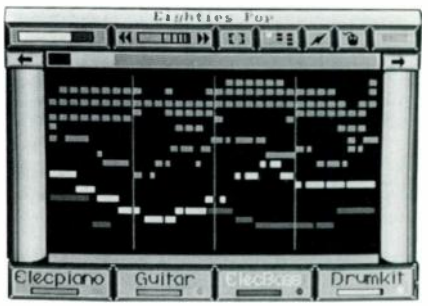
VOICE EDITOR/LIBRARIANS

The cream of the Amiga voice editor/librarian crop so far is a handful of products introduced recently by Sound Quest, a small Canadian company. For Yamaha synths, there are *DXII Master* ($175) for the DX7II (reviewed in the March '87 EM), *DX Master* ($150) for the DX7, and *TX81Z Master* ($125) for the TX81Z. For the new Ensoniq SQ-80 synthesizer there's *SQ-80 Master* ($150), and for Roland's latest synths, the *D-50 Master* ($150) and *MT-32 Master* ($150). The Casio CZ series has *CZ Master* ($125). In addition, Sound Quest makes a generic librarian called *Master Librarian* ($125) that saves and loads System Exclusive data for almost everything.

These are all intelligent, great-looking, feature-packed and easy-to-use editors that make excellent use of the Amiga's unique features; Mike Lambie, the Sound Quest programmer, is to be congratulated.

The *FB01 Datafiler* ($90), by Triangle Audio, is a simple voice editor that lets you control all voice- and instrument-configuration parameters of the Yamaha FB01 module. All values are logically grouped and displayed, and are changed by clicking and dragging the mouse on data slider icons. The program contains no whistles or bells, but does provide an improved way to manipulate and manage voice and setup data for this four-operator, eight-voice synth module.

Of course, in the Amiga's multi-task-



Instant Music lets you improvise—without ever hitting a clinker—against a variety of preprogrammed backgrounds.

ing environment, any number of these sequencers, librarians and/or editors can run simultaneously—you could hypothetically load, edit, swap and save your synthesizer voices while a sequencer is running. If you wanted, you could even load in a word processing program and write a letter to your mom while this is going on. (For those of you interested in the verbal as well as the musical uses of the Amiga, some of the word processors available for the Amiga include: *Scribble*, [$99.95] by Micro-Systems Software, Inc., *Textcraft*, [$99.95] by Commodore, and the popular *Word Perfect* [$395] by the WordPerfect Corporation.)

THE AMIGA WAY OF SAMPLING

Sampling on this computer is as uncommon as its other features. For instance, *Soundlab* ($299.95), by Blank Software, is a powerful, full-featured sample editor for the Ensoniq Mirage that also makes optimum use of the Amiga's audio and graphic abilities to take and edit samples.

Three main windows in Soundlab display a number of waveform viewing and/or editing options, and visually enhance the Mirage's parameters. The program offers waveform drawing with the

mouse; *compress* (a digital compressor with variable slew rate, ratio and threshold settings); *interpolate* (to alter a sample's rate *after* it's been sampled); and a 3 dB *fade* option for smooth crossfades.

But, taking a unique approach, the program is also set up so the Amiga itself will play the Mirage samples with its own sound-generating circuits. The *convert* command can change some Mirage sound files into Amiga samples and vice versa. This is a beautifully realized wedding of two low-cost yet powerful instruments—the Mirage and the Amiga—brought together by the matchmaking talents of a fine piece of music software.

The Amiga's four-voice, 8-bit sampler was originally intended not just for music, but for speech applications as well. (The speech synthesizer is included in the operating system and translates any text you type into speech.) As a compromise between the music and speech applications, the sampler comes with an anti-aliasing, low-pass filter that starts cutting out frequencies at around 7kHz, thus diminishing the musical usefulness of this feature. Fortunately, a simple software routine on the new Amigas (the 500 and 2000) allows you to disable the filter, and the resulting unfiltered sounds are truly impressive. The older Amiga 1000 requires a relatively easy hardware modification.

At least four companies—Karl Denton Assoc., Wavetable Technologies, E.C.T. Sampleware, and Datasound Inc.—produce libraries of samples, on disk, that can be loaded and played by the Amiga, with no outboard sampler necessary. Although the Amiga is just an 8-bit sampler, and the newest samples are typically made at only about a 28 kHz sample rate, there is still a broad and professionally useful selection here that includes acoustic instruments, synth sounds, orchestral instruments and a variety of sound effects. Believe me, it's *amazing* to hear sampled sounds this good coming out of your computer.

But what about making your own

TWENTY FOUR III

Professional Software for Professionals

For ATARI ST with 1Mbyte

Steinberg JONES

Dept. KR
17700 Raymer St., Ste. 1001
Northridge, CA 91325

818-993-4091

FAX: 818-701-7452
Telex: 5106017237

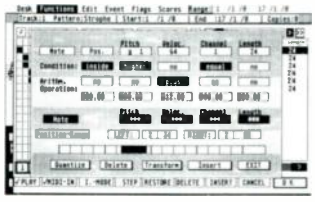
Other software available from Steinberg/Jones:

SYNTHWORKS DX/TX
SYNTHWORKS ESQ-1
SYNTHWORKS FB-01
SYNTHWORKS D-50
SYNTHWORKS MT-32
SYNTHWORKS TX-81Z
SOUNDWORKS S900
SOUNDWORKS MIRAGE
SOUNDWORKS EMAX
SOUNDWORKS P-2000/02
DESKTOP MIXING DMP-7
THE EAR

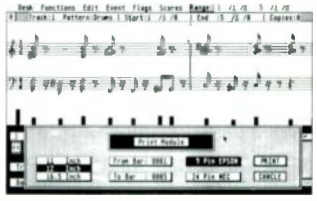
If you are making a living in the music business you don't have time to deal with unwieldy software, likewise, you don't want to stifle your creativity with tools that are limited in any way... hence TWENTYFOUR III.

Wtih TWENTYFOUR's **NEW RECORDING MODE**, you may record on four tracks simultaneously. Jump from a drum-track to a bass-track, react, edit, improve the piano, quantize the bass, erase some notes... and all this is done without ever hitting STOP—you're continuously in 'RECORD-MODE.'

With improved **LOGICAL EDIT**, you can program a slight delay on every fourth



Logical Edit



Print Score

snare but quantize every second one, transpose only the loud brass and string parts, and double all the short bass notes with a kick drum... all this can be done with a simple click of the mouse.

With **REMOTE CONTROL** you can program all the basic functions of the TWENTYFOUR to be controlled remotely from your MIDI keyboard.... **CLIPBOARD** in the SCORE-EDIT page allows you to cut out themes, move them, copy them, overlap them, and then print out the entire pattern.... **COPY** on the main page enables you to drag tracks and patterns anywhere you want... **STANDARD MIDI FILE FORMAT** keeps you in touch with the rest of the MIDI-World.

For audio or video applications, you may use TWENTYFOUR III with the **SMP-24** for professional SMPTE combined with MIDI processing, or the **TIME-LOCK** if only SMPTE synchronization is required.

samples? The first requirement for this is a hardware interface consisting of an analog-to-digital converter that accepts audio (an *analog* signal from a microphone, stereo system, synthesizer or other source), converts it into *digital* information that computers understand, and sends it to the Amiga. Typical digitizers are *Future Sound* by Applied Visions ($175) and *Perfect Sound* by SunRize Industries ($89). Future Sound records in mono while Perfect Sound records in stereo.

Once a sound has been digitized, you can edit it. The sample editors for the Amiga's own voices are not quite as powerful as those available for upscale samplers like the Emulator II, Akai S900 or Ensoniq Mirage, but they offer enough basic, useful features (reverse sample, mix samples together, cut/copy/paste and zoom) to provide you with hours of sonic tinkering and titillation.

The two most powerful of these editors are *Studio Magic* ($99.95) by SunRize Industries (companion to their Perfect Sound digitizer) and *AudioMaster* by Aegis ($59.95). While AudioMaster offers more of the conventional features and includes freehand waveform drawing, Studio Magic has some less-conventional features such as amplitude modulation and echo, and includes a simple four-voice MIDI sequencer that, while useful, is more of a scratch pad than anything else. Both do the job.

Pro Midi Studio's SoundScape also has a resident sample editor module, and yet more modest ones appear in several semi-pro sequencers such as *Sonix* ($79.95) by Aegis and *Music Studio* ($49.95) by Activision.

SYNTHS ON A DISK

A program called *Synthia* is distributed by The Other Guys Software. While not a sampler *per se*, Synthia uses algorithms to emulate various modes of synthesis in controlling the Amiga's digital voices. The program is actually a software synthesizer—a synth on a disk. It emulates subtractive and additive synthesis and uses sound families called *interpolation string* and *percussion*. You can draw envelopes and LFOs, alter phase modulation depth, tuning, filter, and select the type of reverb you want. The program uses uncommon conventions for sound programming, but nevertheless can make some pretty outrageous sounds.

Another synthesis program, *Waveform Easel* ($19.95) by Silver Software, is similar, although on a much more modest scale. It lets you design synthesized sounds for the four audio channels by manipulating waveforms with the mouse. This is a simple program that does a good job introducing the novice to sound wavefom editing. At $19.95, you can't go wrong.

There's even a software drum machine, *Dynamic Drums* from New Wave Software, that uses the Amiga's audio channels to trigger multiple drum samples. You can load in a drum kit made up of ten samples, program patterns, and link them into songs just like a regular drum machine. It offers individual accent, volume and tuning controls for each drum, and has one feature I've never seen on a drum machine before: *dynamic drums* lets you *randomize* both the volume and tuning on a drum to achieve a more live effect. It slaves to any external MIDI time-based device and sounds pretty good; its only real drawback is the lack of individual outs for the ten drums. Even so, it's a pretty hip piece of software.

It's easy to imagine improvising an entire movie soundtrack on *Music Mouse.*

OTHER KINDS OF AMAZING AMIGA MUSIC SOFTWARE

A number of the algorithmic composition programs that came out in the last year have recently been ported to the Amiga. (See the Aug. '87 EM for a full report on the pre-Amiga versions of these programs.)

M, from Intelligent Music, is a pattern generator that alters any phrase you play into the computer by changing variables such as pitch, order, duration, volume, attack and transposition. The results can be wonderfully complex and intricate patterns. As a compositional tool for generating musical ideas, *M* is both thought-provoking and fun.

Another recent port to the Amiga is considerably more than just a composi-

The Software Way to Stardom:
Amiga Programs for a Desktop Music Video

SOME AMIGA PAINT PROGRAMS that would be useful in various ways for producing videos include: *Delux Paint II* ($129.95) by Electronic Arts, *Aegis Draw* ($125.95) and *Draw +* ($259.95) by Aegis, *Digi-paint* ($59.95) by New Tek, *B-Paint* ($39.95) by Finally Software and *Sculpt 3D* ($99.95) by Byte-by-Byte.

Animation software includes: *Aegis Animator* ($139.95) and *VideoScape 3D* ($199.95) by Aegis, *Animate 3D* ($150) by Byte-by-Byte, *Animator: Apprentice* ($295) by Hash Enterprises, *Animotion* ($99.95) by Finally Software, *DeluxeProductions* ($199) and *DeluxeVideo 1.2* ($129.95) by Electronic Arts, *Photon Video: Cell Animator* ($149.95) by MicroIllusions and *Silver* ($169) by Impulse Inc.

One of these animation packages, DeluxeVideo 1.2 by Electronic Arts, is designed to accept IFF and SMUS music files (Amiga file standards for music and graphics) created on any IFF SMUS-compatible music software (some examples of these are Deluxe Music Construction Set, The Music Studio, Sonix, and Instant Music). This allows you to set triggers in the animation sequence that will then play back your music files or sound effects, synchronized to the video animation, on the Amiga's audio channels.

There are also character generators for the Amiga, real-time video digitizers, gen locks, frame grabbers and numerous video special effects packages. All contribute to making the Amiga an unbelievable video production tool.

tional tool. *Music Mouse* ($79.95) by Laurie Spiegel (Amiga version implemented by Laurie Spiegel and David Silver; distributed by Opcode) is unique. You use the mouse to control scales, intervals, sequencing patterns, tempo, instruments and such for four voices—the Amiga's or a MIDI instrument's—to create a pleasant and fascinating sequence whose overall texture is defined by the chosen mode and pattern, and whose shape is defined in real time by its oddly organic response to your movement of the mouse. Apart from a certain modal sameness that can creep in after a while, the program can weave hours of constantly changing musical fabric. It's easy to imagine improvising an entire movie soundtrack on *Music Mouse*.

Two unusual offerings are programs by Doug Hoffman of Silver Software. One, *DNA Music* ($19.95), uses the genetic code material in a double helix DNA molecule as the basis for musical sequences. Another, *Fractal Music* ($19.95), generates pitch strings from fractals—the equations mathematicians use to describe seemingly random shapes in nature. These programs are a bit weird, but interesting and educational.

MUSIC SOFTWARE IN THE HOME

Most of the other music programs out there are semi-pro—intended for the home computer/consumer market. By their very nature, these entry-level music programs are easy to learn, fun to use, and filled with features not necessary on a complex pro system—like great big fat notes in different colors with bright appealing graphics, ridiculously simple screens, and instantly satisfying and effortless musical results.

And that's the way it should be. (My question is: shouldn't the best software—especially the pro systems—contain some of those very elements? Shouldn't a great professional program be fun to use?) There are a number of these programs—*Deluxe Music Construction Set* ($99.95) by Electronic Arts, *Sonix* ($79.95) by Aegis, *The Music Studio* ($79.95) by Activision and—a perfect example—Electronic Arts' *Instant Music* ($49.95), written by Bob Campbell.

Instant Music lets you create a rhythmic and harmonic template over which you improvise with the mouse. The program makes sure all pitches relate to the current harmonic progression and fall

within accurate rhythms—you *can't* hit a wrong note. The display contains no notes, no staves, no bar lines, no music—only colorful squares and rectangles that ascend or descend with the pitch. You just move the mouse up or down and concern yourself with the pretty patterns on the screen. Even if you've never touched an instrument before, this feels like you're actually playing a synthesizer or guitar or bass, and it always sounds right.

Though limited, this program offers a chance to play and improvise in an unorthodox way. Just as Music Mouse presents us a new method of playing an instrument, Bob Campbell's Instant Music offers a radically new way of visualizing melody and voice leading, and this accomplishment should not be underestimated.

The only real lack in Amiga music software is a professional music printing program. Deluxe Music Construction Set, Sonix, and The Music Studio *do* allow you to print scores, but their editing parameters limit them to simple lead sheet work. Full-blown orchestral scores are still in the future.

INDESCRIBABLE SOFTWARE

There's one product for the Amiga that bears special mention. *Mandala* ($395, plus a $295 video digitizer) by Very Vivid, Inc. is tough to describe, but here goes.

Imagine facing a video camera that's standing next to your Amiga monitor. The monitor is displaying an animated environment filled with colored bells, created with an Amiga paint program. From the camera, your digitized image goes to the computer, which inserts it into the animated environment.

So there you are on the monitor, standing in a roomful of colored bells. The computer knows where (on its screen) your image resides and, from your motion, can trigger any event—like a MIDI Note-On. You move, your image strikes a bell, and this triggers a MIDI note event, like sampled bells for example. You're playing imaginary instruments in empty space and hearing them sound in real time.

It doesn't end there. Reach up and grab an arrow on the computer screen and you change environments. Now you're in a room with a large harp. Strum the imaginary harp and—you guessed it—you hear harp sounds that correspond exactly to your gestures. Go into the drum room. Your hands are touching nothing and yet you hear the drums loud and clear. This is an absolutely incredible experience that gives—at the very least—new meaning to the term "air guitar."

Manufacturers of Music and Video Products for the Amiga

Aegis Development
2210 Wilshire Blvd.
Suite 277
Santa Monica, CA 90403
☎ 213 / 392-9972

Access Assoc.
491 Aldo Ave.
Santa Clara, CA 95054-2303
☎ 408 / 727-0256

Activision
PO Box 7286
Mountain View, CA 94039
☎ 415 / 960-0410

Applied Visions Inc.
Suite 2200
One Kendall Square
Cambridge, MA 02139
☎ 617 / 494-5417

Blank Software
1034 Natoma St.
San Francisco, CA 94103
☎ 415 / 863-9224

Byte-By-Byte
Arboretum Plaza II
9442 Capitol of Texas Hwy. N.,
Suite 150
Austin, TX 78759
☎ 512 / 343-4357

Commodore Business Machines
1200 Wilson Dr.
West Chester, PA 19380
☎ 215 / 431-9100

Datasound
603 Brantley Pl.
Virginia Beach, VA 23452
☎ 800 / 341-1950 (x 24)

Diemer Developments
12814 Landale St.
Studio City, CA 91604
☎ 818 / 762-0804

Dr. T's Music Software
220 Boylston St., Suite 306
Chestnut Hill, MA 02167
☎ 617 / 244-6954

E.C.T. Sampleware
PO Box 36
Sierra Madre, CA 91024
☎ 408 / 741-0117

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
☎ 415 / 571-7171

Finally Software
2255 Ygnacio Valley Rd., Suite N
Walnut Creek, CA 94598
☎ 415 / 935-0393

Hash Enterprises
14201 SE 16th Circle
Vancouver, WA 98684
☎ 206 / 256-8567

Intelligent Music
PO Box 8748
Albany, NY 12208
☎ 518 / 434-4110

Karl Denton
PO Box 56
Westland, MI 48185
☎ 313 / 522-0939

Magnetic Music
RD #5
Box 227A Myrtle Dr.
Mahopac, NY 10541
☎ 914 / 248-8208

MicroBotics Inc.
811 Alpha Dr., Suite 335
Richardson, TX 75081
☎ 214 / 437-5330

MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
☎ 818 / 360-3715

MicroSearch
9896 Southwest Freeway
Houston, TX 77074
☎ 713 / 988-2818

Micro-Systems Software, Inc.
4301-18 Oak Circle
Boca Raton, FL 33431
☎ 800 / 327-8724

Mimetics Corp.
PO Box 60238, Sta. A
Palo Alto, CA 94306
☎ 408 / 741-0117

New Tek
115 West Crane St.
Topeka, KS 66603
☎ 913 / 354-1146

New Wave Software
PO Box 438
St. Clair Shores, MI 48080
☎ 313 / 771-4465

Opcode Systems
1024 Hamilton Ct.
Menlo Park, CA 94025
☎ 415 / 321-8977

The Other Guys
PO Box H
Logan, UT 84321
☎ 800 / 942-9402

Silver Software
77 Mead St.
Bridgeport, CT 06610
☎ 203 / 366-7775

Sound Quest
5 Glenaden Ave. East
Toronto, Canada M8Y 2L2
☎ 416 / 234-0347

Steinberg/Jones
1770 Raymer St., Suite 1001
Northridge, CA 91325
☎ 818 / 993-4091

SunRize Industries
3801 Old College Rd.
Bryan, TX 77801
☎ 409 / 846-1311

Triangle Audio Inc.
PO Box 1108
Sterling, VA 22170
☎ 703 / 437-5162

Very Vivid
302-1499 Queen Street West
Toronto, Canada M6R 1A3
☎ 416 / 537-7222

WaveTable Technologies
1647 Willow Pass Rd., Suite 267
Concord, CA 94520
☎ 415 / 947-0689

WordPerfect Corporation
288 West Center Street
Orem, Utah 84057
☎ 801 / 225-5000

MUSIC VIDEOS

One of the most important reasons for a musician to consider an Amiga is that it is an incredible desktop music video workstation. You may resist, but you know in your heart that a good video is critical these days to breaking and promoting any musical entity, and the cost and control of doing your own production are big factors. So how professional is the Amiga as a music video workstation?

An important reason for a musician to consider an Amiga is that it is an incredible music video workstation

Tom Petty's *Jammin' Me*, George Clinton's *Do Fries Go With That Shake?*, Timbuk 3's *The Future's So Bright I Gotta Wear Shades* and Oingo Boingo's latest video were *all* done on Amigas. Even the *Max Headroom* show employs Amiga graphics in its production. This is a professional-quality machine that enables you to do video work that otherwise would cost tens or hundreds of thousands of dollars.

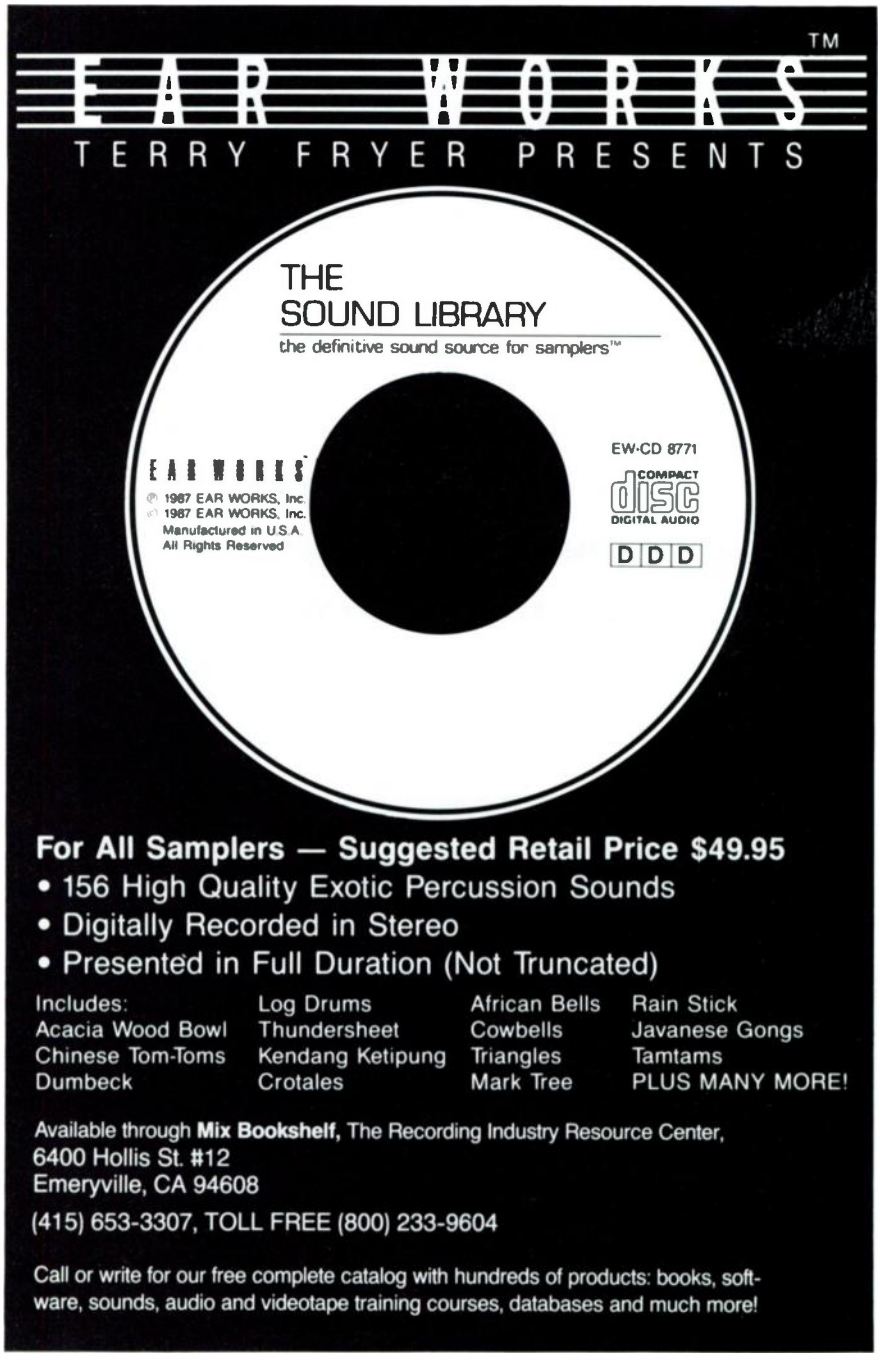
With multi-tasking the Amiga can run a sequencer *simultaneously* with graphics paint and animation programs, and both sound and video can be dumped directly to videotape. This means that working alone, you could complete an entire animated music video right in your own home, save it to disk, drive to a studio and dump the performance to videotape in a few minutes. Sound impossible? It's not. The programs with which you could do this are available from the manufacturers listed in the sidebar.

SUMMARY

The Amiga 500's recent success in the marketplace is reason to believe that the major music software developers who have not yet tapped the Amiga's potential will soon start to develop Amiga programs. In the meantime, there's already plenty of top-notch, professional software available.

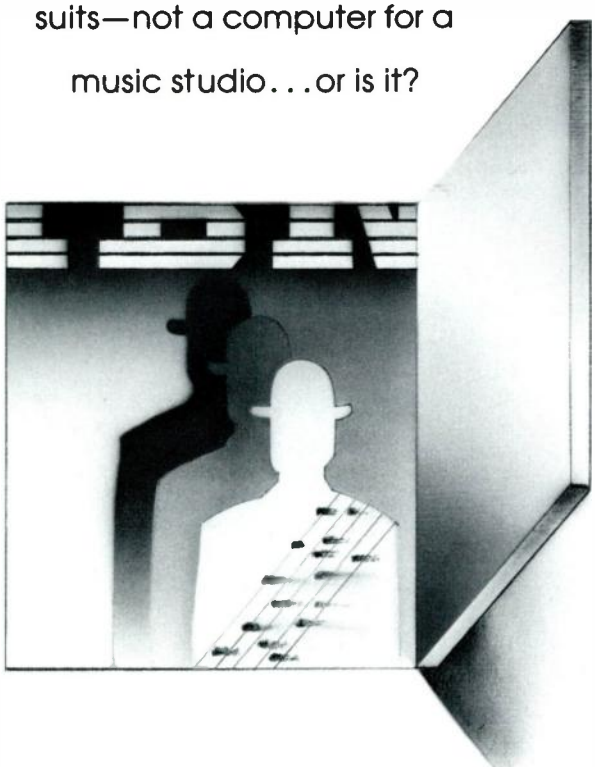
This until recently neglected computer, with great audio, great video, multi-tasking, an easy-to-use operating system and an incredibly inexpensive price, is much more powerful and cost-effective than people realize. If you're on the verge of taking the PC plunge, pay the Amiga some *serious* attention. If the glass slipper fits, wear it, and rest assured this baby won't turn into a pumpkin once the clock strikes 12. This Cinderella isn't going to be overshadowed by her stepsisters any longer. EM

***Dean Friedman** has several hit records to his credit (including the single* Ariel*). He is the author of* The Complete Guide to Synthesizers *and* Synthesizer Basics *(Amsco), and is currently director for the New York School of Synthesis (☎ 212/ 323-8056). He has just released a video manual for the new DX7II (FD/D).*



BIG BLUE *Does* MIDI: *A Survey*

While Apple, Commodore and Atari trumpeted their computers as liberating, creative, and just plain fun, IBM marketed the PC to corporate types in suits—not a computer for a music studio. . . or is it?



HUMORLESS CREW-CUT guys in business suits. Long columns of numbers cranked out of impersonal machines that occasionally run amok and send you a $120,076 phone bill. Stultifying images of conformity, oppression, sterility. Those are the stereotyped images the letters "IBM" conjure in most peoples' minds, which may explain why the IBM PC was a bit slow to catch on as a music computer.

As it turned out, more than a few musicians realized that you use the *computer*, not the image. IBMs and IBM-compatibles—or "clones"—now rate third in popularity among musicians, behind the Macintosh and the Atari. (*In last year's* EM *reader survey, IBM computers ranked* second *as most-owned, right behind the venerable Commodore 64—Ed.*) Fact is, some of the most powerful music software written runs on the IBM, and current prices make it a very attractive MIDI option. In fact, the best reason for buying "IBM" these days is one IBM hates: the so-called *clones*.

These low-priced knock-offs from Taiwan are assembled and marketed by American jobbers under various brand names. These days you can get a complete XT clone system, with Hercules-compatible graphics, a full 640K of RAM *and* a 20-Megabyte hard disk for about $1,000. A two-floppy system might run $700. Believe it or not, that's cheaper than a new two-floppy Commodore 64! Interested? Here's a survey of what's state-of-the-art in the IBM world.

THE BASIC MACHINE

I won't bore you with a lot of tech talk about the IBM's innards—just what you need to know for music applications.

Speed You want the fastest processor you can afford, at the fastest clock

BY CARTER SCHOLZ

Some Things Speak For Themselves.

And what these three programs are saying is revolutionary. Because they work with you to make your music. With intelligence. Warmth. Excitement. With some pretty daring results.
M is an extraordinary composing and performing environment. Its screen becomes a visual control panel, so you can explore and produce like never before. With Jam Factory, you teach your music to the program's four players, then arrange their improvisations until they sound just right.
UpBeat is a graphic rhythm programmer complete with fills and song structure.
And it even remembers the sounds of your drum machine.
But you've heard all this before. Through rave reviews and articles in Keyboard, Electronic Musician, Music Technology, MCS, Musician, Macworld, MacUser, Omni, and other magazines.
From the musicians all over the world who use them.
Now it's time to hear these programs yourself. Visit your local dealer for a demonstration.
Or contact us for more information and free brochures. Demo disks are $10 per program.
Just send us a check and specify the disks you want. M for the Macintosh, Atari ST, or Amiga.
Jam Factory and UpBeat for the Macintosh.

Intelligent Music
P.O. Box 8748
Albany, NY 12208
518-434-4110

M, Jam Factory, UpBeat, and Intelligent Music are trademarks of Intelligent Music Computer Systems, Inc. Macintosh is a trademark licensed to Apple Computer, Inc. Atari and ST are trademarks of Atari Corp. Amiga is a registered trademark of Commodore-Amiga Inc.

Temporal Acuity Products recently introduced *MusicPrinter Plus*, which plays sequences on the IBM Music Feature or MIDI synths, and prints impressive-looking, dot-matrix scores.

speed. From slowest to fastest, IBM processors are:

- 8088—used in the PC and XT
- 8086 and 80186—used in some clones
- 80286—used in the AT
- 80386—used in some clones

Clocks range from 4.77 MHz at the low end to about 16 MHz. "Turbo" models allow speed switching, typically between 4.77 MHz and 8 MHz. The low speed is there to let you run finicky software; this feature is comforting to have, but I've never had to use the low speed on my turbo.

Storage You want the most storage you can afford. One floppy disk drive and one hard disk is recommended. A floppy drive costs about $100 and stores 360,000 bytes; a hard drive costs about $300 and stores 20 million bytes. You figure out which is the better deal. Get a Seagate ST-225 20-Megabyte hard disk—it's a reliable bargain.

Fauna You may or may not want a mouse. Not much IBM software uses it, but for *Score* or *Personal Composer* it's worth the $100 cost. I recommend the Logitech mouse, which is Microsoft-mouse-compatible.

Graphics A Hercules-type "monochrome graphics adapter" is standard on most clones; this is what you want. It has a text mode and a graphics mode. All the software listed here runs on it.

While we're on the subject of graphics, let me explain something: the IBM is unique among existing small computers for being, fundamentally, a text-based machine. Graphics are an add-on option. This *could* be a problem for you—Lord knows it has been for programmers. There are (so far) at least six different video display "standards" for IBM: text, CGA, Hercules mono, EGA, VGA, and PGA. So it's no wonder that most music programs, including the major sequencers, are written for a text display—programming for all those other displays would be a nightmare. (This is in direct contrast to the Macintosh, which pretty much *requires* programmers to work in its one, single graphics standard.) The upside of this is that the IBM text display is more legible than any other small computer. The downside is that you may not be able to take all that text if you're especially right-brained. Of course graphics can be done—and done brilliantly—on the IBM. The *mono* graphics adapter we mentioned provides a screen resolution that's actually *superior* to the Macintosh, but programs that take advantage of this capability are few and far between.

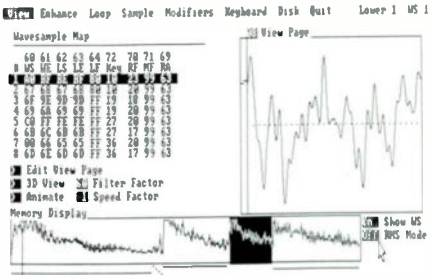
MIDI INTERFACES

Roland introduced the MPU-401 ($295) interface early in the MIDI revolution and it quickly became the IBM standard. It remains the one interface that nearly all IBM programs support. The MPU-401 is an external box that hooks up to Roland's MIF-IPC card ($164) inside the computer. Voyetra makes a plug-in single-card equivalent called the OP-4001 ($295, or $229 without sync features), and Roland has announced its own single-card 401 called the MPU-IPC ($195).

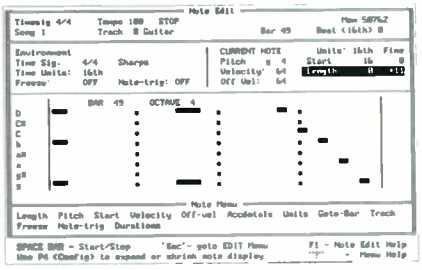
There are alternatives to the 401 if you're willing to restrict your software choices. Systems Design Associates makes an integrated hardware/software package called *Promidi* ($595) that includes both an interface and a sequencer. IBM makes *The Music Feature* ($495), a plug-in four-operator FM synthesizer with a MIDI interface. Mellotron Digital makes the *MuArt 4-Port MIDI Interface* ($695 including 48-track sequencer software) which has four MIDI Ins and Outs instead of the usual one. The hard-core hacker on a budget can even build an interface, from plans published in *Byte's* June 1986 issue. At the moment, the MPU-401 and equivalents are the only interfaces worth considering; the software just isn't there yet for the others.

SEQUENCERS

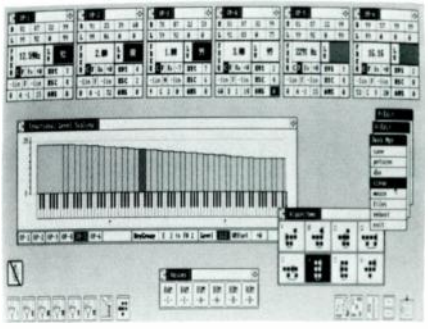
One of the most capable workhorse sequencers for the IBM is Voyetra's *Sequencer Plus Mark III* ($495; see the review in the March '88 issue). It's distinguished by



Vision **is a sample editor for the Ensoniq Mirage from Turtle Beach Softworks; a revised version, *Vision II*, has just been released.**



Voyetra's *Sequencer Plus Mark III* is the highest-level member of a family of three sequencer products.



Bacchus Software Systems makes *Graphic Editing Systems* for the Yamaha TX802 and TX81Z.

Music Hardware and Software for the IBM PC/Clones

Product	Company	Features	Price
INTERFACES			
MPU-401/MIF-IPC	Roland	w/tape sync	$275+$164
MPU-IPC	Roland		$195
OP-4001	Voyetra	w/ or w/o sync	$295/229
Promidi	SDA	w/sequencer	$595
Music Feature	IBM	w/FM synth	$495
MuArt	Mellotron	4 ports, w/seq.	$695
SEQUENCERS			
Sequencer Plus	Voyetra	64/32/16 tracks	$495/295/99
Texture 2.5	Dr.T	24 tracks	$295
AdLib	AdLib	w/FM synth & seq.	$245
Personal Composer	Jim Miller	64 tr. w/scoring	$495
48 Track PC	R. Keller	48/16 tracks	$249/100
MESA	Roland	8 tr. w/scoring	$695
Cakewalk	Twelve Tone	256 tracks	$150
Concept 1/2	MIDI Concepts	32/16 tracks	$495/$245
SCORING			
Score	Passport	PostScript	$795
Copyist	Dr. T		$225
Personal Composer	Jim Miller	PostScript	$495
MESA	Roland		$695
MISCELLANEOUS			
various editors	Passport		$125
various editors	Bacchus		$249/199
various editors	Dr. T		$99
Tune-Up	Antelope	100 TX81Z tunings	$49
Vision II	Turtle Beach	waveform editors	$349
CMU MIDI Toolkit	CMU	C routines	$20

a full complement of "transform" functions that allow you to select notes or tracks for quantization; several kinds of transposition; inversion; retrograde; crescendo; duration adjust; and time offset. You can view and edit your work at the note, bar, or piece level. The note display is a pseudo-graphic "player piano" roll, with pitch on the vertical axis and duration on the horizontal, and editing can be done with the cursor keys or numerical entry. Each bar can have a different meter, and you can loop tracks of different length independently. Sequencer Plus may not be for everyone, but it would probably make the largest number of diverse composers happy. Scaled-down versions, without transforms, are also available: the 32-track *Mark II* ($295) and the 16-track *Mark I* ($99). The program is copy-protected.

In *Texture* 2.5 ($295) you build songs by linking short riffs (of up to 999 beats) that can repeat a number of times with or without crescendi and accelerandi. It's a fairly powerful way of creating long takes from a minimum of material, but it is definitely biased toward the pop-song format of repeating choruses, verses, and bridges. The program's editing transforms aren't as extensive as Sequencer Plus's, but include time stretching and compression. Texture is copy-protected.

48 Track PC ($259), by Robert Keller, looks and acts like a multi-track tape recorder, but allows you to link segments *a la* Texture. (Unlike Texture, however, every repetition of a riff eats up more memory space.) Note-editing is done via a note list. I was impressed by several

EXPLORE THE NEW TECHNOLOGY...

• Computer Music Systems
• Midi Software & Interfaces

For: Music Printing • Recording
Audio/Video Workstation
Education Software
Midi Synthesizers • Midi Guitars

• Weekly Seminars & Demos
• Customer Support

FOR A FREE CATALOGUE,
CALL, WRITE OR VISIT

MUSICATION

1600 Broadway (48th St.)
N.Y., NY 10019, Suite 1000A
(212) 957-9100

Son of FX

ORGANIZE YOUR RECORDING, COMPUTER AND RACK-MOUNTABLE EQUIPMENT IN AN ATTRACTIVE, MOBILE WORK STATION.

SON OF FX FEATURES:
- Two adjustable shelves for multi-tracks, drum machines, computers and more!
- Holds up to 10 rack "spaces" of equipment.
- Shown with optional "Rack Drawer"™

ASK YOUR DEALER FOR A DEMONSTRATION
CALL OR WRITE FOR FREE BROCHURE

FOUR DESIGNS COMPANY 6531 GROSS AVENUE • CANOGA PARK, CA 91307 (818) 716-8540 OUTSIDE CA 800 544 3746

FOR ADDITIONAL FOUR DESIGNS PRODUCT INFORMATION, CALL:
1-800-544-3746
SAY YOU SAW IT IN
ELECTRONIC MUSICIAN!

FX RACK

ECONOMICAL 19" RACK MOUNT "FURNITURE" FOR THE PROFESSIONAL OR HOME STUDIO.

FX RACK FEATURES:
- Holds up to 18 "spaces" of equipment.
- Attractive black textured vinyl laminate.
- Shown with optional wheels.

ASK YOUR DEALER FOR A DEMONSTRATION
CALL OR WRITE FOR FREE BROCHURE

FOUR DESIGNS COMPANY 6531 GROSS AVENUE • CANOGA PARK, CA 91307 (818) 716-8540

A new level of performance is just a touch away

The new Ensoniq EPS Performance Sampler and SQ-80 Cross Wave Synthesizer with Poly-Key™ pressure sensitivity

Discover a new level of performance in the new Ensoniq EPS Performance Sampler and SQ-80 Cross Wave Synthesizer. With Poly-Key pressure sensitivity you'll find more expression than in any other sampler or synth.

Playing an instrument with Poly-Key pressure is a musical treat. Each individual note responds vividly to your touch. You can control the modulation of pitch, vibrato, brightness or loudness—even the mix between two different sounds—all by varying the pressure of individual keys. So, instead of just playing a chord, you can command an entire string section. Or give horns real individuality. Or play dozens of other expressive effects you never could before.

The Ensoniq EPS — The only sampler that can play and load at the same time

It's hard to be expressive when your keyboard is silent, so the EPS lets you load sounds from the disk *while you are playing.* No other sampler—regardless of price—has this important performance feature.

Another new means of expression—Instant Patch Select—lets you choose alternate wavesamples or programs instantly in real time. With two patch select buttons located near the pitch wheel, you can instantly add expressive variations to a sound as the spirit of the moment moves you.

In addition, the EPS has 20 dynamically assigned voices, 20Hz to 20KHz audio bandwidth, 16 bit data format, 13 bit sample converter, 24 bit internal processing, floating point output with 96dB dynamic range and a built-in 8-track MIDI sequencer. And since the EPS can convert and play Mirage sounds, there's a ready library of over 2500 sounds available right now.

The Ensoniq SQ-80 — Studio technology with the performance touch

In addition to expressiveness, your instrument needs sounds that can cut through a stage full of amplified instruments. The Ensoniq SQ-80 Cross Wave Synthesizer cuts like a sharp knife.

Cross wave technology involves grafting the transient attack characteristics of one sound onto the beginning of another. The SQ-80 has a total of 75 sampled and synthesized waves on board, including multi-sampled bow, pick, breath and hammer attack transients, as well as inharmonic loops and sampled and synthesized sustain waves. So you can create thousands of sounds that not only cut, but sing and soar as well.

There's also an 8-track MIDI sequencer and built-in 880K disk drive for program, sequence and MIDI system exclusive storage. Each disk can store up to 1728 different programs and 10 full sequencer or MIDI system exclusive blocks. With one disk, you can be set up and ready to play before the guitar player tunes up.

Discover a new level of performance. Step up to an Ensoniq EPS Performance Sampler or SQ-80 Cross Wave Synthesizer at your authorized Ensoniq dealer, today. For the name of your nearest US dealer call toll free: 1-800-553-5151.

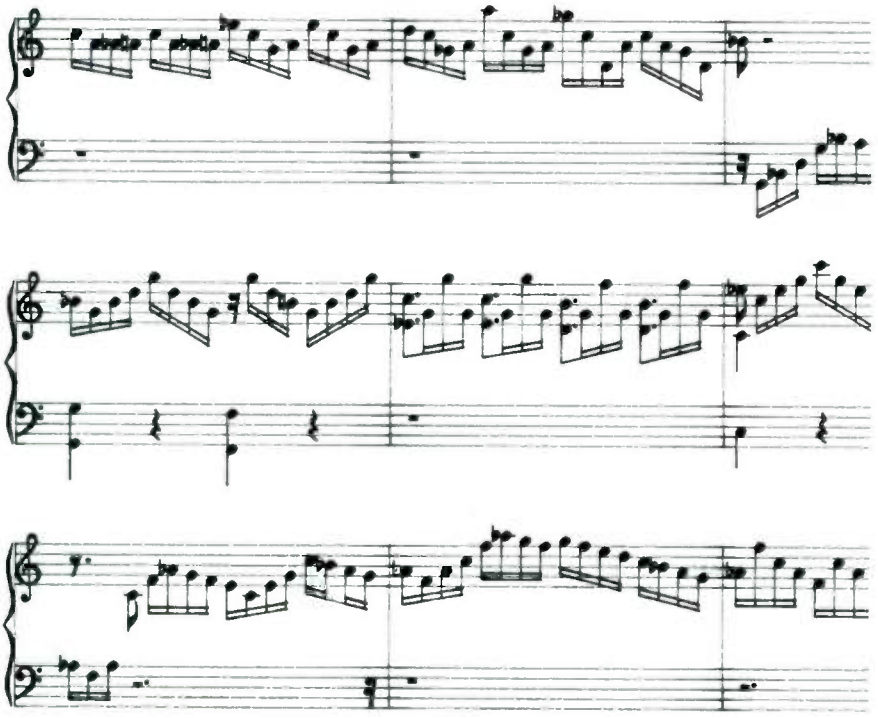
ENSONIQ Corp, Dept. E, 155 Great Valley Parkway, Malvern PA 19355 □ Canada: 6969 Trans Canada Hwy., Suite 123, St. Laurent, QUE. H4T 1V8 □ ENSONIQ Europe BV, Domplein 1, 3512 JC Utrecht, Holland □ Australia: Electric Factory, 188 Plenty Rd., Preston, Vic. 3072 □ ENSONIQ Japan, Ochanomizu KS Bldg., 2nd Floor #201, 3-3-1 Hongou Bunkyo Ku, Tokyo

©1987 ENSONIQ Corp
Ensoniq, Mirage, ESQ-1, EPS, SQ-80 and Poly-Key are trademarks of Ensoniq Corp.

ensoniq®

THE TECHNOLOGY THAT PERFORMS


ensoniq
EPS
SQ80
ensoniq



Computer plotter print-out from Roland's *MESA* music scoring system.

features: any kind of MIDI data, including System Exclusive, can be entered in a track; real-time editing of tempo and velocity is possible via a pitch wheel while a song is playing; and the powerful transforms include some I hadn't seen elsewhere, including *time stretching* with SMPTE. Detailed but not overwhelming help screens and intelligent documentation make the program a breeze to use. Keller has proven responsive to customer input, incorporating some suggestions into his revisions. One very hip feature: you can read and write song files in standard ASCII format, for later editing in any word processor. Hackers and algorithmic-composer types will find this a boon.

Personal Composer ($495) by Jim Miller is far more than just a sequencer. In fact, as a sequencer it leaves a lot to be desired, but it also gives you a scoring program, artificial intelligence extensions, and a DX7 voice librarian. By the time you read this, version 2.0 should be out, and it promises to be a whole new program. Miller's was one of the first graph-

Stereo echo, to be exact. There's also stereo chorus and flanging. Pitch change. Four kinds of reverb. Plus reverb and gate.

Thirteen different kinds of effects in all. In our new SPX90II, an encore performance of the most successful digital processor in audio history.

And now we've expanded the delay times. And expanded the possibilities.

There are 30 preset variations, each with up to nine separate controls. So you can get precisely the sounds you want.

But that's just the beginning. Because there's also room for 60 more custom variations, your own "signature" sounds that you can create and store in memory.

The SPX90II lets you label each custom effect with its own title. And you can instantly

There's an e

ics-based music programs for the IBM, and it looked like a miracle at the time. Progress has made us all jaded since then, but 2.0 could renew the sense of wonder. Deserving of high praise is Miller's generous upgrade policy: even major new versions of the program are available to registered users for *free*.

Roland's *MESA* ($495) is functionally similar to Personal Composer, but I find it less powerful and less efficient to use.

Cakewalk ($150), from Twelve Tone Systems, is the least expensive of the full-functioned sequencers. It emulates a tape recorder, and lets you view your work by track, measure, and event, in list format. Editing can be performed at any of these three levels, and a good selection of transform functions is available. This is a good entry-level sequencer for musicians on a budget.

For the beginner, who is probably on a budget also, the *AdLib Music Synthesizer* ($245) represents the least expensive way into electronic music—but not into MIDI. This half-slot card can play up to nine two-operator FM voices (for comparison, the IBM Music Feature can play eight four-operator voices). With these, you can play pre-recorded songs using the included *Jukebox* software, or write your own with the included *Visual Composer* sequencer. The optional *Instrument Maker* program ($49.95) lets you design your own sounds to add to 70-plus presets that come with AdLib. The main drawback is AdLib's lack of MIDI, and hence, of expandability.

If your needs include engraved-quality output of scores . . . nothing else (but *Score*) will do.

SCORING

And when you're done playing, *The Copyist* ($225) will read and score music prepared on various sequencers, including Sequencer Plus, Texture, 48 Track PC, and (with the aid of a $49 translation program from Twelve Tone) Cakewalk. It supports Epson FX dot-matrix printers, the HP Laserjet, and HP and Roland plotters. Its output is not as fine as that of Personal Composer or Score, but the price may be right.

Personal Composer ($495) was the first IBM scoring program, and remains the standard. Its dot-matrix output is quite good (though not publication-quality); version 2.0 will support *PostScript*, a page description language standard on many laser printers and high-resolution typesetters.

Score ($795) from Passport Designs is the Rolls-Royce of scoring programs. Developed at Stanford University by Leland Smith, it has the degree of sophistication that only a decade's worth of constant use and refinement can produce. Music is input via the computer console, a pre-

call up an effect with either our MFC1 MIDI foot controller, remote controller or just a standard footswitch (all optional).

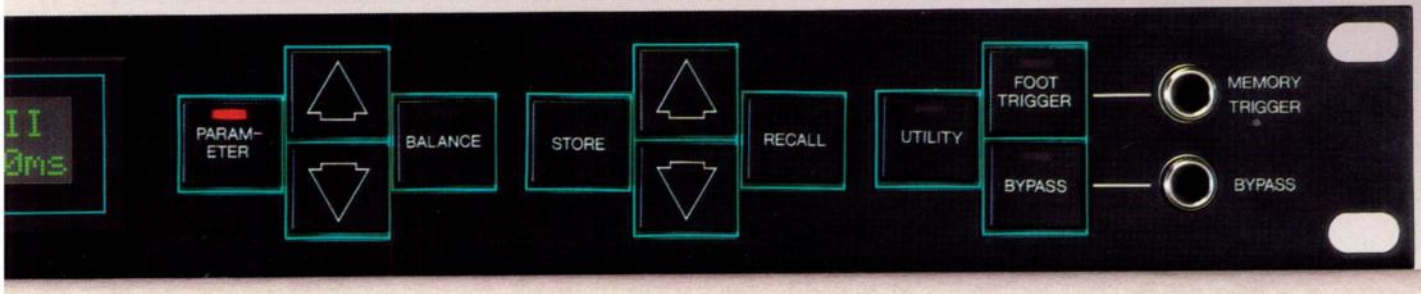
But even if you don't need custom tailored sounds, the factory preset effects give you maximum signal processing in minimum rack space.

So whether you're a musician, producer or audio engineer, visit your nearest Yamaha Professional Audio Products dealer to see and hear the new SPX90II.

It'll have some terrific effects on you. Yamaha Music Corporation, Professional Audio Division, P.O. Box 6600, Buena Park, CA 90622. In Canada, Yamaha Canada Music Ltd., 135 Milner Avenue, Scarborough, Ontario M1S 3R1.

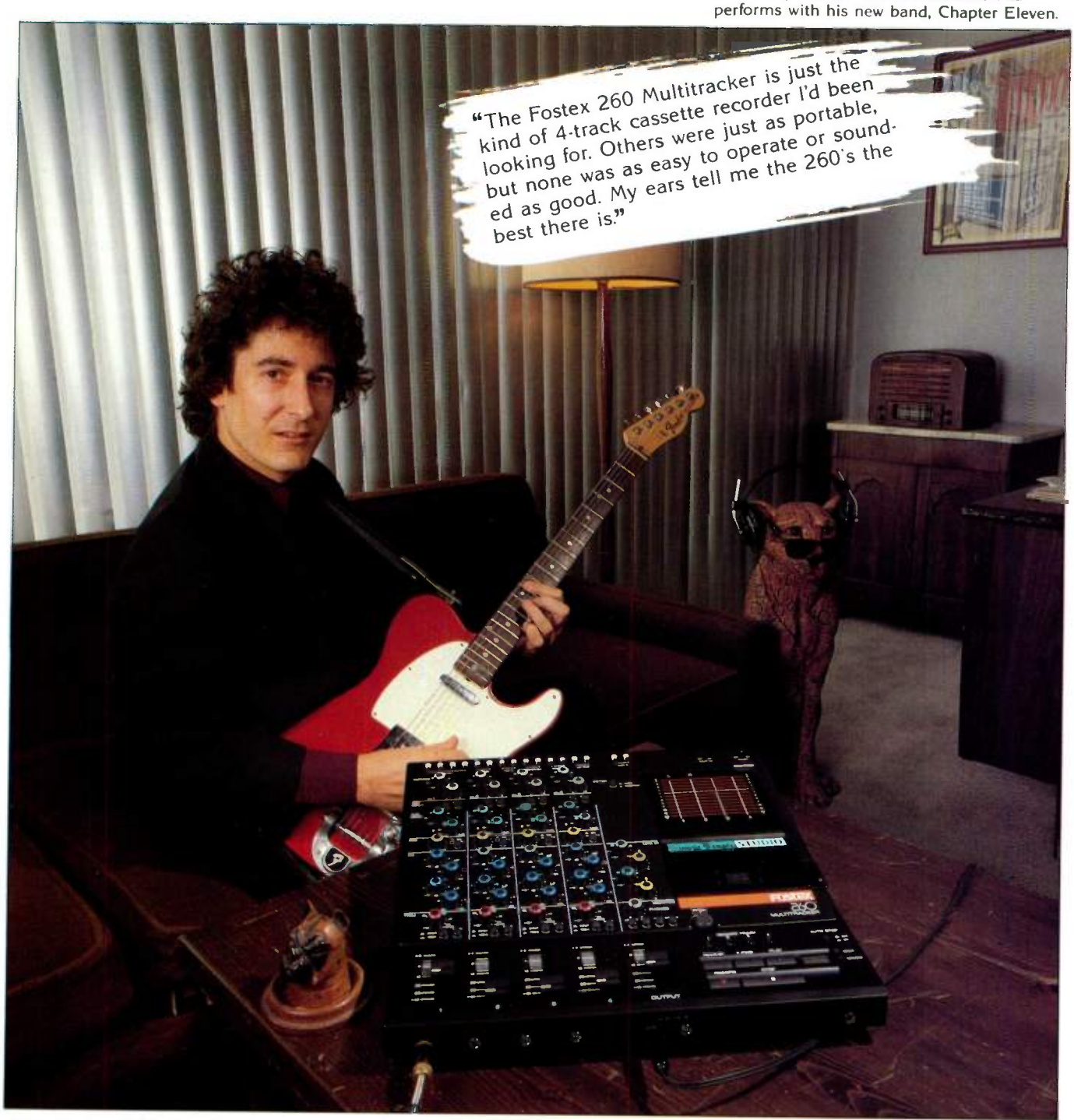
YAMAHA®
Engineering Imagination™

cho in here.



STAN RIDGWAY ON FOSTEX

The former lead singer for Wall of Voodoo iscurrently working on the follow up album to "The Big Heat," his first solo endeavor. Stan also composes for film soundtracks and performs with his new band, Chapter Eleven.



The Fostex 260 Multitracker features: 6 inputs • High speed 4-track recording with advanced noise reduction • Sweepable EQ • Switchable meters • Two headphone jacks • More buss flexibility than any other 4-track cassette/mixer available.

FOSTEX
Personal Multitrack

©1988 Fostex Corporation of America 15431 Blackburn Ave., Norwalk, CA 90650 (213) 921-1112

pared text file, a mouse, or a MIDI keyboard. The on-screen score can be played back in four parts over MIDI or on the IBM Music Feature. If Score's hundreds of symbols, from guitar chords to harp pedals, aren't enough for you, you can design your own. Output can be sent to a dot-matrix printer, a laser printer, or a PostScript file. The degree of control and the quality of the output allowed by Score is unparalleled, but it's a hard program to learn, and may well be overkill for your needs. But if your needs include engraved-quality output of scores like Ives's *Concord Sonata* or Cornelius Cardew's *Treatise*, nothing else will do. A warning: Score runs like cold molasses on a stock PC or XT. You'd best have a 286 or 386 machine with a math co-processor chip if you want to really take advantage of what this package has to offer.

MISCELLANEOUS

Passport, Dr. T's, and Bacchus all make good solid editor/librarians for a variety of synths. The Bacchus series is worth a look, if only because of its screens—which prove that an IBM *can* be forced to look and act like a Mac. Voyetra's *Patch Master* ($195) creates synth data dumps that can be loaded into the Sequencer Plus librarian module.

There *is* life beyond MIDI, and your computer can run other kinds of programs.

If you own a sampler, you need a waveform editing system—that's the easiest way to get good loops on any of the under-$10,000 samplers currently on the market. Turtle Beach Softworks makes *Vision II* ($349) for the Mirage and the Akai S900. Dr. T's makes *Waveform* ($149) for the Mirage. Both use Hercules or CGA graphics to display the waveform. *Tune Up* ($49) for Antelope Engineering is a library of 100 exotic tunings for the microtunable TX81Z synth. If you have a TX81Z, I highly recommend it—it's a real ear-opener, and great fun.

A final bit of advice: it never hurts to think of what you'll be doing after hours. There *is* life beyond MIDI, and your computer *can* run other kinds of programs. Text-based applications like spreadsheets, databases, and word processors are the IBM's forte. Consider that too before you decide on a machine.

THE FUTURE

Recent IBM news is the introduction of the PS/2 series of computers—IBM's next generation of machines. Are the old PC/XTs and ATs obsolete? I think not. First, the new operating system for the PS/2 (Microsoft's *OS/2*) has been plagued by delays; Microsoft is now claiming "late 1988" as a release date. Second, the delay between the release of OS/2 and the release of music software that takes advantage of it is going to be even longer. Finally, the existing market for older machines is just too large for software companies to abandon—something like ten million pre-PS/2 IBMs and clones are out there, and they won't be forsaken any time soon. The most encouraging part of the IBM scene to me is the increasing activity of individual developers. Robert Keller's 48 Track PC, Twelve Tone's Cakewalk, and Antelope's TuneUp are, I think, just the beginning of a new wave of cost-effective software—including some interesting applications that the bigger software houses might consider too specialized to publish.

Most interesting of all is a category I call "hackware"—tools for creating your own MIDI utilities. Carnegie-Mellon University distributes the *CMU MIDI Toolkit* ($20) that includes a complete performance language called *Adagio*, and a real time programming package called *MoxC* (you need Lattice C 4.0 to run MoxC). I know of other toolboxes under development for the Forth and Pascal languages.

This may seem like exotic stuff, but in the long run these tools will benefit everyone—users as well as hackers—by making it easier, cheaper, and quicker to create innovative MIDI software.

(Thanks to David Gray of Leo's Audio and Music Technologies, Oakland, CA, for supplying some of the hardware and software mentioned in this article.) EM

Carter Scholz owns several kinds of computers and synthesizers. His favorite software/hardware combination is fingers and a piano.

Manufacturers of Music Products for the IBM PC/Clones

AdLib
50 Stanford St., Suite 800
Boston, MA 02114
☎ 800 / 463-2686

Antelope Engineering
1048 Neilson
Albany, CA 94706
☎ 415 / 528-0609

Bacchus Software
2210 Wilshire Blvd., #330
Santa Monica, CA 90403
☎ 213 / 820-9145

Carnegie-Mellon University
College of Fine Arts Room 111
Center for Art & Technology
Pittsburgh, PA 15213-3890
☎ 412 / 268-3454

Dr. T's Music Software
220 Boylston St., Suite 306
Chestnut Hill, MA 02167
☎ 617 / 244-6954

IBM Entry Systems Division
11400 Burnet Rd.
Austin, TX 78758
☎ 512 / 823-4584

Robert Keller
2920 Jefferson
Eugene, OR 97405
☎ 503 / 485-3481

MIDI Concepts Inc.
7657 Winnetka
Canoga Park, CA 91306
☎ 818 / 342-0409

Jim Miller
PO Box 648
Honaunau, HI 96726
☎ 808 / 328-9518

Mellotron Digital Corp.
36 Main Street
Port Washington, NY 11050
☎ 516 / 944-6789

Passport Designs
625 Miramontes St., Suite 103
Half Moon Bay, CA 94019
☎ 415 / 726-0280

RolandCorp US
7200 Dominion Circle
Los Angeles, CA 90040
☎ 213 / 685-5141

Systems Design Associates
928 W. University, Suite 660
Denton, TX 76201
☎ 817 / 565-9210

Temporal Acuity Products, Inc.
300 120th Ave. N.E.
Bldg. 1, Suite 200
Bellevue, WA 98005
☎ 206 / 462-1007

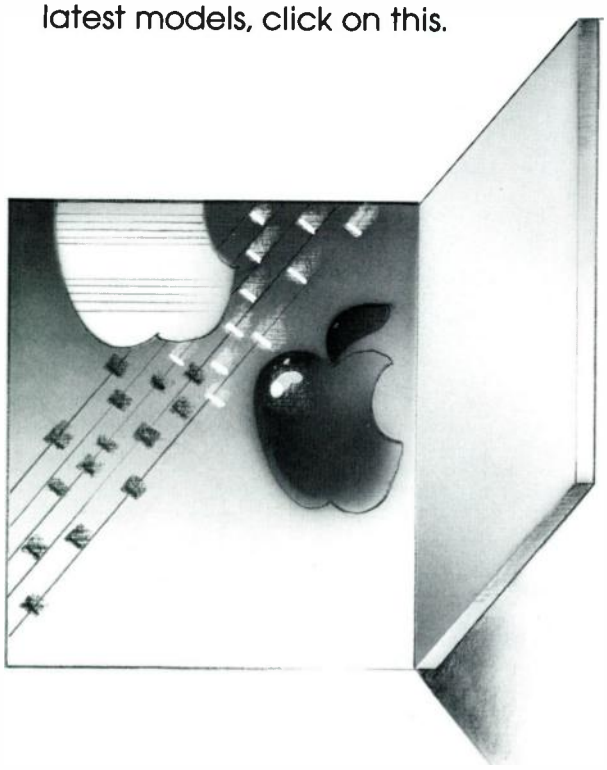
Twelve Tone Systems
Box 226
Watertown, MA 02272
☎ 617 / 594-5051

Turtle Beach Softworks
1912 Alcott Rd.
York, PA 17402
☎ 717 / 741-4972

Voyetra Technologies
426 Mt. Pleasant Ave.
Mamaroneck, NY 10543
☎ 914 / 698-3377

The State of the MACINTOSH: *A Musical* PERSPECTIVE

The musical ascendancy of the Apple Macintosh is a fascinating and sometimes confusing story—even to Mac owners. If you're shopping for a computer, or want to know how your Mac compares to the latest models, click on this.



IN THE WELL-LIT RECESSES of the corporate offices of Apple Computer, two small teams of very gifted, intensely creative engineers play all day with MIDI software, sound resource files, hard disk recorders, computer speech, synthesizers, and samplers, exploring the boundaries of how musicians work with computers, and inventing the tools we'll need the day after tomorrow.

This is the Advanced Technology Sound Group, born in December, 1985 with a pair of engineers developing the sound circuit for the Macintosh II and fooling around with music on the side. The pair grew into eight musicians/engineers, and there are plans to double that number later this year.

Another team, over in Product Development, offers system software and hardware support to third party developers who are tapping the Mac's audio or MIDI capabilities. They write code for sound generation and speech recognition, develop and promote standards like the Standard Sample Format announced in January, and provide tools and techniques for developers.

THE MUSICIAN'S COMPUTER OF CHOICE

This scenario shouldn't surprise anyone. With its combination of computing power, genuine portability, visual clarity, small footprint, and ease of use, one could almost believe the Apple Macintosh was designed with musicians in mind. Even more, there's the software—those dynamite MIDI programs that, for almost three years, have made the Macintosh the obvious first choice for professional MIDI studios. Almost anything you can do with MIDI software, you can do with a Macintosh.

But the truth is, Apple wasn't even

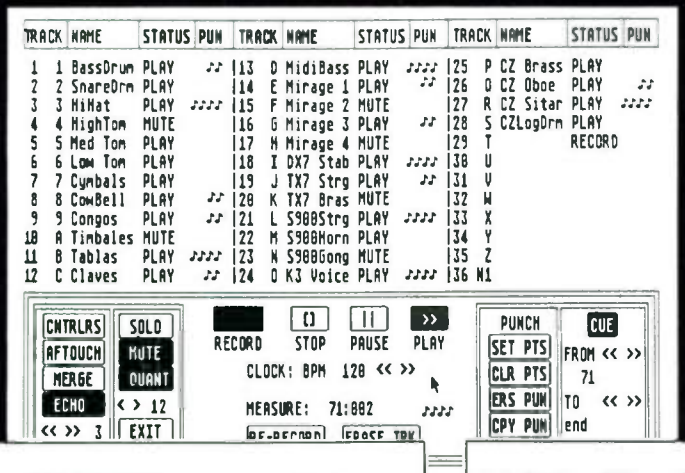
BY GEARY YELTON

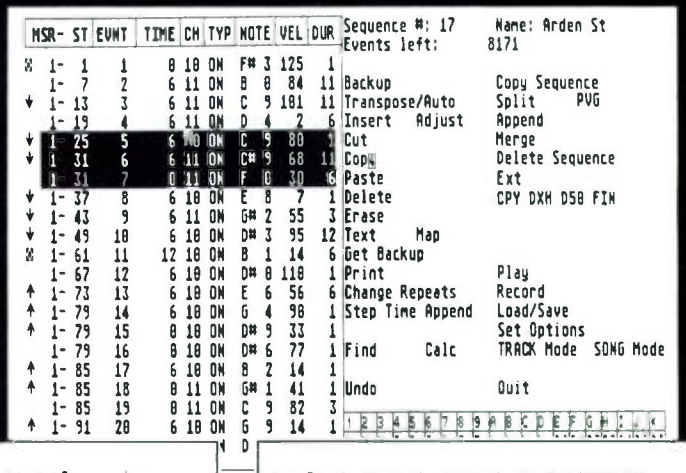
Dr. T's

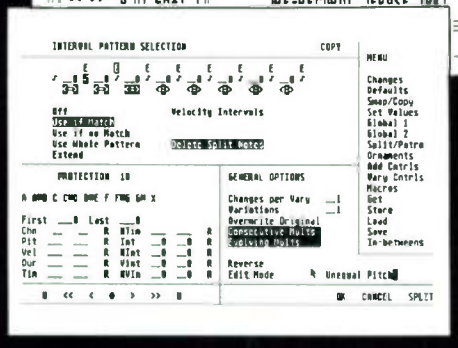
MUSIC • SOFTWARE

Software to Unleash your Imagination

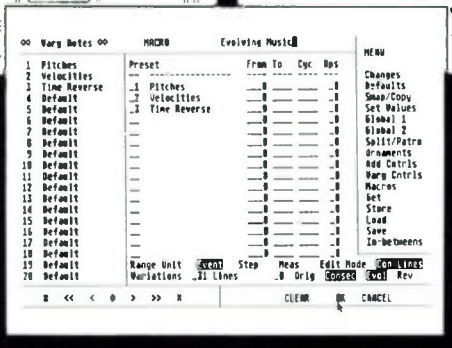
KCS VI.6 and LEVEL II with MPE



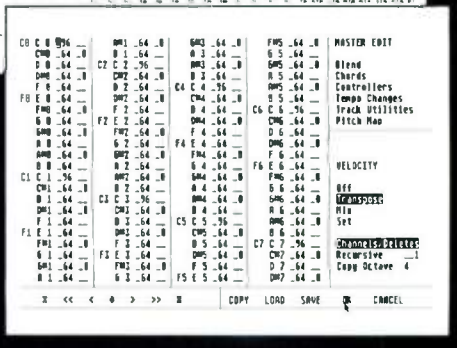




Interval Pattern Selection



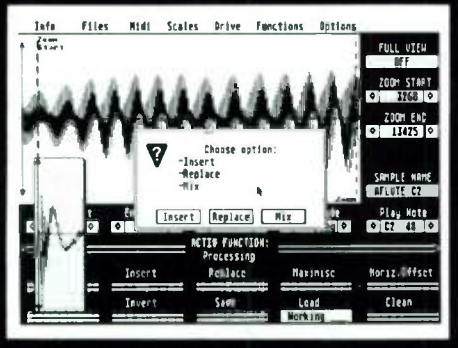
Macro Screen



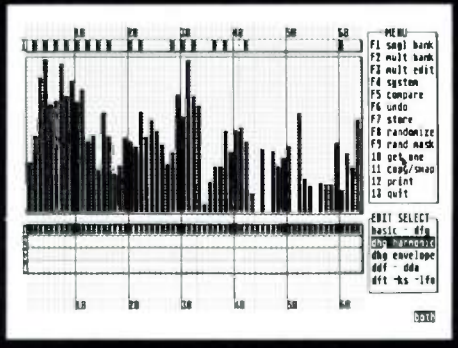
Pitch Map Matrix

Available for Atari ST, Amiga and Macintosh Computers

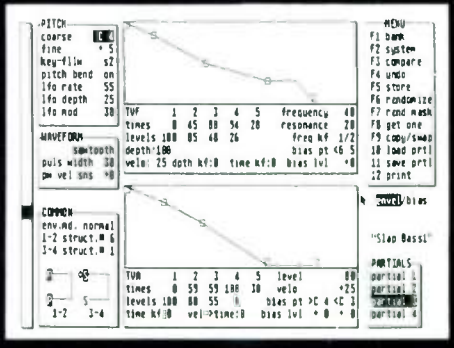
New KCS manual by Jim Johnson and Level II manual by Jim Aiken. Now supports standard MIDI files.



S900 Sample Editor/Converter



Kawai K-5



Roland MT-32

220 Boylston St. • Suite 306 • Chestnut Hill • MA 02167 • (617) 244-6954

Call or write for our Free Brochure

Blank Software's "Alchemy" transforms the Mac into the central hub of a sampler-oriented system.

looking when the phenomenon of "The Musical Macintosh" snuck up and grabbed them from behind. In their pursuit of the Fortune 500, they originally dismissed the pro music market as insignificant. Today, thanks to a handful of companies started by enthusiastic MIDI programmers, Apple has come around to a new attitude.

A MUSIC HISTORY FOOTNOTE

A very large part of the Mac's success has been its consistent user interface—detailed to all software developers, and common to almost all Mac applications—that makes it easy to learn and use. When a user learns one Mac application, the familiar pull-down menus, windows, buttons in dialog boxes, the mouse, and file management techniques make it much easier to learn others, often without the manual.

This approach to computers was developed, by the way, by a Xerox think tank in the early '70s, implemented in the early '80s on Apple's $10,000 Lisa, then on the Macintosh. No, dear reader, Apple didn't invent mice, desk accessories, and pull-down menus, but they *were* the first to put them on computers for peoples' homes and MIDI studios.

Nonetheless, the Mac's musical talents weren't immediately evident. It was born with a cheesy, if well-implemented, sound generator that sampled at 22.254 kHz. But software was slow to appear. Macromind's *MusicWorks*, the first commercial software to play music on the Mac's circuits, was a stimulating toy. The original *ConcertWare* had additive synthesis and wave drawing, but was never very useful in the studio. Eventually, *Professional Composer* gave us serious score notation. Still, though Macs could speak and sample almost any sound, they couldn't sequence MIDI tracks. Over a year and a half passed with no MIDI for the Macintosh, and those who'd bought a Mac early began to wonder if we hadn't made another expensive mistake. (You're not an experienced electronic musician unless you know that feeling.)

In their pursuit of the Fortune 500, (Apple) originally dismissed the pro music market as insignificant.

Finally, in the summer of '85 some sophisticated MIDI sequencers and synthesizer librarians, a voice editor for the Yamaha DX7, and appropriate interfaces sprang up from Opcode, Southworth, and Musicworks. The musical Macintosh had taken off.

Once out of the gate, the Mac took the lead and never looked back. It logged an impressive string of firsts: at one time, Digidesign's *Sound Designer* was the only way to load and graphically manipulate samples without a Fairlight or Synclavier. Laurie Spiegel's *Music Mouse* was the first "intelligent/algorithmic MIDI instrument" for any personal computer, and was soon followed by Intelligent Music's innovative *M* and *Jam Factory*; and for quite a while, *Professional Composer*, by Mark of the Unicorn, was the only inexpensive way to laser-print your compositions.

Since late '85, the Mac has been the king—albeit disputed—of musical computers. At the very least, it's the MIDI computer by which others are judged. Expensive new ideas about audio software may trickle down from the likes of New England Digital and Fairlight, but when it comes to MIDI, Mac programmers are the leading edge most of the time.

HOW THE MAC GREW

Since the original Apple Macintosh was unleashed on January 24, 1984, there have been a number of new models and upgrades. This profusion can be confusing, and bears a bit of clarification.

For $2,495, the very first Macintosh had what seemed like a generous 128K (Kilobytes) of main memory (RAM, the computer's live, real time workspace), 64K of ROM (the computer's operating memory), a single-sided 400K microfloppy disk drive (one of the first), and a mouse you voluntarily held in your hand. It was the first personal computer to use the new Motorola 68000 32/16-bit processor, the same engine that now powers the Amiga and Atari ST.

When RAM chips became more affordable, the 512K "Fat Mac" was introduced, also for $2,495, and the original Macintosh dropped to $1,995. With 128K of memory the Mac's potential was severely handicapped, but the 512K Mac demanded to be taken seriously. To upgrade a 128K to 512K, Apple charged around $900. Ouch! I let a trusted friend boost my memory for around $150 as soon as I got my hands on Professional Composer.

The Macintosh Plus entered the world in January 1986. With the ability to run powerful new spreadsheets and databases, the Plus was Apple's first realistic bid at the corporate market, and changed the business world's view that the Mac was just a computer for creative types. (I like to think they were at least partly right.)

Apple, of course, offered to upgrade the 512 to a Plus for around $1,000—ouch again—and along with the Plus, unveiled the 512Ke ("e" for enhanced), that added the double-sided drive and the Mac Plus's ROM to the original 512K machine. Apple offered an upgrade from the 512 to the 512Ke from authorized Apple dealers only.

In toto, for the Macintosh pioneer who bought the original 128, a complete Apple upgrade to the Mac Plus cost more than $4,000. There are alternatives to this costly route, however, that we'll get to in a minute.

WHAT'S DIFFERENT ON THE PLUS?

The Mac Plus has a larger keyboard than its ancestors, a double-sided 800K microfloppy drive, a SCSI (Small Computer Systems Interface, pronounced "skuzzy") port, a revised 128K ROM, and a full Megabyte (1M) of *expandable* RAM. On the Mac Plus and all subsequent new models except the 512Ke, the RS-422 ports (the printer and modem ports) are now round ports with no power-supplying pin. This means older MIDI interfaces, sound digitizers, and other hardware depending on that power pin only work with pre-Plus Macs. Fortunately, to use an older Mac with a newer interface, all you need is an adapter cable, available at most Mac computer stores.

Prior to the Mac Plus, Mac ROMs used the Macintosh File System (MFS) to organize files on disk. Later ROMs—the 512Ke, Plus, SE, and II—feature the Hierarchical File System (HFS) that organizes disks first by folders, then by files, a much more workable organization. Before HFS, the number of files in a single disk was severely limited, and since the operating system didn't recognize folders on a hard disk, storage was diminished and Megabytes were wasted. HFS, along with the SCSI port, made a hard disk much more practical. (SCSI is the Macintosh standard for high-speed data transfer to and from, for instance, a hard disk or CD ROM.) Other improvements in the Plus's ROM included faster graphics routines and numeric calculations, and drivers for AppleTalk, the 800K floppy, and the SCSI port.

Older Macs don't recognize HFS disks unless the system folder on the startup disk contains a system file called HD 20. If you own an older Mac 128K or 512K, you can't run a lot of recent software, a problem that's likely to get worse. The tradeoff is that with an HFS machine, you can't run a few older Mac programs (mostly games and shareware).

Those who'd bought a Mac early began to wonder if we hadn't made another expensive mistake.

THE CURRENT HARVEST

In March 1987, Apple unveiled the Macintosh SE and the super-powered Macintosh II, completely redesigned from the ground up compared to the original Mac family. The upgrade path for older Macs came to an abrupt stop and the 512Ke was officially discontinued.

As two completely different machines, the Macintosh II and SE are currently Apple's top-of-the-line computers, with the Plus holding down the entry level. (You can tell the difference between an older Plus and one made after the introduction of the II and SE by the newer model's "platinum" color.)

Nineteen circuits from the Mac Plus were reduced to a single chip on the SE. The high-performance SE (short for SCSI-enhanced) features: a Megabyte of RAM; a 256K HFS ROM; a single expansion slot; faster operation; a redesigned keyboard and mouse that connect to the new Apple Desktop Bus; built-in AppleTalk; a choice of two internal floppy drives or a floppy and a hard disk; and a *noisy* built-in fan. I got an SE a few months ago and I love it, but it sounds like a microwave oven. Apple is aware of the problem and promises a solution in the near future.

YAMAHA DUST COVERS

Now is the time to buy some custom-made dust covers for all your Yamaha MIDI equipment. For this month only, we are offering the following "Direct From Factory" prices with savings of 35-50%!

	Reg. Price	NOW	
DX7	$34.50	$17.50	Limited
RX11/15	$24.50	$12.50	Supplies!
DX7II/FD/S	$37.50	$24.75	
DX100	$30.50	$20.00	
KX76/88	$44.50	$30.00	
RX5/17/21	$24.50	$16.00	
All PSR's	$37.50	$24.75	

Buy 2 or more covers and get an additional 10% discount!

Don't forget, Gotcha Covered makes dust covers for over 100 models from Yamaha, Roland, Ensoniq, Korg, Casio, Tascam, etc. Call or write for our latest catalog.

ORDER NOW!

GOTCHA COVERED™
The Dust Cover Company

22N159 Pepper Rd. · Barrington, IL 60010
Phone (312) 382-3210 · FAX (312) 382-3250 · Toll Free 1-800-822-1899

FREE MIDI CATALOG!

COMPUTERS AND MUSIC FOR EVERYONE

You don't have to be a PRO to buy from FUTURE MUSIC - in fact, most of our customers are "just plain folks" with a home computer and a love of music!

START YOUR COMPUTER MUSIC SYSTEM TODAY

$295 CASIO CZ101

PROFESSIONAL SYNTHESIZER SOUND UP TO FOUR UNIQUE SOUNDS AT ONCE PROGRAMMABLE. PORTABLE. EASY TO USE — THE STANDARD —

FREE AC ADAPTER & SHIPPING

MIDI INTERFACES FROM $39.95

ALL MAJOR BRANDS AVAILABLE

BOOKS ON MIDI, MIDI PRODUCTS

- Understanding Midi, Vol. 1, **Now Only**. . . 2.95
- **New!** Understanding Midi II 3.95
- Synthesizer Technique 9.95

Add $1.50 for postage/handling per book.

Future Music

800-FOR-MIDI 10-6 M-F 12-5 SAT.

(800) 367-6434 or (702) 826-6434

900 W. FIRST - P.O. BOX 1090 - RENO, NV 89504

MasterCard and Visa Accepted

EYE AND I PRESENTS . . .

Voice Crystal™

FOR ESQ1

AND NOW FOR THE D-50

AVAILABLE AT YOUR DEALER

ESQ-1

Voice Crystal 1 . . . . . $62.95
Deep Blue 80 Voice E²PROM

Voice Crystal 2 . . . . . $62.95
Magnificent Red 80 Voice E²PROM

Voice Crystal 3 . . . . . $62.95
Mellow Yellow 80 Voice E²PROM

Voice Crystal X $49.95
Crystal Clear Blank 80 Voice RAM

D-50 (with write protect)

Voice Crystal 1-D50 . . . . . $110.00
64 Voice RAM w/32 Voices & 32 Blank

Voice Crystal 2-D50 . . . . . $110.00
64 Voice RAM w/32 Voices & 32 Blank

EYE AND I Productions, Inc., 2151 Old Oakland Rd., #224
San Jose, CA 95131, PH: (408) 943-0139

The Macintosh II is an entirely different type of machine. Based on the faster 68020 32-bit microprocessor, the Mac II does lots of things a Mac Plus will never do. It's the long-anticipated "open Mac" with eight expansion slots and a sophisticated sound circuit that boasts a sampling rate of 44.1 kHz. Add-on hardware (like music workstations to rival Synclavier, neural co-processors, and a 20-bit audio card from Southworth with a sampling rate of 192 kHz) is also being developed for the new II.

On the downside, a lot of pre-1988 Mac software won't run on the II. It doesn't have a built-in video monitor, or the small footprint of the other models. You can buy monitors with 256 levels of gray, or color monitors that display the Mac II's ludicrously generous palette of 16.8 million colors. Unfortunately, a Macintosh color monitor and associated hardware don't come cheap: a fully-configured color Mac with extra RAM and a hard disk easily costs from $7,000 to $8,000. I hope prices will fall by the time the Mac II does something I can't live without.

OKAY. NOW, WHAT ARE MY OPTIONS?

Used Macs are available if you look for them. I've seen old 128K Macs for as little as $600. A third-party upgrade from 128K to 512K may cost between $120 and $150 from a multitude of sources. (Ask your Apple dealer or your local Macintosh user group to recommend one.)

Apple dealers will upgrade a Mac 512K to a 512Ke for $299, installation included. This highly recommended enhancement includes the HFS ROM and a double-sided internal disk drive. A valuable addition is an external double-sided drive, about $180 and up from third parties and from Apple dealers. Since the flyback transformer on a lot of 512s and Pluses seems to be burning out after a year or two, (the first symptom is jitters in the display screen) another near-necessity for these models is a cooling fan, under $100 from Kensington or Beck Tech. Rather than use up pages in the magazine on sources—Christopher Yavelow has already done a pretty good job on that in his "Mac Power User" article—refer to the various Mac magazines (check your local newsstand) for pricing and availability on a variety of Mac-related hardware and software.

Note that if you want to use *Hypercard* (Apple's interactive information environment), *MultiFinder* (multi-tasking software that lets you work on multiple applications at the same time), or other recent and future system updates, you must have *at least* a full Megabyte of RAM *and* the HFS ROM.

I think the best choice for musicians on a budget is a used Macintosh 512Ke, typically about $900 or so. It runs any music software you can run on the Plus, a situation that's unlikely to change. For music, it'll do the job, and upgrades to the level of the Plus are available piecemeal. RAM upgrades are available in varying amounts from one Megabyte (around $150) to two Megabytes (around $400) and beyond. Dove Computer offers reliable and inexpensive upgrades. In a pinch, you can even get by with the 512Ke's single internal disk drive, although you'll eventually tire of swapping disks, and want to get either a second drive or a hard disk.

More Pluses have been sold than any other Macintosh, so there's lots of third party support.

The most logical choice for industrial-strength MIDI is the Mac Plus. With a list price of $2,195, the Plus has twice the memory of the 512Ke, and it'll do practically anything you can do with an SE (at present). Not to be discouranged by its lack of expansion slots, MegaGraphics and many other developers have devised clip-on expansion cards and the like. More Pluses have been sold than any other Macintosh, so there's lots of third party support.

With Apple's new (read: still very expensive) "snap-in, single in-line memory modules" (SIMMs)—a tiny circuit board occupied by RAM chips—a technician can expand Plus and SE memories to configurations from one to four Megabytes. The Mac II has twice as many

Aphex Aural Exciter® Type C It's for Anyone Who Performs, Records or Listens to Music.

The Aural Exciter Type C restores natural brightness, presence and detail to live, digital and recorded sound. Lyrics will have more intelligibility...guitars more bite...drums more kick. Synthesizers and electronic drums will come alive.

"I recommend Aural Excitement to those of you looking for that extra 'zing.'"
Eddie Ciletti, MUSIC & SOUND OUTPUT

Even multitrack tapes made on narrow format machines will sound like they were made on expensive studio recorders. Cassette dupes will have an unmuffled, professional sound.

Ask your dealer to demonstrate the effects of a genuine Aural Exciter using your type of equipment. You'll be amazed at the improvement...and the low prices!

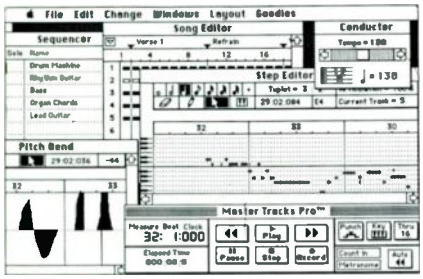
For the name of your nearest dealer and additional information, call or write...today!

APHEX®

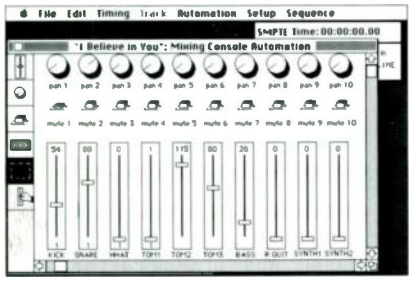
Aphex Systems Ltd. • 13340 Saticoy St. • North Hollywood, CA 91605
(818) 765-2212 • TWX: 910-321-5762

Aural Exciter is a registered trademark of Aphex Systems Ltd.

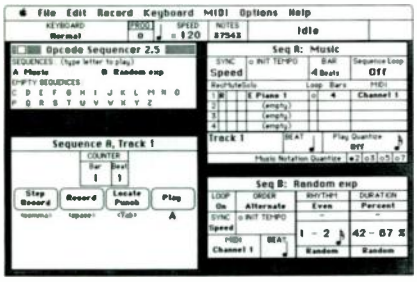
© 1987 Aphex Systems Ltd



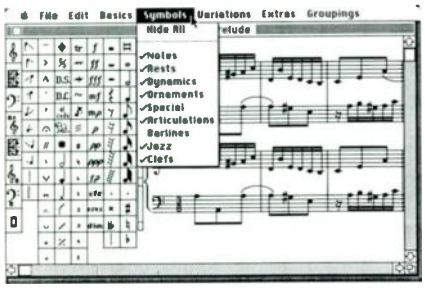
***Master Tracks Pro*, from Passport Designs, uses graphics extensively—you can even draw in controller and pitch bend data.**



Among its other talents, Digidesign's *Q-Sheet* can automate a mixing board that responds to MIDI.



***Sequencer 2.5*, from Opcode, is designed for the stage as well as the studio.**



Mark of the Unicorn's *Professional Composer* was one of the first successful scoring programs.

SIMMs, for maximum storage of eight Megabytes, with provisions to expand someday to a whopping two Gigabytes (2,000 Megabytes). Upgrades are available from Apple, Dove, MacMemory, and others for around $250 and up per Megabyte (prices subject to change).

If you want to buy a computer that won't be obsolete for years, go for the SE, with or without the internal hard disk. You can always get a hard disk later, and two floppy drives are very handy for copying from one floppy disk to another. An SE with two floppy drives and the standard keyboard lists for $2,898, and with one floppy, a built-in 20-Megabyte hard disk, and the enhanced keyboard (with lots of function keys), the price goes up to $3,798. Color SEs with 68020 processors are predicted for the future. Add-on hardware from SuperMac, Levco, and others, can already give the SE Macintosh II compatibility and speed.

If you must have color now, or if you're determined to buy the latest gear and money is no object, get a Macintosh II. The basic Mac II CPU with a single Megabyte of RAM and one floppy drive retails for $3,769. A keyboard, a monitor, and an internal hard disk cost extra. It's expensive as far as personal computers go, but someday soon, the Mac II will take MIDI where no one has gone before.

DO I NEED A HARD DISK?

A hard disk lets you turn on your computer and have immediate access to all the software you use regularly. SCSI hard disks are much faster than floppies, so you gain speed as well. Since applications and data files all reside on the same disk, loading and saving times are significantly decreased. All your fonts, desk accessories, and other resources are always at your command. Before I got a SuperMac DataFrame XP20 hard disk, I had hundreds of floppies littered across my desk, and wasted a lot of time looking for lost disks. Now there are only a few dozen, with floppy backups for the hard disk tucked neatly away until needed.

If your machine has a SCSI port, be sure to get a SCSI drive. They're a lot faster than the hard disks that connect to the Mac's disk drive port. SCSI drives from Jasmine Technologies, ranging from $649 for 20 Megabytes to $2,899 for 160 Megabytes, and the more expensive SuperMac DataFrame XPs are especially popular. The prices of Mac hard drives are falling, and used and discontinued SCSI drives also can be found.

If you have a 512Ke and want a hard disk, adding a SCSI port is well worth the $100 to $150 that third parties charge. (Jasmine offers a "user-installable" SCSI port for $129 list.)

MIDI ME UP, MAC!

Once you have the computer, you need to connect it to the world of MIDI via an interface adapter. (This adapter is usually called a "MIDI interface," although calling something a "Musical Instrument Digital Interface interface" seems pretty redundant to me.) These range from Apple's simple 1-In, 1-Out interface ($99) and Altech's 1-In, 3-Out model ($119.95), to such over-achievers as Southworth's *Jambox+* ($459; it can not only merge and filter MIDI data, but read and write SMPTE and MIDI time code), and Opcode's flexible *Studio Plus Two* ($275), a 1-In, 6-Out model with useful printer/modem through switches. Passport and others also offer a variety of MIDI interfaces for the Mac, each with different capabilities. As for software, the possibilities are staggering, ranging from simple composition programs to high-end sequencers and sample editors.

Macintosh users are among the most fanatical "this is the right way and the only way" computer devotees you can find. Many find such behavior obnoxious, but there must be reasons, or at least excuses, for such ardent extremism. In the last four years, the Macintosh has evolved into a mature music computer. Many brilliant people have spent significant portions of their adult lives turning the Mac into the musically useful tool we know today, and thanks to them, it will be even more useful tomorrow.

A MUSICAL MAC ANECDOTE

Apple Computer is infamous for their secretiveness, so circulating rumors about unannounced products is a favorite pastime of Macintosh user groups. If you're fortunate enough to be privy to Apple's secrets, you must sign what's called a non-disclosure form, promising not to spill the beans. Before the Macintosh II was officially announced, Peter Gabriel and his engineer dropped by Apple's corporate offices and asked, "What's new?" As the story goes, after the forms were hastily signed and the pair heard

Monitor Myths and Minutiae

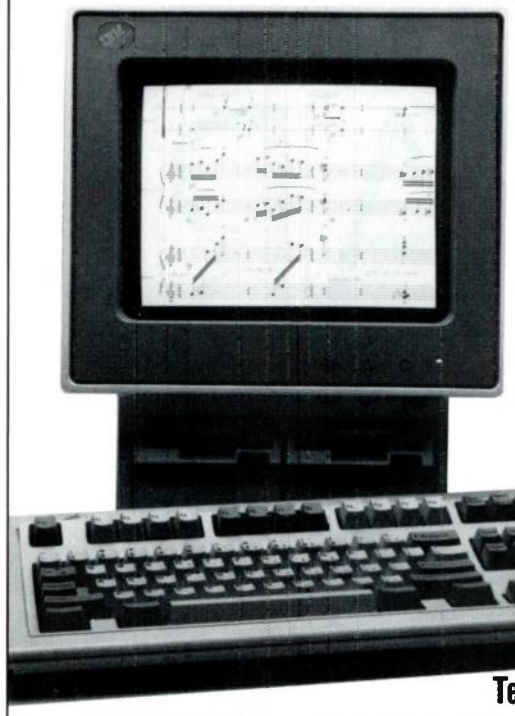
CONTRARY TO POPULAR BELIEF, you can use display screens of any size for the Mac, all the way up to a 37-inch color model from Mitsubishi. Most big screens are for the Mac II or SE, starting at around $1,500, but MegaGraphics makes full-page displays for the Plus and even the 512Ke. They cost more than monitors for most other computers for good reasons. Mac displays are *WYSIWYG*, short for "what you see is what you get," so that a two-inch line on the screen prints out as a two-inch line on paper. Other computers usually change the size of the individual pixels (bits) on the screen when you change the screen size, but the Macintosh's standard pixel density is fixed at 5,184 dots per square inch (72 dots per linear inch). When you connect a larger display, you gain visual real estate, room to move around, but the 72 dpi resolution remains the same. So if you're using, for example, Mark of the Unicorn's *Performer* for sequencing, you can have lots of long edit windows open simultaneously without overlapping. Usually you can use the Mac's on-board screen in addition to an external one (or more), dragging objects from one screen to another, or even leaving them halfway on each screen.

the Mac II, the engineer kept expressing his amazement that it cost less than ten grand, and the Apple people had to keep reminding him that it was less than five grand. The moral of the story is that, while the Macintosh isn't a cheap computer, it pushes the limits of musical technology at a scant fraction of the expense of dedicated digital audio workstations. The Mac was one of the first computers to be "friendly" enough for the average musician, and will probably retain its position as the leading-edge MIDI computer for some time to come. EM

Geary Yelton is a synthesist, composer, freelance MIDI consultant, and writer. He lives near Atlanta, Georgia, where someday he'll finish his next book, The Musical Macintosh.

MUSICPRINTER™ PLUS

THE ULTIMATE INSTRUMENT FOR DESKTOP COMPOSING



FOR IBM COMPUTERS

Elegance in composing, printing and performing music.

- Compose/arrange directly on the screen
- Print full hi-res scores using dot matrix printers
- Play MIDI out with studio musician precision

MusicPrinter Plus is the most comprehensive, friendly, easy-to-learn composition package on the market today. This new standard-setting program was developed by composers/educators and is published and backed by the nation's leading music education software company.

SUPPORTS

IBM PC, PC/AT, PS/2, or compatibles with 640K RAM. CGA, EGA, VGA, or Hercules. IBM Music Feature or Roland MPU-401. Call or write for information.

Temporal Acuity Products, Inc.

300 - 120th Avenue N.E., Bldg. 1 - Bellevue, Washington 98005
(206) 462-1007 or 1-800-426-2673 (except WA)

Rhythm City

America's Largest Dealer for the Electronic Musician

All Name Brands

Roland • Korg • Ensoniq
E-mu Systems • Kurzweil • Casio • Akai
Tascam • Fostex • Soundcraft • Studiomaster

All lines of keyboards and software in stock!

Digidesign • Passport • Dr. T. • OpCode • Mark of the Unicorn

Complete MIDI Recording & Performance Systems

Professional Advice *New and Used Equipment Available*

Musicians Buy At Rhythm City!

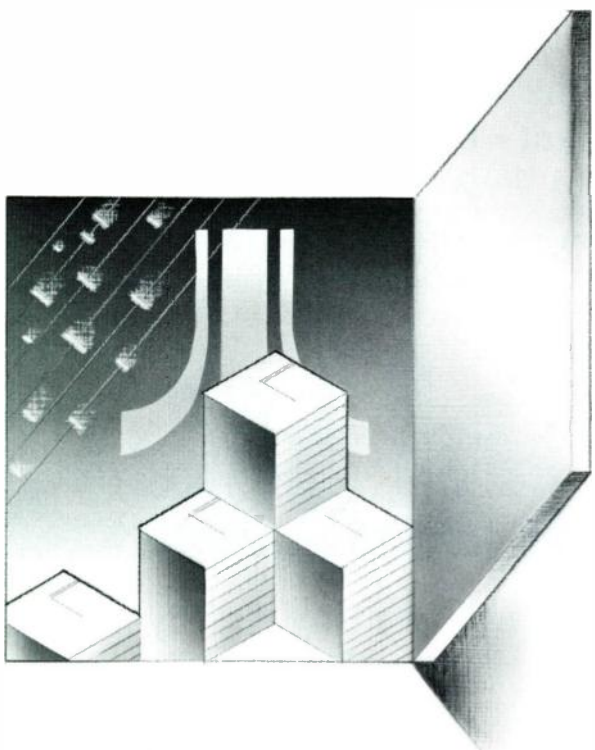
287 E. Paces Ferry Rd.
Atlanta, Georgia 30305

(404) 237-9552

Hours: Monday thru Saturday: 10-6

The ATARI ARRIVES

The Atari ST is happening in a big way. The computer itself is an excellent platform for musical applications; as for the software. . . well, try these applications on for size.



AT THIS WRITING, ten companies have announced about 16 sequencing packages, at least 12 of which are shipping. Four sequencer companies are, or will soon, support SMPTE sync to tape with their own external hardware. Three of the seven announced music scoring packages are out, and at least 20 out of 30 announced synthesizer editor/librarian programs are out (with several "generic" librarian programs also available to back up multiple synths with just one program). One program (Dr. T's *Pro S900*) translates digital samples into additive synth parameters for the Kawai K5. At least five companies produce sampler editing software, four sell systems that use the ST for automated mixdown, two ship interactive composing software, one has a system that uses the ST for 16-bit sampling and direct-to-hard-disk digital recording, and several companies are producing music education software.

Folks, that's a *ton* of music software, more than any other computer in its third year of existence has had, and maybe more than any other computer period. What brought this about? Glad you asked.

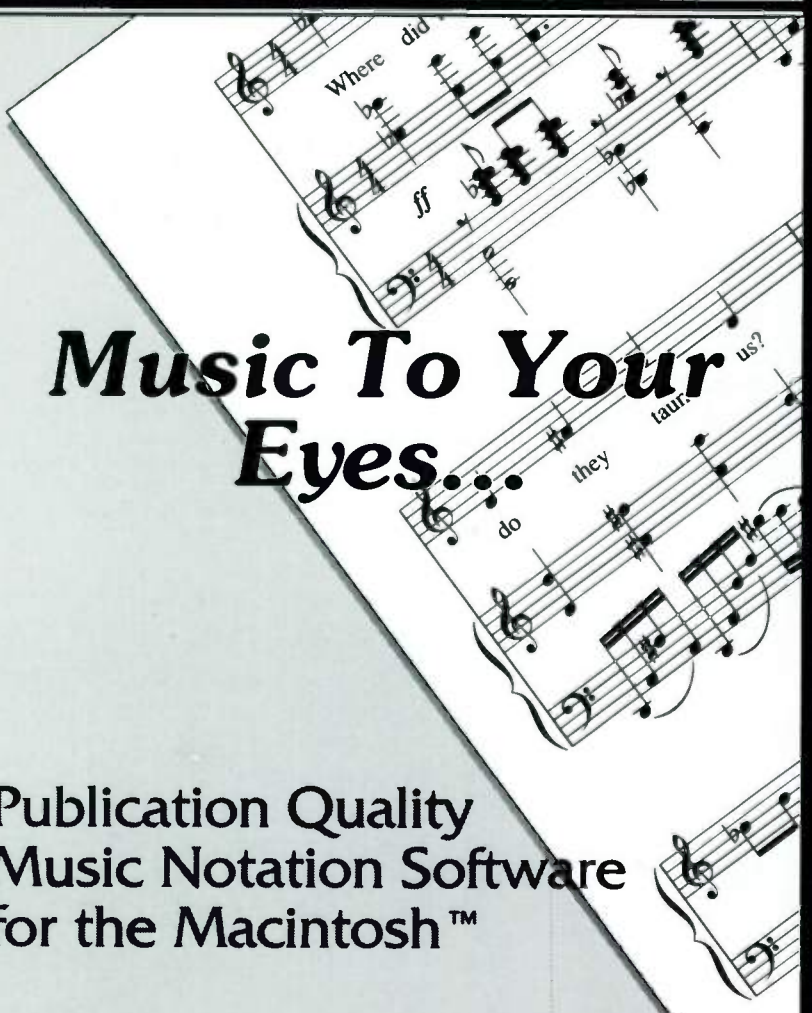
ANCIENT HISTORY

Way back when (about four years ago) in the days when the Apple II and the Commodore 64 were king and queen of MIDI computing and the Mac was turning from rumor to reality, Atari and Commodore were vying for control of a new computer being developed by a company called Amiga. Commodore prevailed, as we know, and so Atari went to plan B.

Plan B was the 520ST, the beginning of the ST line, and in an incredible effort Atari beat Commodore's Amiga to the market. That head start, combined with an affordable price and built-in MIDI ports, made the Atari ST seem a promis-

BY JAMIE KRUTZ

HB Music Engraver



Music To Your Eyes...

Publication Quality Music Notation Software for the Macintosh™

H.B. Imaging, Inc.
560 South State Street, Suite G1
Orem, Utah 84058
Telephone: (801) 225-7222

Price: $395.00

- Direct MIDI input using step time.
- The HB PostScript font, Interlude, is free with the Engraver package.
- A utility package performs conversions from Professional Composer™ (Mark of the Unicorn) and standard MIDI formats into the HB Engraver format.
- Engraver files can be listened to through MIDI.
- Engraver files can be sent to most popular graphic and page layout programs as encapsulated PostScript and bit mapped files.
- Complete Adobe Illustrator™ compatibility.
- The Engraver prints entirely with PostScript, using no QuickDraw.
- Up to 50 staves in one system
- Up to 8 simultaneous lines of music per staff
- Up to 30 notes per chords per line of music
- Over 124 different music symbols
- Unlimited page size and staff height from pocket book, to billboard dimensions.
- Up to 100 levels of front or back indentation per. system
- Automatic centering of lyric syllable under appropriate note head
- Word processor merge ability
- Definable placement for block text
- Unlimited note, staff, symbol, clef, and font sizes
- User definable music and text fonts can be set for each line of music or lyrics.
- Automatic avoidance of character collision
- Correct spacing between music characters
- Alterable spacing between systems and staves
- Alterable rules for horizontal placement of passing tones, key signatures, accidentals, time signatures, first note and bar lines
- Correct notation of unequal groupings, i.e. eighth notes over triplets
- Fits song within given number of pages
- Vertical layout - top to bottom page-design and layout
- Unlimited page size
- Measures movable from system to system with automatic horizontal rebalance
- Special preference window to define measure information
- Correct offset of accidental clusters
- Alterable phrase marks, slurs and ties (MacDraw™ and Illustrator™-like handles)
- Alterable tie and slur line weight
- MIDI channel assignment per line of music within staves for audio proofing
- Transposition of selected regions
- Part extraction
- User definable Guitar Frames and Chords
- Alterable dynamic, glissando, trill, and arpeggio signs
- Multiple measure rest symbols
- Alterable placement of fingering, pedal, and tremolo marks
- Automatic beaming
- Different beam slant for every note head variation as well as exceptional beaming
- Beaming between staves
- Automatically adjusted stem lengths
- Correct note head placement of note clusters
- Cue, rhythmic, string harmonic and solid note head shapes

SYSTEM REQUIREMENTS:
- Apple Macintosh Computer
- 1 Megabyte of internal memory
- Imagewriter, LaserWriter, Lynotype typesetter, or any PostScript printer.

Macintosh is a trademark of Macintosh Laboratories HB Music is a trademark of H.B. Imaging, Inc.

BEAVERTON DIGITAL SYSTEMS

D-50
TX81Z
ESQ-1
FB-01
DX21/27/100
Editors/Librarians
for the MACINTOSH™
MacPatch™ generic patch librarian!
Patch Librarian Desk Accessories!

Macintosh MIDI Interface
2 Ins 6 Outs assignable
$149.00

Order Hotline
Outside CA. 800-356-MIDI
Inside CA. 818-584-5814
Info 503-641-6260
P.O. Box 1626 Beaverton, OR 97075
Dealer Inquiries Welcome

Call MacMusic MIDI BBS!
(503) 646-2095

MIDI-MUSIC SOFTWARE

BUY THE RIGHT SOFTWARE
BUY IT RIGHT THE FIRST TIME
FOR THE RIGHT COMPUTER

Mark of the Unicorn
PASSPORT
digidesign
STEINBERG
SONUS
Opcode
Hybrid Arts
Dr. T's Music Software

WE STOCK ALL TITLES FROM
ALL MAJOR MANUFACTURERS
NEW TITLES ALWAYS COMING IN
CALL FOR AVAILABILITY
AND PRICES
WE SHIP WORLD WIDE

Leigh's Computers
1475 3rd AVE. NYC 10028 Between 83-84st.
ORDER BY PHONE (212)879-6257

MIDI Software for the Atari ST

MANUFACTURER	SOFTWARE	LIST PRICE
ADDITIVE SYNTHESIS:		
Digidesign	Softsynth	$295
AUTOMATED MIXDOWN:		
Musically Intelligent Devices	Megamix (16-40 channels including hardware and software)	$1,100-$4,400
JL Cooper	MidiMation (SMPTE based 16-56 channels w/hardware and software)	$2,500-$4,500
	MixMate (8-channel SMPTE/FSK based w/hardware and software)	$1,000-$1,240
Steinberg/Jones	Desktop Mixing DMP-7	$590
INTERACTIVE COMPOSING:		
Dr. T's	Fingers	$49
Intelligent Music	M	$200
MUSIC EDUCATION:		
Electronic Courseware Systems, Inc.	Keyboard Note Drill	$40
	Keyboard Blues	$80
	Super Challenger	$40
	Keyboard Kapers	$40
	Early Music Skills	$40
	Musical Stairs	$40
	Keyboard Namegame	$40
	Keyboard Tutor	$40
	As a package: Beginner Series	$360
	Keyboard Jazz Harmonies	$80
	Keyboard Chords	$80
	Keyboard Intervals	$80
	Keyboard Fingerings	$80
	Keyboard Arpeggios	$80
	Keyboard Speed Reading	$80
	Keyboard Extended Jazz Harmonies	$80
	Functional Harmony: Basic Chords	$80
	Aural Skills Trainer	$80
	As a package: Intermediate Series	$700
	Beginner & Intermediate Series	$1,060
Chro-Magic	Guitaristics	$40
Steinberg/Jones	The Ear	$100
PATCH EDITORS/LIBRARIANS:		
Aegix	Perfect Patch (DX7)	$60
Beam Team	DX/TX7 Xsyn	$100
	DX21/27/100 Xsyn	$100
	FB-01 Xsyn	$100

The number of music programs for the Atari 1040ST has grown amazingly in the past year.

ing machine to music software developers. Some developers moved up from the Atari 8-bit computers; as ST sales became strong overseas, more developers joined in from Europe, and even more US developers joined in to get at the overseas markets (where Macs are expensive and IBM doesn't rule).

Meanwhile the Mac was getting excellent software support, and the more complex and slower-selling Amiga was having trouble attracting developers, leaving it months behind the ST in software support.

SO WHAT IS THE ST ANYWAY?

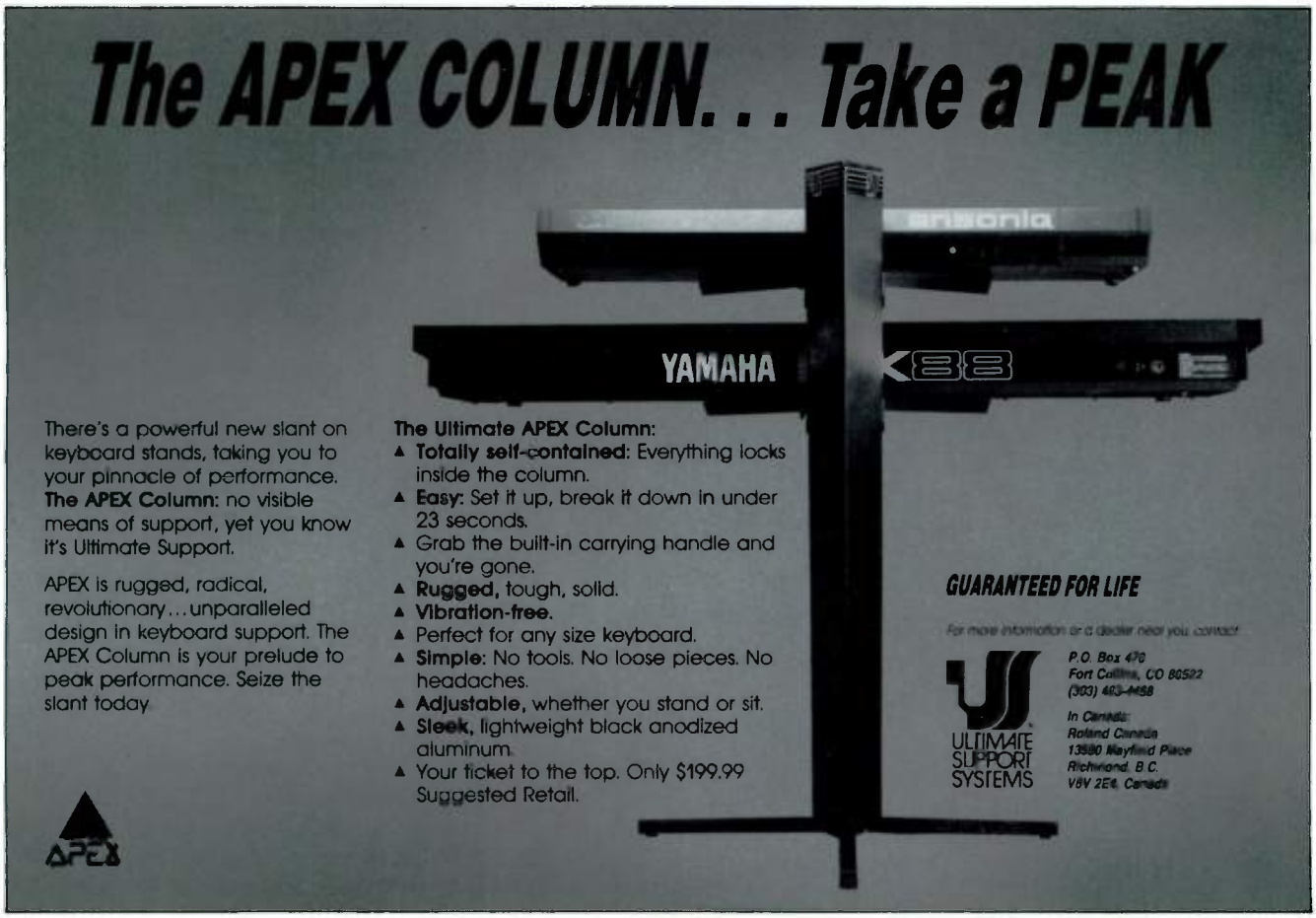
The Atari ST comes in eight flavors, each with its own name, price, and on-board memory capacity:

520STFM monochrome	$ 800	0.5 Mb
520STFM color	$1,000	0.5 Mb
1040STF monochrome	$1,000	1 Mb
1040STF color	$1,200	1 Mb
Mega 2 monochrome	$1,700	2 Mb
Mega 2 color	$1,900	2 Mb
Mega 4 monochrome	$2,400	4 Mb
Mega 4 color	$2,600	4 Mb

All STs come with a built-in disk drive (single-sided 360K for the 520; double-sided 720K for all the others), a mouse, a choice of monochrome or color monitor (you can start with the monochrome, then add the more costly color monitor to your system at any time for the price of the monitor), and ST BASIC (although there are better BASICs available). The four Mega versions have one internal hardware expansion slot and a separate keyboard. The 1040 and 520 are one-piece units with a built-in keyboard. Monitors are physically separate on all STs.

The operating system of the very first 520 was disk-based, but later put in ROM, making for a start-up that's fast enough to get you up and running 15 seconds or so after you hit the power.

Theoretically the RAM of all the STs can be expanded to four Megabytes. Third-party memory expansions are



REMOVES VOCALS FROM RECORDS!

Our VOCAL ELIMINATOR can remove most or virtually all of a lead vocal from a standard stereo record and leave most of the background untouched! Record with your voice or perform live with the backgrounds. Used in Professional Performance yet connects easily to a home component stereo system. Not an equalizer! We can prove it works over the phone. Write or call for a free brochure and demo record.

Listen...

Before You Buy!

- Time Delay
- Reverberation
- Crossovers
- Noise Reduction
- Compressor/Limiters
- Expanders
- Spectrum Analyzers
- Parametric EQ

Don't have regrets about paying too much for a lesser product. In demos and comparisons, we'll show you why we're Better! Our Factory Direct sales allow us to produce a Superior product and offer it to you at a Lower price. Call or write for a free full length Demo Album and 24 page brochure.

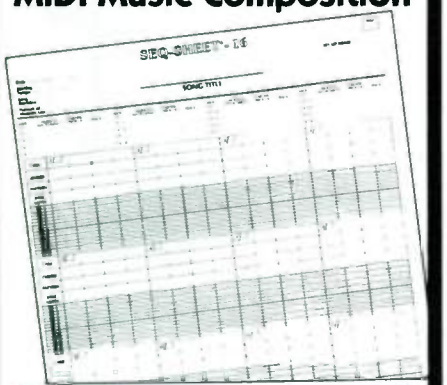
LT Sound, Dept. EM-9, 7980 LT Parkway
Lithonia, GA 30058 (404) 482-4724

24 HOUR PHONE DEMO LINE: (404)482-2485

Introducing . . .

SEQ-SHEET©

THE "MISSING LINK" in MIDI Music Composition



COMPATIBLE WITH ALL SEQUENCERS AND SOFTWARE

Seq-Sheets are custom made standard forms designed specifically for documenting *all* MIDI parameters. The endless time and effort you spend with ordinary paper can create a "MIDI-LIFE CRISIS". Seq-Sheets combine a studio track sheet with a musical lead sheet **PLUS** MIDI channel columns to create a unique HARD COPY for all your organizational, editing and filing needs. Invest now in Seq Sheets to achieve the full potential of your MIDI system. $6.25/40 sheet pad.

FOR INFORMATION OR TO PLACE AN ORDER CALL:

1-800-63-SHEET

(IN N.J. CALL 1-201-440-4475)
OR WRITE TO:
T.G. DATA MUSIC DIVISION Box 319 Alpine, NJ 07620
(Dealer Inquiry Invited)

MIDI Software for the Atari ST

MANUFACTURER	SOFTWARE	LIST PRICE
PATCH EDITORS/LIBRARIANS:		
Beam Team	Casio CZ Xsyn	$100
	Roland JX8P Xsyn	$100
Caged Artist/Dr. T's	DX Heaven	$130
	4-Op Deluxe (TX81Z, FB-01, DX100, 27, 21)	$130
	Kawai K3	$100
	ESQ-apade (ESQ1)	$130
	D-50	$130
	MT-32	$130
	M-6 Tricks (Oberheim Matrix 6)	$130
	PCM-70	$150
	Korg DS-8	$100
	Korg DP-2000/3000	$100
Compu-Mates	D-50 Command	$180
	DS-8 Synthdroid	$80
	DW Synthdroid	$80
	CZ Synthdroid	$80
	DSS Synthdroid	$130
	K3PO+ (Kawai K3)	$100
	R100 Drumdroid (Kawai R100)	$100
Hybrid Arts	DX-Android	$200
	CZ-Android	$100
MIDImouse Music	D-50 Capture!	$100
	MT-32 Capture!	$100
	FB-01 Voice Master	$100
	CZ Series/CZ-1 Voice Master	$100
	Matrix 12/Xpander Librarian	$50
	SQ-80 Source!	$100
	D-50 and MT-32 sound disks	$25
Savant Audio	Edit-8000	$80
Sonus	D-50 Design	$200
Steinberg/Jones	Synthworks DX/TX	$260
	Synthworks FB-01	$200
	Synthworks TX81Z	$200
	Synthworks ESQ-1	$260
	Synthworks D-50	$260
	Synthworks MT-32	$200
Synergy Resources	SynthView	$50
GENERIC LIBRARIANS:		
Hybrid Arts	Genpatch	$150
Paradigm Software Products	Omni-Banker ST	$55
SAMPLE EDITORS:		
Digidesign	Sound Designer Universal	$395
Drumware	Soundfiler Akai S900	$300
	Soundfiler Akai X7000/S700	$250
	Soundfiler Akai S612	$200

available for the 520 and 1040, but installing them will void your 90-day warranty. A "blitter chip" that speeds up certain graphics operations (but probably does not have much impact on music software) has been developed for the Mega STs, and a retrofit should be made available for the newer 520s and 1040s.

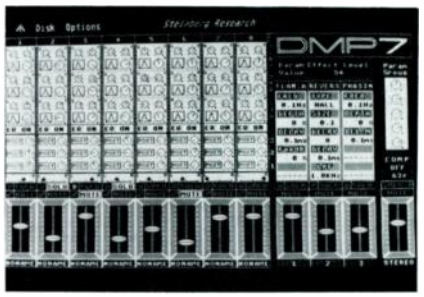
Monochrome systems run in a high-resolution mode comparable to the Mac (600/400 pixels), and color systems run in either low (320/200 pixels) or medium resolution (640/200 pixels). The 520 is the only version that comes with a built-in RF modulator so you can use a standard color TV as a display.

WHAT LOTS OF PEOPLE BUY

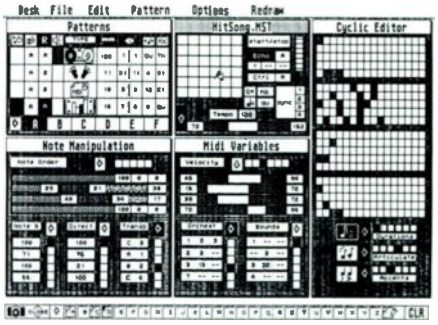
Many musicians are opting for the 1040STF because of the double-sided drive, Megabyte of RAM, and affordable price. Those who want to play a lot of games, or do color graphics or animation need the more expensive color system. The crisper-looking monochrome version of this arrangement suits the more visually oriented applications such as sheet music scoring, word processing, page layout or CAD work, and costs less as well. The monochrome monitor is especially nice in the studio because it runs at such a high frequency it doesn't emit the high-pitched ringing that is audible in most TVs and many color computer monitors, including Atari's.

The ST runs at a clock speed of 8 MHz, slightly faster than either the Mac or the Amiga. A built-in DMA (Direct Memory Access) port is included for fast data transfer to and from an optional hard disk. This port is so fast Hybrid Arts was able to use it to connect their *Midiplexer*, a device that adds another (merging) MIDI input and three more discrete MIDI buses to the output for their sequencing software. Anyone for 64 channels of MIDI?

The user interface uses a mouse-based, drop-down-menu style of windowing called the Graphic Environment Manager (GEM), written by Digital Research and



Steinberg/Jones *DMP7 Desktop Mixing* screen



Main Screen for *M*, from Intelligent Music

MORE GREAT BASS

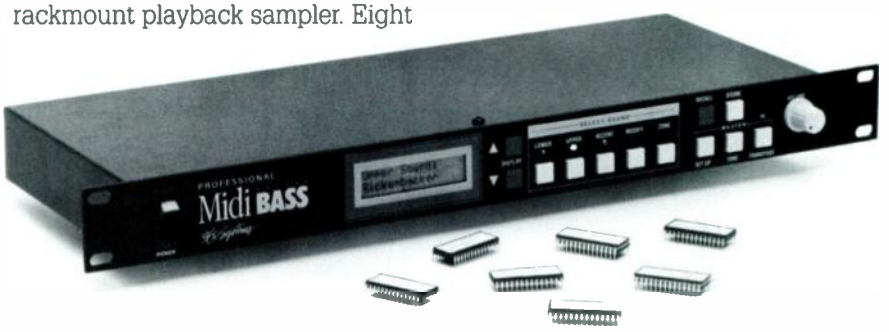
Send for this new demo cassette and hear the entire library of sounds available for the Professional Midi Bass.

All the classic bass sounds are here, like P-bass, Jazz Bass, Rickenbacker, and more. All the new synth basses are here too. You'll hear *dozens* of great bass sounds, from the upright acoustic to the downright weird.

All of the sounds in our Alternate Sound Library are multi-sample recordings of the real thing–stored on EPROM chips, the most reliable and instantly accessible storage medium for sound. Sound chips start at just $39.95 list. Get the demo tape and hear them all.

About Pro Midi Bass

The Professional Midi Bass is a rackmount playback sampler. Eight



sounds are included with Pro Midi Bass and many more are available from our extensive Alternate Sound Library. Pro Midi Bass will hold as many as *30* samples on-board and available for instant recall.

Use the features included in the Pro Midi Bass to create and store your own presets. With programmable zones and separate accent sounds, four sounds are always performance ready–each with its own settings for loudness, filter, decay, release and accent crossover. Pro Midi Bass accepts Midi patch change commands and responds to pitch bend information. See it at better keyboard stores everywhere.

For demo cassette send $5 to:

360 Systems

360 Systems, Dept. KE
18740 Oxnard Street
Tarzana, California 91356

MIDI Software for the Atari ST

MANUFACTURER	SOFTWARE	LIST PRICE
SAMPLE EDITORS		
Drumware	Genwave/12 (Akai S900, E-mu Emax and SP-1200, Oberheim Prommer, and MIDI sample dump standard 12-bit samplers)	$300
Dr. T's	Pro S900 (also converts samples to Kawai K5 parameters)	$249
Hybrid Arts	Oasis ST (Mirage)	$250
Sonus	ST Sonic Editor (Mirage)	$200
Steinberg/Jones	S900 Soundworks	$285
	Mirage Soundworks	$285
	Prophet 2000 Soundworks	$285
	Emax Soundworks	$285
SCORING:		
Compu-Mates	Final Score ST	$200
Dr. T's	The Copyist (3 levels)	$100, $250, $450
Electronic Arts	Music Construction Set	$50
Hybrid Arts	EZ-Score Plus	$150
Quiet Lion	Mu-Script	$100
Sonus	Superscore	$300
Steinberg/Jones	Masterscore	$350
SEQUENCERS:		
Compu-Mates	Final Trak	$200
Digidesign	C-Lab Creator	$350
Dr. T's	KCS Level II	$325
	KCS	$250
	MIDI Recording Studio	$40
Electronic Music Publishing House, Inc.	MIDIplay	$50
Hybrid Arts	SMPTETrack	$575
	SyncTrack	$375
	EZ-Track Plus	$65
MichTron	Super Conductor	$80
MIDImouse Music	Fast Tracks ST	$130
Quiet Lion	Mu-Script I	$100
Passport	Master Tracks Pro	$350
	Master Tracks Jr.	$130
Sonus	Masterpiece	$376
	SST Super Sequencer	$150
Steinberg/Jones	Steinberg Pro 24 III	$295
UTILITIES:		
HyperTek/Silicon Springs	OmniRes Monitor Emulator	$35

similar to the Mac and Amiga user interfaces. Although all such systems are descendents of Xerox research, Apple sued Digital Research over GEM for allegedly stealing the "look and feel" of the Mac. Digital Research paid Apple an out-of-court settlement and changed its IBM version of GEM, but this didn't affect Atari, who still uses its original version for the front end of the ST's operating system.

Developers have told me that windows update more slowly under GEM than do Mac windows (although the ST's actual *programs* run faster), and have therefore replaced some or all of GEM to increase the display speed. I usually prefer programs that use GEM, since—like the Mac—its consistency is what makes the ST so

It would be nice if Atari/DR would listen up and improve the aspects of GEM that bug the programmers.

darned easy to use. Although I'm sure Apple's lawsuit has complicated things in GEMland, it would be nice if Atari/DR would listen up and improve the aspects of GEM that bug the programmers.

IBM AND MAC IN ATARI CLOTHING?

The ST can emulate both the IBM and the Mac. It does the former using *PC Ditto*, a program made by Avant-Garde, of Jacksonville, Florida. Because this is a software-based emulation, IBM programs *will* run noticeably slower. Still, for those of us who'd like to bring work home from the office and take word processing/spreadsheet breaks in between sequencing our next gold LP, this is a consideration. Even without PC Ditto the ST can read IBM ASCII files directly from 3.5-inch IBM disks, since it uses a compatible disk format.

(IBMs, by the way, can read Atari ASCII files, but only from a disk formatted on the ST with a public domain program from Atari and most other bulletin boards called *IBMFRMT.TOS*. This creates an IBM boot sector on the disk.)

The ST's Mac emulation is a hardware add-on from Data Pacific called *Magic Sac*. A Magic Sac-equipped ST actually runs

Manufacturers of Music Products for the Atari ST

Aegix
PO Box 9488
Reno, NV 89507
☎ 702 / 329-1943

Avant-Garde
381 Pablo Point Drive
Jacksonville, FL 32225
☎ 904 / 221-2904

Beam Team
See: Steinberg/Jones

Chro-Magic Software Innovations
516 N. Jackson
Joplin, MO 64801
☎ 417 / 623-7393

Compu-Mates
See: Steinberg/Jones

Data Pacific
609 East Speer Blvd.
Denver, CO 80203-4240
☎ 303 / 733-8158

Digidesign, Inc.
1360 Willow Road, Suite 101
Menlo Park, CA 94025
☎ 415 / 327-8811

Dr. T's Music Software, Inc.
220 Boylston Street, #306
Chestnut Hill, MA 02167
☎ 617 / 244-6954

Drumware, Inc.
12077 Wilshire Boulevard, #515
Los Angeles, CA 90025
☎ 213 / 478-3956

Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
☎ 415 / 571-7171

Electronic Courseware Systems, Inc.
1210 Lancaster Drive
Champaign, IL 61821
☎ 217 / 359-7099

Electronic Music Publishing House, Inc.
2210 Wilshire Blvd.
Santa Monica, CA 90403
☎ 213 / 455-2025

Hybrid Arts
11920 W. Olympic Blvd.
Los Angeles, CA 90064
☎ 213 / 826-3777
BBS ☎ 213 / 826-4288

HyperTek/Silicon Springs
#120-1140 Austin Ave.
Coquitlam, B.C.Canada V3K 3P6
☎ 604 / 939-8235

Intelligent Music
PO Box 8748
Albany, NY 12208
☎ 518 / 434-4110

Magic Sac
609 E. Speer Blvd.
Denver, CO 80203
☎ 303 / 733-8158

MichTron
576 South Telegraph
Pontiac, MI 48053
☎ 313 / 334-5700

MIDImouse Music
PO Box 877
Welches, OR 97067
☎ 503 / 622-4034

Musically Intelligent Devices
(PO Box 682)
6 Brian Street
Commack, NY 11725
☎ 516 / 864-1683

Paradigm Software Products
1369 Concord Pl. Suite 3-B
Kalamazoo, MI 49008
☎ 616 / 372-5972

Passport Designs, Inc.
625 Miramontes Street
Half Moon Bay, CA 94019
☎ 415 / 726-0280

Quiet Lion
7335 Craner Avenue
Sun Valley, CA 91352
☎ 818 / 765-6224

Savant Audio
2140 Bellmore Ave.
Bellmore, NY 11710
☎ 516 / 826-6336

Sonus Corporation
21430 Strathern, Suite H
Canoga Park, CA 91304
☎ 818 / 702-0992

Steinberg/Jones
17700 Raymer Street
Suite 1001
Northridge, CA 91325
☎ 818 / 993-4091

Synergy Resources
754 N. Bolton Ave.
Indianapolis, IN 46219
☎ 317 / 356-6946

Mac programs faster than a Mac, and the monochrome ST screen has a few more pixels than the Mac's, besides being bigger and easier to read. Unfortunately Magic Sac *doesn't* run Mac MIDI programs, but supposedly does run every other Mac II-compatible program. This could be handy for those who want to run Microsoft's popular *Word* or *Excel*—word processor and spreadsheet programs—or the hot new *Hypercard* software.

There is also a variety of quality non-music application software written directly for the ST. Intriguingly, developers seem sensitive to a market whose decision to buy the machine is based largely on price. For whatever reason, ST software tends to be more affordably priced than similar software written for other computers.

What this adds up to is that a musician with an ST could easily keep track of business; design and laser-print cards, promotional materials and forms; communicate with others via modem; keep track of connections; and play some hot games—all in addition to running a *lot* of musical power.

HUNKY BUT NOT COMPLETELY DORY

There are a few disadvantages to using the ST. The keyboards have a mushy feel (although an Atari representaive stated that the Mega keyboards have been redesigned to offer a much better feel), and the 520 is limited to a single-sided disk drive. In addition, other than the 520 being able to use a standard TV via its RF unit, STs are limited to using certain kinds of monitors. If you use Atari monitors and want to work with *all* the machine's resolutions, you have to buy two Atari monitors. The other alternative (according to Atari) is buying one of the "multisync" type monitors sold by NEC and Sony, one of which will handle all the ST's resolutions.

Possibly the greatest limitation is one shared by the Mac and IBM as well—the ST's lack of a multi-tasking operating system. To get around this, some companies—Dr. T's, Hybrid Arts and Steinberg/Jones, to name a few—have designed integrated software systems that allow concurrent operation of several programs, or emulate multi-tasking by switching between programs quickly.

Another problem is the absence of a standard file format for sequencers—meaning primarily that you can't record a track on a sequencer and print it with a scoring program made by another developer. This is sure to change as companies move to support the new MIDI File Format standard, and as conversion utilities that move files among different brands of software become available.

CONCLUSION

The quality and variety of software available for the ST make it a worthy contender for the musician considering the computer plunge. It's an excellent choice at any level, from beginner to pro. EM

After escaping from an interstellar slave labor ship, sent here to mine monosodium glutamate, ***Jamie Krutz*** *writes music, produces videos, writes articles, and consults. He sometimes performs original low-fat, high-fiber music in the duo The Vegetable Club (which tours internationally within Colorado).*


BILLS PAID

PART 1

If you have a Mac, chances are you aren't using it to its full capacity. Why settle for having your computer just save your sequences and patches, when it could also save you the time to be creative?

MAC POWER USER = POWER MUSER

PHILOSOPHER/MYSTIC Georges Gurdjieff (and others) have claimed that at any given moment we are using only 2% of the brain's potential. He, and teachers like him, have outlined methods to try and realize that other 98%. A similar situation exists with computers. The Macintosh processor is running at 8 MHz (faster if you have a 68020 accelerator board or Mac II), so unless you can type 10,000 words per minute, you're not realizing the full potential of your computer.

There are ways to tap this power, and this three-part series will initiate you into the mysteries of power computing in three stages: first, through power desk accessories; next through power utilities (like FKeys, INITS, cdevs, print spoolers, finder substitutes, RAM disks, quasi-multi-tasking, and hard disk optimization); and finally, through the ways to design a power environ-

ILLUSTRATION BY PABLO HAZ

BY CHRISTOPHER YAVELOW

The forecast is for incredible winds.

Tie down all loose objects.

With the WX7 Wind MIDI Controller, woodwind players everywhere will be playing up a storm.

Because now, they too can tap into the full range of powerful MIDI technology that Yamaha has developed over the years.

The WX7 can drive tone modules, synthesizers, even drum machines—and still give you the kind of control you demand as a reed player.

Its 14 fully-adjustable keys are arranged in a traditional Boehm layout, so you already know how to play it. But "traditional" is hardly the word to describe the things you can play.

For example, the WX7 makes it possible for you to play over a range of seven octaves. Hold one note while you play another. And bend pitch effectively throughout the entire note range.

The WX7's mouthpiece is very much like that of a saxophone. And with the proper settings on your tone module, breath and lip pressure can control such parameters as volume, tremolo, vibrato, tone and articulation.

Two trill keys make it easy to perform half-and whole-note trills, using the same fingering in every register. While a Program Change Key lets you switch programs as you play.

And if all this sounds incredible here, just imagine how it sounds at an authorized Yamaha Digital Musical Instruments dealer.

So go try a WX7 for yourself. And brace yourself for some powerful winds.

YAMAHA

Yamaha Music Corporation, USA, Digital Musical Instrument Division, P.O. Box 6600, Buena Park, CA 90622.
In Canada: Yamaha Canada Music Ltd., 135 Milner Avenue, Scarborough, Ontario, M1S3R1.

ment for creative productivity using the Resource Editor, macros, and *Hypercard*. We'll cover one stage each month until you too can become a "Power User"—the true master of your Macintosh, training it to do two or three tasks simultaneously and even continue working for you while you sleep.

WHY BE A POWER USER?

Microcomputers operate at speeds that would seem to promise their masters powers akin to those of superheroes like "The Flash." Contrary to our expectations, as more and more microprocessor-controlled devices are introduced into the musical creation continuum, one sometimes observes an inverse relationship to efficiency. In more generalized terms, N × (Keystrokes + CPU time) = Creative Productivity ÷ N. Simply put, the time it takes for the computer's CPU (Central Processing Unit) to execute a task, plus the time it takes us to tell the computer what task to do, can quickly reach unacceptable proportions.

Having bitten from the Apple (Macintosh), you may feel like a modern day Adam, cast out of the garden of pre-silicon innocence. But all is not lost. Software is available that will access the "Tree of Macintosh Knowledge," and let you become a "power user," or perhaps more aptly (since we're talking about Macs and creative pursuit), a "power muser."

POWER USER PHILOSOPHY

The bottom line is using your Macintosh as a *productivity tool*. To do this you will need to establish at a very early point who is the boss of the computer/human relationship. Off-loading any of life's tasks to your computer gives you that much more time for creativity; this includes using *MacMoney* to balance your checkbook, *MacInTax* to figure out (and fill out and print out) your income tax forms, and *HomeBanking* to manage your bank accounts and pay your bills via modem. If you can train your computer to do two things at once, you're well on your way to calling the shots. By the end of this series you should be able to get your Macintosh to do three things at once, and take care of all your busy work while you're asleep at night.

THE INGREDIENTS

First, if you have a 128K or 512K Macintosh, upgrade it to a Mac Plus or buy an SE. This rest of this article will assume a minimum of a single Megabyte of RAM (but get more if you can). Since the Mac Plus is one of the most popular computers for the musician, we'll leave the Mac II power tips for a future article.

You should also have a hard disk *and* two floppy disk drives for reasons that will be revealed as we progress. A computer without a hard disk makes about as much sense as running a studio with two audio cables: you could probably do it by switching cables from device to device as necessary, but what a waste of time plugging and unplugging the wires to route your audio signals. Similarly, you could pop floppy disks in and out of your drives to access musical data; but it seems incongruous that musicians whose studio gear runs to five or six figures procrastinate about the purchase of a hard disk in the three- or four-figure range. As Apple guru Alan Kay says, "A computer without a hard disk is like an automobile without a gas tank."

By the end of this series you should be able to get your Macintosh to do three things at once, and take care of your busy work while you're asleep.

Don't skimp on the hard disk capacity either: 40 Megabytes is barely acceptable—if you do any sampling whatsoever, even 80 Megabytes will fill up faster than you might have anticipated. You probably have your studio wired up to allow you to access any of your signals with little effort; you will likewise want to get at data instantly. The unfortunate reality is that while most synths don't accumulate more audio outputs over a period of time, data just grows and grows—be prepared.

You've probably figured out that the shortest distance between two points is a straight line, and arranged your gear "ergonomically" so that all the important buttons and knobs are within arm's length. With a Macintosh, the shortest distance between two points is determined by how far the mouse has to move to get there, so go into the Control Panel Desk Accessory and set the mouse tracking as fast as possible.

If you're going to be a true power user, you'll want to plug all sorts of things into the Mac's serial ports—modems, printers, MIDI interfaces, etc. The amount of time you'll save by using a switch box, or better yet, a MIDI interface with built-in switch box (such as Opcode's *Studio Plus Two*), will more than cover the cost of the purchase.

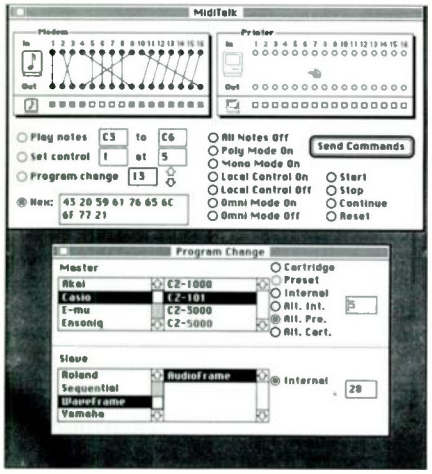
DESK ACCESSORY BASICS

The Macintosh is not a "true multi-tasking" computer but Apple has provided us with ways to circumvent this obstacle. The most basic work-around is found under the Apple menu in the guise of "desk accessories," and these are the most basic tools of the power user.

Desk accessories are programs dedicated to a single purpose that may be called up and run while you are within other "stand-alone" Macintosh applications. While most of these DAs (as these "mini-programs" are called) cannot execute tasks unless their window is the foremost one on the screen, there seems to be no limit to the number of DAs which may be open at any moment with a 1-Meg Macintosh Plus. When the main program's window is on top, you can go on working as usual while dozens of open DA windows are hiding behind your main window, waiting to be clicked upon and brought to the front. In this case the Mac is not really doing two things at once, but the time you save from not having to quit your primary application, then momentarily boot up another program, then return to the software you started from can add up to minutes and eventually hours and days.

Apple originally mandated that a user could have only 15 DAs in the system file at any time, but power users have found ways around this limitation. (One way is to install dummy drivers into the system file to bring the DA limit up to 29, but even that proved too little.) Now using INIT files like *Suitcase* or *Font DA Juggler* (INIT files, to be discussed fully in Part II, are system resources that expand the capabilities of the system file and are automatically loaded when you power up your

Mac), you can have between 500 and 600 DAs available at all times. Furthermore, these DAs don't have to be physically installed in the system file using Apple's cumbersome *Font/DA Mover* utility; once the INIT files have been placed in the system folder, any DAs, fonts, or FKeys (function keys) in the system folder are automatically loaded when you turn on the Macintosh. Don't throw out the Font/DA Mover though, you will still need it to pack suitcase files full of multiple DAs and fonts, and you will need the similar *FKey Manager* to bring all your FKeys together into a single file. I currently have 86 DAs, totaling nearly 2 Megs on the hard drive, which I use practically every day. Fortunately, the learning curve for DAs is not as steep as for standard programs, because most DAs are designed to perform a single, dedicated purpose rather than several more generalized applications.



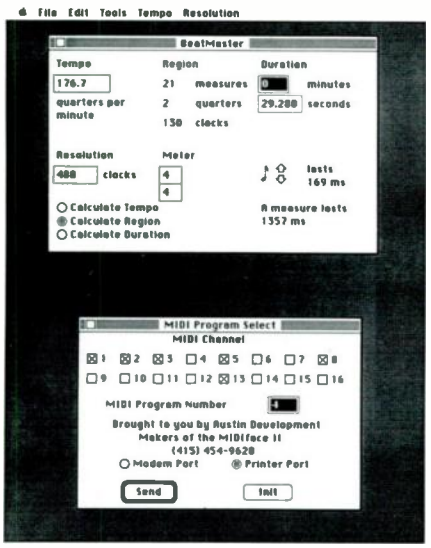


FIG. 1: Three main windows from Opcode's MidiPack and Austin Development's MIDI Program Select DA.

VARIETIES OF DESK ACCESSORIES

Simple DAs include calculators, note pads, clocks, and file utilities. Many are devoted to full-featured graphic functions: *CheapPaint, DeskPaint,* and *Canvas* provide real graphic power in a DA. You never can tell when you might need one of these to quickly sketch the patch schematic of a mix setup for later recall using one of the graphic viewing DAs: *ArtGrabber, Aristo,* or *SmartScrap.* These open up a window through which a graphic document can be quickly viewed, copied, or pasted (but not edited) from within any other environment.

There are many DAs devoted to MIDI utilities. Southworth's *JamBox* is controlled entirely from the Desk Accessory menu. Beaverton markets a patch librarian DA for several synths and you may be fortunate enough to have an early DA version of CTM's *MidiPack* (now a standalone application distributed by Opcode), a set of DAs which includes MidiTalk (a MIDI Event Generator), Program Change, and BeatMaster, the functions of which are shown in **Fig. 1**. Finally, there are public domain MIDI DAs such as *MIDI Program Select.*

Text processing DAs such as *miniWriter, MockWrite, Redwriter,* and *JoliWrite* can help you create track sheets, jot down ideas or lyrics, compose electronic mail messages, or send messages to your synths using MidiTalk. Furthermore, these text processing DAs will read any standard text file so they are indispensable for reading e-mail without having to leave your sequencer, patch editor, or notation program.

If you have a large library of sounds or patches, eventually you will need some sort of software to keep track of which disks or files contain these sounds. Rather than use a full-featured database, a number of DAs can access this information from within any other program. For example, I use *Acta* to keep track of my sample library. Acta is an outlining program with sorting and searching capabilities that allows main headings and nested subheadings to be opened or closed with the click of the mouse (**Fig. 2**). The moment I sample or download a new sound I immediately open Acta and add it to the listing—likewise, I can search for a sound by name or category from within any other program. *HelpDA* offers similar capabilities, although has a drawback in that the file information cannot be edited from within HelpDA itself. A similar DA called *AffiniFile* permits extensive cross-referencing of information by whatever category you care to assign to a sound, be it real or subjective. Besides text information, AffiniFile will also retrieve graphics, which could, for example, include patch bay configurations (**Fig. 3**).

There are also programs that allow you to make your own DAs. Chuck Surac and I used *DA Maker* to create desk accessories which list all the presets of the Kurzweil. DA Maker is a simple program to operate, taking whatever text or graphic information it finds on the Macintosh

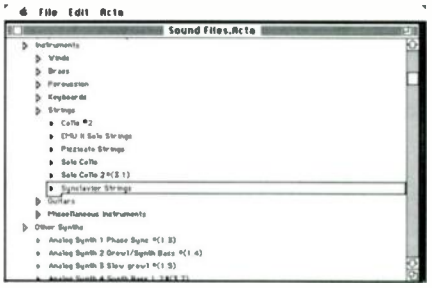


FIG. 2: Acta sound file database, sorted by category, sub-category and name.

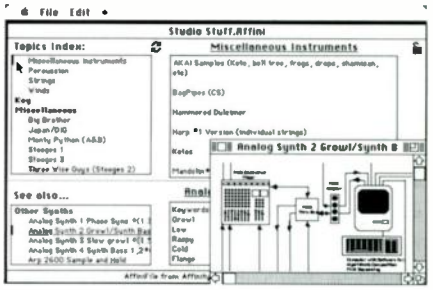


FIG. 3: AffiniFile database offers graphics and objective and subjective cross-referencing.

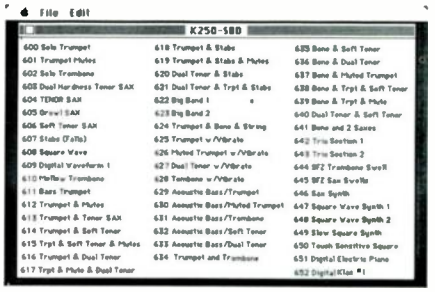


FIG. 4: Quick DA reference for Kurzweil 250 by DA-Maker.

clipboard and turning it into a screen shot recallable on demand from the DA menu (**Fig. 4**). I used DA Maker to create a list of my passwords for all the telecommunications networks and BBSs in which I participate (in a code that only I understand, of course).

The time management capabilities of DAs have gone much further than the little *Alarm Clock* DA which ships with the Mac. Many people use a program called *J-Clock* to install a permanent clock in the upper right corner of the menu bar. Because I need to call people all over the world, I use a more powerful DA called *Time Zone*, which allows the times of your city and any other city (picked from Time Zone's own menu) to be installed in the menu bar (**Fig. 5**).

There are many DA calendars available but none can compare with Smart Alarms' *Appointment Diary*. If someone calls you to make a date while you are in the midst of applying your Mac to musical ideas, the Appointment Diary DA can be opened in a second (**Fig. 6**). Furthermore, any item on any page of the Calendar can be designated as a "Reminder" by selecting the information and typing "Command-R." This opens Smart Alarms' Reminders file and here you may designate how much advance warning you want and, if desired, a recurrent interval

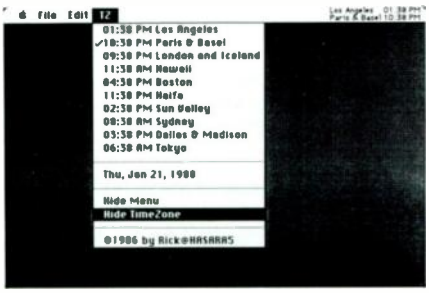


FIG. 5: TimeZone displays local time and that of another zone.

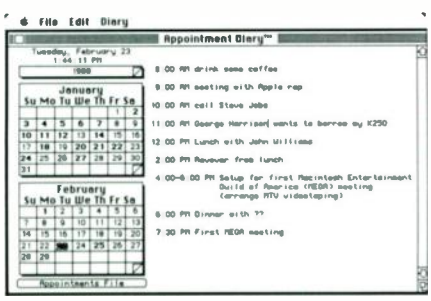


FIG. 6: SmartAlarms' Appointment Diary.

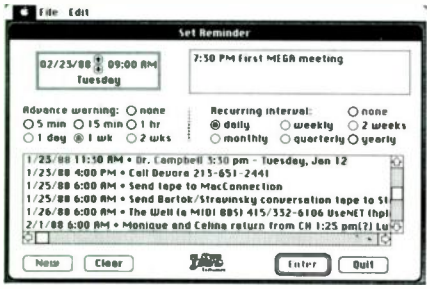


FIG. 7: SmartAlarms' DA for setting reminders, warnings and alarm intervals.

for the alarm. At the right time, the Mac will beep three times and the message from your Appointment Diary will appear on the screen with some buttons giving you the option to "remind me again in N minutes, hours, or days" or "Thanks I've dealt with this now" (Fig. 7).

Rolodex-type DAs have been popular from the inception of the Macintosh, but the newest contender, *QuickDex*, is the one we've all been waiting for. I keep my main address book with a database package called *Filemaker+*, but sometimes I want to be able to get to my 3,000 names, addresses, phone numbers, e-mail handles, and categories without having to quit whatever I'm doing and boot up the Filemaker address file. To get around this, I've created a Filemaker script (somewhat like a macro; this topic will also be covered later in this series) which converts my address file into a file accessible by the QuickDex DA. QuickDex can search through all 3,000 "rolodex cards" in less than a second and once a card is located, "Command-D" will immediately dial the first phone number on the card, stripping the local area code from the number if necessary—it's like having a 3,000-number auto-dialer, and I haven't used the buttons on the phone since I got QuickDex (Fig. 8).

FIG. 8: QuickDex gives your phone and modem unlimited auto-dial capabilities.

Manufacturers of Music Products for the Macintosh

ActaSymmetry Corp.
761 E. University Dr.
Mesa, AZ 85203
☎ 602 / 844-2199

AffiniFile
Affinity Microsystems, Ltd.
1050 Walnut St., Ste. 425
Boulder, CO 94301
☎ 303 / 442-4840

Apple Computer
20525 Mariani Ave.
Cupertino, CA 95014
☎ 408 / 996-1010

Appointment Diary
(see **Imagine Software**)

Aristo
Studbail Software
3707 Poinciana Dr., #137
Santa Clara, CA 95051

ArtGrabber
(see **MacroMind**)

BackDown
Ron Risley
PO Box 8125
San Diego, CA 92102

Canvas
Deneba Software
7855 NW 12 St., Ste. 202
Miami, FL 33126
☎ 800 / 6-CANVAS

CE Software
801 73rd St.
Des Moines, IA 50312
☎ 515/ 224-5782

CheapPaint
(see **MacroMind**)

DeskPaint
Zedcor, Inc.
4500 E. Speedway, Ste. 93
Tucson, AZ 85712
☎ 800 / 482-4567

DiskTools II
Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
☎ 800 / 245-4525
☎ 800 / 562-1112 (CA)

DiskTop
(see **CE Software**)

Filemaker+
Nashoba Systems Inc.
175 Sudbury Road
Concord, MA 01742
☎ 617 / 371-2028

FKey Manager and PopKeys
Dr. Carlos Weber
250 Douglass Street, #12
San Francisco, CA 94114

Font DA Juggler
Alsoft, Inc.
PO Box 927
Spring, TX 77383-0927
☎ 713 / 353-4090

Font/DA Mover
(see **Apple Computer**)

HelpDA
James McCarthy
7 Ship Street
Hingham, MA 02043

Imagine Software
19 Bolinas Rd.
Fairfax, CA 94930
☎ 415 / 453-3944

J-Clock
Public Domain Software
James Sulzen and Edgar Matias

Jambox
(see **Southworth Systems**)

JoliWrite
Benoit Widemann
68 Avenue d'Italie
Paris, 75013, France

Macintalk
(see **Apple Computer**)

MacroMind Inc.
1028 W. Wolfram
Chicago, IL 60657
☎ 312 / 871-6448

MIDI Pack
(see **OpCode Systems**)

MIDI Program Select
Austin Development
227 Marin St.
San Rafael, CA 94901
☎ 415 / 454-9620

miniWriter
Maitrey Design
PO Box 1480
Goleta, CA 93116

MockTerminal
(see **CE Software**)

MockWrite
(see **CE Software**)

OpCode Systems
1024 Hamilton Court
Menlo Park, CA 94025
☎ 415 / 321-8977

PopKeys
(see **FKey Manager**)

QuickDex
Greene, Inc.
15 Via Chualar
Monterey, CA 93940
☎ 408 / 375-0910

RedWriter
(see **CE Software**)

Smart Alarms
(see **Imagine Software**)

SmartScrap
Solutions International
PO Box 989
Montpelier, VT 05602
☎ 802 / 229-0368

Southworth Systems Inc.
91 Ann Lee Rd.
Harvard, MA 01451
☎ 617 / 772-9471

Studio Plus Two
(see **Opcode Systems**)

Suitcase
Software Supply
599 N. Mathilda Ave., Ste. 210
Sunnyvale, CA 94086
☎ 408 / 749-9311

TimeZone
Rick Jansen
Allebeplein 351062 AB
Amsterdam
The Netherlands
☎ 31/20-156149

DESKTOPS AND TELECOMMUNICATIONS

Perhaps the biggest time-savers in the desk accessory format are file utilities such as *DiskTop* and *DiskTools*. Both allow you to perform any operation you might normally do in the Macintosh finder (that is, on the desktop) from within a program. File copying, moving, erasing, creation of folders, information about file type, size, and last modification date are supported, as is the safe launching of applications and the opening of documents in new applications *without* having to quit a program and return to the desktop.

Telecommunications DAs like *MockTerminal* provide stripped-down but functional terminal emulation capabilities that allow you to go on-line at a moment's notice, without exiting your current program. On occasion, I have needed to quickly download a sound file and used Mock Terminal to log onto a music BBS, without leaving my sequencer or notation program; but more often I use this DA when I am expecting someone to send my Mac a file. I keep the modem in auto-answer mode (Hayes-compatible modems use "ATS01") and the moment I hear someone connect with my modem, I open the MockTerminal DA and set up the transfer parameters with the other party. Next I use another desk accessory called *BackDown* to download the file in the background, and I go on with whatever I had been doing when the call came into the modem. Oh, you may have noticed that we are now doing two things at once with the Macintosh, downloading a file in the background and "going on with whatever we were doing"—I guess it's time to move up to intermediate-level power using. See you next month with Part II of "Power User, Power Muser": Power Utilities. EM

The unfortunate reality is that while most synths don't accumulate more audio outputs over a period of time, data just grows and grows—be prepared.

Christopher Yavelow is a computer-assisted composer who has become well-known as a writer on this topic. He received graduate degrees in music composition from Boston University and Harvard, diplomas from several noted European conservatories, and his works have received some three dozen international awards and fellowships. He is executive director of MEGA, the Macintosh Entertainment Guild of America, a national Mac user's group dedicated to the music and film industries.

Make Your Atari ST Sing!!

LET'S TALK QUALITY
- Top of the line components!
- Superior design!
- Scrupulous testing!

LET'S TALK FEATURES
- 36" cables let you place unit conveniently!
- Single AC powercord replaces separate power supply and two powercords!
- Lighted switch and busy lights!
- Small footprint (5¼" x 12")

LET'S TALK FREEBIES
- Format and partition software!
- Complete back-up and restore software! ($39.95 value)

LET'S TALK WARRANTY
- Extreme steps to insure quality allow us to offer **a one year limited warranty.**

LET'S TALK FUN

Until you have experienced the fun and convenience of using a hard disk, you have missed much of what you expected from your computer.

20.8 MEG. HARD DISK

3.5" D.S. MICROFLOPPY

LET'S TALK TURKEY... IT'S AT YOUR DEALER NOW!

ASTRA SYSTEMS, INC.

2500 S. Fairview, Unit L
Santa Ana, CA 92704
(714) 549-2141

Is the compressor output going to overload your flanger? Does that battery really measure 1.5V? Want a quick way to tell if a console input is active? Here's how to find out.

LED Bar Graph Peak Detector

BY THOMAS HENRY

NOT TOO LONG AGO I was building Craig Anderton's preamplifier circuit, Project #1, in *Electronic Projects for Musicians* (available from Mix Bookshelf, 6400 Hollis, Emeryville, CA 94608) to build into a modular guitar processing box. The circuit provides a VU meter output so you can monitor how hot the signal is getting, and thus avoid any undesired overloading (along with its accompanying distortion). But rather than use a VU meter, which is relatively fragile and measures an "average" signal strength, I elected to keep tabs on the audio path with a much sturdier LED bar graph display. In addition, the bar graph measures peak signal levels in easy-to-interpret half-volt increments. This article describes exactly how I built my unit, and you can make one just as easily.

Of course, the LED Bar Graph Peak Detector can be used with just about any guitar or synthesizer module, not just preamplifiers. Plug it into the send jack of a console's insert point to see if the channel is active, measure a power supply output, or check the output of an envelope generator in an analog synth. You can even use the meter to test 1.5-volt batteries, if you're so inclined.

HOW IT WORKS

Fig. 1 shows the complete schematic for the LED Bar Graph Peak Detector. Notice how simple it is! The heart of the unit is National Semiconductor's LM3914N. But we're getting ahead of ourselves; let's back up and consider the input circuitry first.

The audio signal to be measured enters at jack J1. Notice that this jack is set up as a "patch-over" affair. If no plug is inserted in J1, then the peak detector monitors the "hard-wired" input. Inserting a plug breaks the hard-wired connection, so the peak detector will then monitor the signal provided by the plug. In my unit, the hard-wired input connects to the preamplifier output (mentioned above), so I can see how much signal is

CANNED HEAT.

CompuSound offers a lot more than good advice on the latest Computer MIDI products. Our systems are completely set-up and ready-to-go. They're warranteed for a full year and backed up with expert technical service. At CompuSound we put it all together. So all you have to do is warm your hands.

Macintosh Plus Music Publishing System

- Apple Macintosh Plus computer
- Opcode Studio Plus II interface
- Mark/Unicorn Performer sequencer
- Mark/Unicorn Pro Composer score pgm.
- Apple Imagewriter II printer w/cable
- 2 10-Foot MIDI cables

Package Price $3069

Macintosh Plus Music Sequencing System

- Apple Macintosh Plus computer
- Opcode Professional Plus interface
- Passport Mastertracks Pro sequencer
- 2 10-Foot MIDI cables

Package Price $2195

CALL FOR OUR PACKAGE PRICES ON Mac SE /Mac II AND HARD DRIVE SYSTEMS!

IBM PC/XT Compatible System

CompuSound Personal Computer

- 100% IBM Compatible
- Monochrome Monitor
- 640K memory, turbo-speed motherboard
- Key lock, one year warranty
- MPU compatible MIDI interface

With 2 floppy drives **$989**

With 1 floppy drive, 20 MB hard disc **$1139**

IBM Compatible Music Publishing System

With 1 floppy drive, 20 MB hard disc, HP Laserjet II printer, Passport Score Program **$3389**

SPECIAL!

MPU interface and CakeWalk sequencer .. **$199**

Music Quest MSS-1 package **$199**

ATARI 1040ST Monochrome System

- 1040ST computer
- Monochrome monitor
- Your choice of Dr. T's Keyboard Controlled Sequencer or Mastertracks Pro and 2 10-foot MIDI cables

Package Price $1079

ATARI 1040ST Color System

- 1040ST computer
- SC1224 color monitor
- Hybrid Arts SMPTE TRACK and GENPATCH

Package Price $1695

ATARI 520ST FM System

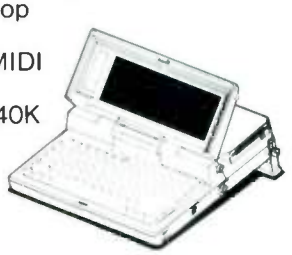
- With Sonus SST sequencer

Package Price $649

NEW! SNAP by Datavue

IBM compatible laptop computer

- MPU compatible MIDI Interface
- 2 Floppy Drives, 640K
- Backlit Screen



Package Price $1879

Call for options.

System Add-On Specials

HARDWARE

- Digital Music
- Harmony Systems
- JC Cooper
- Ultimate Support
- Epson
- Panasonic
- Hewlett Packard
- Everex

SOFTWARE

- Voyetra Sequencer Plus Series
- Jim Miller Personal Composer
- Passport
- Texture 2.5
- Sonus
- Dr. T's
- Mark of the Unicorn
- Opcode
- Hybrid Arts
- Digidesign

1 800-443-7069

All Items Available Separately.

CompuSound™

Suite 201, 5715 Buford Highway, Atlanta, GA 30340 (404) 457-3899

MICRO MUSIC™

"THE MIDI CONNECTION"℠

Mail the card below today or call and we'll send you a FREE copy of our new WINTER 1988...

MIDI CATALOG

50 VENDORS
- *All Major Suppliers*

500 PRODUCTS
- *Software*
- *Interfaces*
- *Computers*

TRIPLE INDEXED
- *Computer*
- *Function*
- *Manufacturer*

PRODUCT GUIDE
- *Functions*
- *Versions*
- *Compatibility*

(404) 454-9646

Just one more reason why we're the place to call to help you...

MAKE YOUR MIDI ...MOVE!™

MICRO MUSIC™
Pinetree Plaza
5269-20 Buford Highway
Atlanta, Georgia 30340

Rush me your FREE CATALOG

Name _____
Company _____
Address _____
City _____ State ____ Zip _____
Telephone _____
(cut out and mail)

© 1988 Micro Music, Inc.

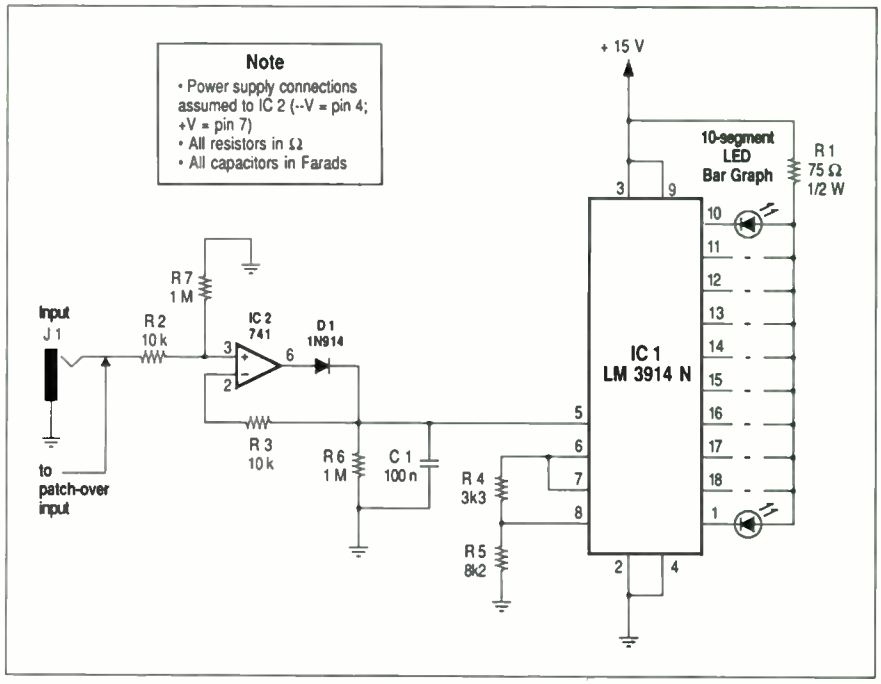


FIG. 1: Schematic for the LED Bar Graph Peak Detector.

going through the preamp. However, there are times when I want to measure the peaks generated by other parts of the guitar box (like fuzzes, flangers and other sources of strong signals). Patching in a cord allows me to do so, quickly and simply.

By the way, notice that the input to the peak detector is DC-coupled. All of my devices which I monitor with this circuit are AC-coupled at their respective outputs, so an additional capacitor was not needed. If you like, however, you can add a capacitor (around 100 nF or 0.1 uF) in series with R2 at the input.

The signal then hits the peak detector formed of op amp IC2 and associated components. This op amp is basically a voltage follower, so the output will mimic the input. However, diode D1 ensures that the output signal is only allowed to move in the positive direction. A charge, representing the highest peak attained by the input signal, is dumped onto capacitor C1. The charge will stay on C1 for a reasonable amount of time, since D1 blocks the normal discharge path through IC2's output. Current is bled off to ground by R6, a high-value damping resistor. By slowing the peak down, via C1 and R6, we've converted the AC signal into a somewhat-filtered DC so that the LED display doesn't flicker wildly in response to a rapidly changing input.

I picked the values for C1 and R6 via experimentation. They create a peak detector which is fast enough to respond to new peaks and valleys, yet slow enough to produce a stable display. Feel free to twiddle with these values, however; reducing C1 or R1 will speed up response but increase ripple.

The peak voltage level now goes to IC1, the LM3914N. This chip is a workhorse! It looks at the voltage on its input (at pin 5) and then automatically lights up an appropriate number of LED segments. Voltage divider R4/R5 sets the meter's scale (range). For my guitar box, a scale of one-half volt (0.5V) per segment, or 5V total seemed right, and R4 and R5 have been assigned resistances appropriate for this. Other values can be calculated by the formula:

Reference Output Voltage = 1.25 (1 + (R5/R4))

R4 also sets the LED brightness according to the formula:

LED Current (mA) = 12.5/R4

Incidentally, the LM3914N is a linear bar graph device; the segments light up in strict proportion to the applied input voltage. For measuring control voltages as well as audio signals in a modular system (where peaks typically run from 0V to 5V), this is exactly what the doctor or-

dered! However, you may want to experiment with the logarithmic or VU versions of this chip (the LM3915 and the LM3916, respectively).

Finally, we're ready to consider the LED segment outputs. Nowadays, a ten-segment LED display is easy to come by (try Radio Shack, for instance), and can fit directly into an ordinary 20-pin IC socket.

Referring to the circuit, note that the cathode from each display segment goes to an associated output on IC1. Pin 1, for example, connects to the lowest segment, pin 18 to the second segment and so on, up to pin 10 for the last segment (representing the highest voltage level). Observe too that only one current-limiting resistor (R1) is needed, thus greatly simplifying the wiring process! However, R1 carries a fair amount of current (around 50 mA), so you must use a half-watt (½W) resistor here. Don't even think about those tiny ¼, ⅛ or 1/10 watt types! In a way, R1 is the real secret to the success of this project, for it enables us to run the LED Bar Graph Peak Detector directly from a standard +15V power supply line. And by the way, with this hefty resistor in place, the LM3914 runs quite cool, thus insuring a long life for the circuit.

HEAT UP YOUR IRONS

Building the LED Bar Graph Peak Detector is easy, due in part to a neat method I came up with for mounting the critter. First, though, refer to the parts list and do your shopping. None of the components should be hard to find.

PARTS LIST

Resistors (¼ watt except as noted)

R1	75 ohm, ½ watt
R2, R3	10k
R4	3k3
R5	8k2
R6, R7	1 Meg

Capacitor (15 working volts or greater)

C1	100 nF mylar

Semiconductors

D1	1N914 diode
D2-D11	10-segment display
IC1	LM3914N LED driver
IC2	741 op amp

Regarding wiring, if you just jump in blindly and whip up a rat's nest, you will probably regret it, for the LM3914N doesn't take kindly to messy construction techniques. (Spurious oscillation is just one possibility.) Additionally, with all of those segments to wire up you just might go bonkers! On the other hand, with a bit of ingenuity, we can overcome these two handicaps.

Fig. 2 shows my solution. Note how the circuit is assembled on two boards: one board contains the ten-segment LED display, while the other harbors all of the other components. The two boards are then brought together and attached by means of two small angles or "L-brackets." Observe further that the foil sides of the boards face each other (albeit at 90 degrees); this keeps the connections between the circuitry and the display very short (less than two inches), which definitely makes the LM3914N happy. Incidentally, wire-wrap and perf board make an excellent pair for this project.

The LED display mounts in a 20-pin socket for two reasons. First, you won't have to worry about heat damage to the display, since you never actually solder anything to it. Secondly, the extra height provided by the socket makes it easier to bring the completed circuit up to a front panel. I used some #4 hardware and small standoffs to mount the project flush up to a rectangular hole cut in the front panel. (The hole should accept the LED device and socket snugly.) All things considered, this method works very well and keeps the tedium factor to a minimum.

Building the Peak Detector is easy, due to a neat method I came up with for mounting the critter.

One final construction note: the LM3914N requires only a single +15V and ground for power supply voltages. IC2, on the other hand, needs a bipolar 15V supply. The +15V line goes to pin 7, while the -15V line feeds pin 4.

And there you have it, a specialized voltage meter, suitable for inclusion in most any electronic music instrument. So the next time you're wondering if you are overdriving a module, don't guess at it; measure it with the LED Bar Graph Peak Detector! EM

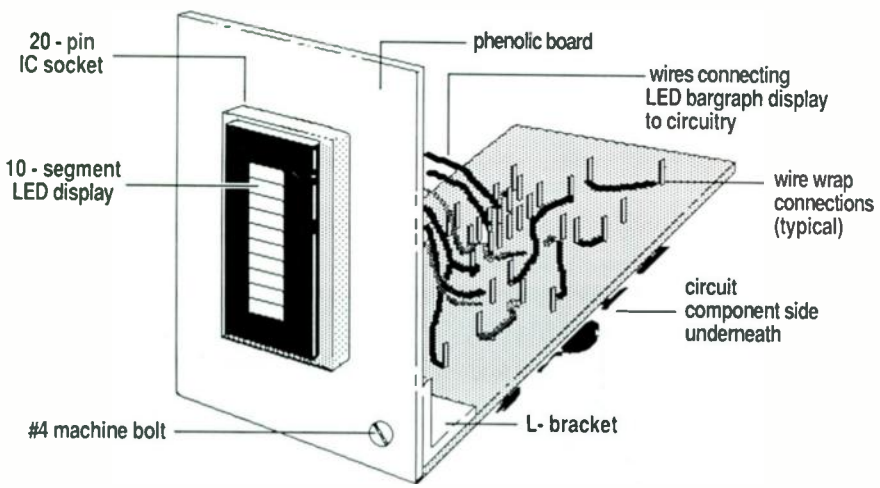
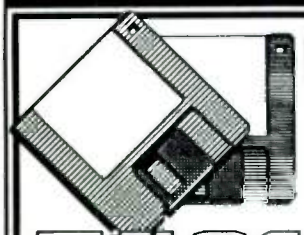


FIG. 2: Suggested construction method for the LED Bar Graph Peak Detector.

Thomas Henry is an assistant professor of computer sciences at Mankato State University in Minnesota. He has had over 100 articles published in electronics, computer, and music magazines, and is also the author of the book Build a Better Music Synthesizer. *His outside interests include amateur theater, Victorian literature, and the history of mathematics.*

VALHALA PRODUCTS NOW MANUFACTURER DIRECT!

It's not that we're charging too little, you've been paying too much!



MACINTOSH SOFTWARE

{Not Copy-Protected!}

TX81Z EDITOR/LIBRARIAN

Up to 16 banks of voices open simultaneously. Voice Library Function. Random Patch Generator. Performance Data editing & storage. 3 ways to test/hear patches: 2k micro sequencer, echo MIDI data from computer port or an on-screen keyboard that features velocity, mod wheel, breath & foot controllers for testing patches. And much more!

D-50 LIBRARIAN

Only **$69.00**

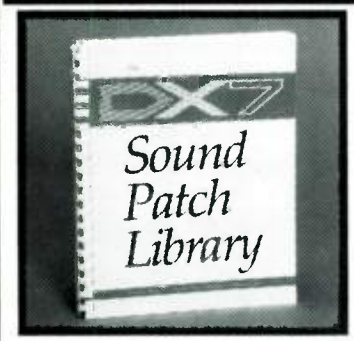
For the D50 Librarian or TX81Z Editor Librarian.

New Mac Software Available May 1988

(Not Vaporware!)

D-50 Editor/Librarian $129.00
(Includes full MT32 support!)

MT-32 Editor/Librarian $69.00
(Translates D50 voices to MT32 format!)



Sound Patch Library™

$29.00

- 757 different patches.
- Sound, algorithm & group indexes.
- 214 pages, spiral bound book.
- Compatible with DX7II & DX7S !

757 New TX81Z Voices

$56.00 ea.

Available on Data Cassette or Mac disk for Valhala's TX81Z program.

Also 757 new voices for DX21, DX27 or DX100 available on data cassette for $56.00 each.

757 DX7/TX7 Voices

$56.00 ea.

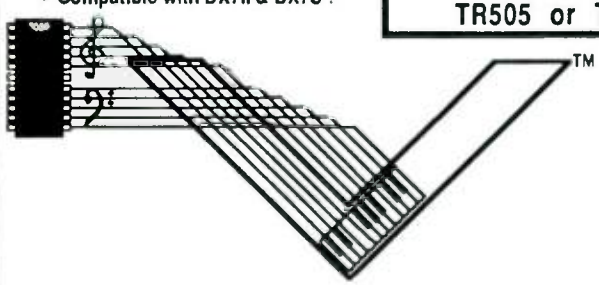
Available on data cassette, DX7IIFD disks or Opcode Mac format and for the Commodore 64 formats: Sonus, Music Direct, Syntech or Passport.

Drum Rhythm Patterns

$22.00 ea.

Data tapes available for:

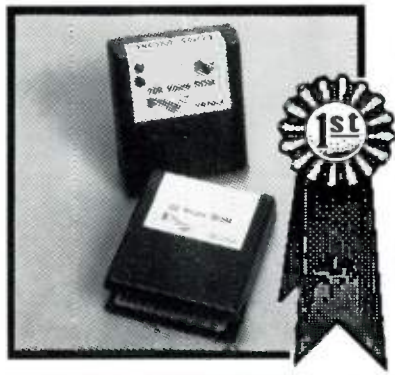
RX21, RX15, RX11, RX5, TR505 or TR707.



ESQ1

ESQ M

SQ80



Our ROMS contain traditional sounds for use when playing live or recording, together with a collection of keyboard type sounds, such as Moog, OBX and Juno along with classic sound effects. Whether your tastes are 'traditional' or lean toward 'New Age', Valhala's the ultimate in sound support.

Orchestral • Bass Guitars
Percussion •Acoustic Pianos
Electric Pianos • Woodwinds
Brass • Sound Effects
Synth Sounds •Strings
and many more!

- **80 - Voice ROMS $25.00 ea.** *(ROM 801, 802, 803 or 804)*
- **160 -Voice ROMS $52.00 ea.** *(ROM 1601 or 1602)*

320-Voice ROMS $99.00 ea.

Valhala's 320 voice ROMS 3201 & 3202 contain all of our voices ready to load into your ESQ & SQ synths - for real creative power at your fingertips instantly!

Now Available ROM 3202 with 320 more new & exciting voices!

ESQ1 Bible™ (Prog Ref.)

$19.00

- Enhance your programming skills.
- Learn acoustic sound programming.
- Includes 40 patches explained.

Sound Patch Library™

$25.00

Be one of the first to purchase the ultimate collection of 757 ESQ1 voices.

C64 Patch & Sequence Librarian for the ESQ1 $65.00

The ultimate storage program for the Commodore 64 & ESQ1! Holds up to 12-banks of voices at one time for easy swapping/viewing. Store single or all sequence memory to disk. 100% Machine language program for super-fast and efficient program execution.

'In summary, the ES1 program is a well-written and useful program.'
Excerpt of review by James C. Chandler for Electronic Musician January 1988

Toll Free Number for Orders Only! 1-800-648-6434

Information requests, questions and customer assistance call: 1-313-548-9360

Business Hours: Monday thru Friday 9am to 5pm EST

VALHALA Box 20157-EM Ferndale, Michigan 48220

ESQ1, ESQm & SQ80 are trademarks of Ensoniq, Inc. This ad and text Copyright © 1988 VALHALA Music, Inc. Sound Patch Library is a Trademark of Valhala Music, Inc. Macintosh is a trademark of Apple Computers, Inc.

All VALHALA customers buy 'MANUFACTURER DIRECT'. There are no dealers or distributor profits added to the 'Manufacturer Direct' prices. We're different in that we both manufacture and sell our own products. By designing and manufacturing our own products we put all the quality in, but eliminate the biggest portion of the selling price, which is the dealer!

D-50 MEMORY CARD GIVEAWAY!

GRAND PRIZE GRAND PRIZE GRAND PRIZE

3 RAM MEMORY Cards and all four of VALHALA's STUDIO SERIES™ ROMS!

Two SECOND PRIZE WINNERS

2 RAM MEMORY cards and your choice of any two of our STUDIO SERIES™ ROMS.

Five THIRD PRIZE WINNERS

1 RAM MEMORY card & your choice of one of our STUDIO SERIES™ ROMS.

One Hundred FOURTH PRIZE WINNERS

1 CUSTOM ROM burned w/sounds from your own personal library of D50 voices.

Prizes to be drawn June 15, 1988.

No purchase necessary. Print your name, address & phone number on a 3 x 5 postcard only & mail it to:
VALHALA D50 Card Giveaway
Box 20157-EM
Ferndale, MI 48220

Giveaway Rules: All entries must be postmarked on or before June 10, 1988. Limit of one prize per person, family, household or address. Giveaway open to all residents of USA & Canada only. Offer void where prohibited & winners subject to all federal, state and local taxes. For a complete listing of all rules send a separate SASE to: Valhala D50 Rules Box 20157-EM Ferndale, MI 48220. For a listing of all prize winners send a separate Self-Addressed Stamped Envelope to: Valhala D50 Prize Winners Box 20157-EM Ferndale, MI 48220.

D-50

RAMS • ROMS • SOFTWARE

D-50 RAM MEMORY CARDS

$69.00 each

Buy 2 RAM CARDS only **$65.00** each
Buy 3+ RAM CARDS only **$60.00** each

Our motto: We will meet and/or beat any advertised price in this issue for D50 RAM cards providing that the competition has them in stock and is currently shipping!

For an additional $10.00 per RAM CARD you can choose any one of four sound blocks from our STUDIO SERIES™ to be loaded into your RAM CARD when purchased from VALHALA.

D-50 CUSTOM ROM CARDS

$35.00 each

We realize that you have many 'favorite voices' that you use on a regular basis. Why tie up a costly RAM card when you can now have a ROM card programmed specifically for yourself, with your favorite voices? VALHALA is pleased to offer this Custom ROM service at a price that seems just too good to be true!

To order a custom ROM, place all 64 voices in the order you prefer along with your selected reverb types onto your RAM card & write-protect the card or place your voice bank onto a 3.5" Mac disk in the Valhala format and ship it to VALHALA. We will return your RAM card/3.5" disk along with your CUSTOM ROM by UPS. (Send SASE for full info.)

D-50 ROM MEMORY CARDS

$40.00 each

The STUDIO SERIES™

256 new and exciting voices now available on our four STUDIO SERIES™ Sound Blocks.

- Top 40
- Analog
- New Age
- Orchestral

D-50 Demo Cassette only $2.50!

Our D-50 RAMs are 100% compatible with the new ROLAND L/A keyboards!

D-10 D-20 D-110

ORDER FORM

Mail to: VALHALA Box 20157-EM Ferndale, Michigan 48220

QTY	PRODUCT DESCRIPTION	PRICE	EXTENDED

Our normal shipping method is UPS ground. If you would like 2nd day UPS please add an additional $2.00 to the S/H charges. All Custom ROM Orders are returned by UPS!

SUBTOTAL	$
Mich 4% Tax	$
SHIPPING	$
GRAND TOTAL	$

** Print or Type Information **

Name _____
Street _____
City _____
State _____ Zip _____
Area Code/Phone _____

VISA and MasterCard order
Toll Free: 1-800-648-6434
No COD's accepted.

Shipping Handling Information

Continental USA add $3.00 Shipping/Handling. Mich. res. add 4% sales tax. Alaska, Hawaii & Canada add $7.50 S/H for UPS or Regular Mail, $12.00 for Air Mail. Payments by MasterCard, VISA, US Postal Money Orders and Canadian Postal Money Orders in USA Funds processed within 48 hours. All other Countries add $10.00 S/H for surface, $16.00 for Air Mail plus $3.00 for each additional item. All foreign payments must be in USA FUNDS - drawn on a USA bank!

Card # _____
Exp. Date _____
Signature _____

VISA MasterCard EM 4/88

Valhala reserves the rights to change specifications and prices without prior notice. Studio Series (in reference to Memory Cards/Voices) is a trademark of Valhala Music, Inc. This ad and text Copyright © 1988 VALHALA Music, Inc.

INSIDER INFO:
TIPS FROM **EM** READERS

MORE FLEXIBLE TAPE SYNC

In response to the comments concerning sync-to-tape in the November '87 letters column, I am using an Otari 8-track recorder and a Roland SBX-10 to convert audio clicks into MIDI for my sequencer. I would also recommend leaving a guard track whenever possible to prevent the leakage problem we all know and love, but sometimes we *need* that extra track.

Through experimenting I have found that loss of sync occurs only while *recording* on the adjacent track. Once the signal is recorded, even at high levels, playback poses no problem. I don't know why this happens, but I'm glad it does because now I'm able to use all seven tracks.

My solution is to record audio sync on tracks 1 and 8 simultaneously. Use the click from 8 when recording on track 2, and from 1 when recording on track 7. Finally, of course, the very last track you lay down will be either 1 or 8.

—Steve Bazeley

MIDI DATA TRANSFER

The Problem: Have you upgraded your MIDI software or computer only to lose all the precious sequencing work you did on your original system? This needn't be so. If you have two computers (one to run your old software and one to run the new software), MIDI interfaces for both computers, a sufficient number of MIDI cables, and MIDI sequencing programs for both computers, you can transfer your old format compositions to your new format. An optional MIDI Thru box might come in handy as well.

The Solution: I solved this problem after deciding to transfer music composed using Passport's *MIDI/4 Plus* to Dr. T's *Keyboard Controlled Sequencer* so that I could make use of the latter's extensive editing capabilities. The solution involved connecting two Commodore 64 computers through MIDI interfaces (compatible with the respective computer's software), loading a MIDI/4 Plus file into the playback computer, creating a new real time sequence with Dr. T's, and playing the MIDI/4 Plus song into the Dr. T's sequence. Connect the playback computer's MIDI Out into the recording computer's MIDI In; if you're using a MIDI Thru box, connect the MIDI Out to the input of the MIDI Thru box, and then connect one output of the Thru box to the recording computer's MIDI In and another output to your synth's MIDI In (so you can monitor the transfer process). Depending on the interface and software used, the recording computer's MIDI Out may act as MIDI Thru, in which case you can connect this to your synthesizer for monitoring purposes. (*Editor's note: When transferring parts, I usually put my "monitor synth" in Omni On mode so that I can hear all tracks at once. Of course, sometimes the number of voices is insufficient to play everything, but at least you can hear most of the parts most of the time.*)

You can either play a MIDI/4 Plus song all at once and record it as one sequence, or you can play individual MIDI/4 Plus tracks separately and later resynchronize them by editing the Dr. T's file. Since Dr. T's can record the same information as MIDI/4 Plus, no data should be lost in the transfer (as long as you specifically set up Dr. T's to record the proper MIDI data).

This technique should be applicable for transferring MIDI data between any two personal computers with MIDI interfaces and MIDI sequencing software. You might also consider this an effective, if rather inelegant, way to transfer sequencer files to a notation system for transcribing sheet music. *—Mark A. Vail*

HOW TO SHOOT YOURSELF IN THE FOOT

Most of the musicians I know hate the "business" end of the music business, and would much rather perform their music than have to go through the hassle of

selling and promoting themselves. We're all encouraged by the "made in Fairyland" stories of some famous musicians and how they just happened to be in the right place at the right time; but the reality of life is that success doesn't just fall into your lap.

There are many aspects to successfully selling yourself, your product or service (I won't even try to begin to lay them all out here), but there is one simple thing that has really helped me and that could drastically improve your chances of landing your next gig: ask questions that call for positive answers.

Suppose you bring in a jingle that you want to sell to a local car dealer. You have his attention. You push the play button on your cassette and watch his face as he listens. Then you ask the question of death: "Well, what do you think?" You sit in unexpected horror as he slowly begins to tell you what is wrong. You lose the sale.

Why did things bomb out? Most likely because you asked a question that called for a negative answer, and once you're on a negative track it's hard to get off. Whenever you ask anyone (I don't care who it is) "What do you think?", chances are you are going to get some kind of criticism, and why not? That's what you asked for. You asked for some analysis and chances are it will be negative. The reason is because most people don't feel that they have really analyzed something until they find something wrong with it.

When you are selling (be it yourself, your talent or whatever), you are not looking for analysis, you're looking for positive responses that will eventually lead to a decision in your favor. Your first question to the car dealer should be "Now Mr. Dealer, you need to reach the older buyer as well as the younger, don't you?" Odds are he will say yes. "Can you hear how the guitar will appeal to your younger buyers while the traditional sound of strings and horns will get your older crowd's attention?" Now if he were to be perfectly honest with you, he would probably say that he never noticed any guitars or horns at all, but you've shown

ILLUSTRATIONS BY LANEE LA'SHAGWAY

you understand his market and you've got him saying yes and, after all, who wants to sound like a dummy? He answers yes.

Now, granted, you still may not get the sale, but if you've done your homework and thought through what would be the best questions to ask that will most likely get positive answers, then the interview is going in your favor. Today, if any of my employees ask a client "Well, what do you think?" it is immediate grounds for the electric chair (I have it MIDIed to my DSS-1).

As I alluded to earlier, there are many other facets to successful sales. I would encourage you to do a little studying on the subject. Remember, if you can't sell what you do, you go nowhere. The taste of success is wonderful and after all, you want to be successful. . . don't you? *—Mark Gungor*

Ibanez (and Other) MIDI Guitar Tips

So you were brought up with the Beatles and guitars and you want to take advantage of the new MIDI technology; well, the days of programming MIDI sequencers or drum machines with a guitar are finally here. Following are some tips I haven't seen covered in print before.

■ *Planning:* The more planning you do before playing or recording, the less 'angst' your music will incorporate. With sequencer programming, take the time to design and print out a programming track guide. Use consistent channel assignments for particular instruments, and a standardized pitch bend range. Doing screen dumps from a sequencer's track assignment screen will help keep a record of your sequencing. Many sequencers let you name tracks; in addition, the names for empty tracks can serve as places to hold notes and memos.

■ *Drum programming:* With the Ibanez MIDI guitar programmer, I have stored several different edits. One, which is used for drum programming, is transposed down one octave (the limit of transposition). This allows me to play the kick drum with the B note on the second fret of the A string. The higher the pitch, the less of a glitch and delay problem (this is very important when programming drums); if your drum machine or sampler has assignable sounds, map them as high on the fretboard as possible.

■ *Sequencing bass:* Most of my programming is done on the higher frets and transposed down, using the transpose function found on just about all sequencer programs. This makes recording bass much easier. If you want to hear the sound in the intended range, temporarily set your synth down one or two octaves. When I say temporarily transpose your synthesizer down, I mean it! Uniformity of approach will yield the best results in the studio; you don't want to have to change octave settings during the final arrangement and recording. Other ways of dealing with the glitch problem include keeping the guitar's sensitivity all the way down (it's easier to add notes than get rid of them).

■ *Recording each individual string:* When sequencing, I often set the top four strings of the guitar to four different MIDI channels, record all four channels into the Opcode sequencer I use, then unmerge the data back into four separate tracks. Each of these can be added to or filtered to add variety to the voicings. After manipulating the parts, you can either merge the tracks together or assign them to different MIDI channels.

■ *Live tips:* In live situations, program a patch in the master unit so that only the strings

being used for a particular part will trigger the synthesizer. For example, if the string part you are playing in a song can be played on just the G and the B strings, then turn off the MIDI output from the E, A, D, and high E strings. This eliminates the possibility of hearing a giant clunker if you happen to hit one of these strings by mistake.

Live, I like to alternate between guitar and synth sounds, but it's difficult to change the settings and use your hands for playing. One solution is a volume pedal patched between the synth output and the controller module input. The other is to program blank patches into the synthesizer in the same bank. When you want just guitar, hit the blank patch. This is great for toggling back and forth between two combinations without changing the balance.

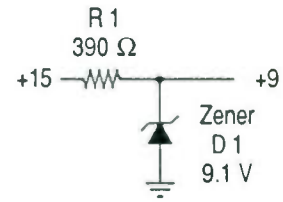
—Chris Halaby

Modifying The "EPFM" Ring Modulator And Fuzz

The circuits presented in Craig Anderton's book, *Electronic Projects for Musicians* (New York: Guitar Player Books, 1980), were designed around a bipolar 9V power supply. Nonetheless, many of these circuits will work just fine on a bipolar 15V supply as well. There are a couple of the devices described in this book, however, which need some slight modification to be used with a higher supply voltage. Here are two proven techniques which have worked just fine in my homebrew guitar pedalboard (which, incidentally, incorporates 11 of Craig's splendid circuits from the above-mentioned book).

The Ring Modulator (Project #9) is built around the 565 phase-locked-loop chip. Now this chip really doesn't like high supply voltages at all, but changing resistors R1 and R2 from 390 ohms to 1.2k (1k2) solves the problem by dropping the voltages at pins 1 and 10 to about 5.5V—well within the chip's range.

The Tube Sound Fuzz (Project #24) was designed to work with a single 9V power supply since the fuzz is configured around a CMOS inverter biased for linear operation. Generally, CMOS circuits wired in this fashion consume a fair amount of current, and so at a higher power supply voltage overheating problems could occur. I got around this problem by adding two parts to create +9V from +15V, as shown below:



The 390-ohm resistor allows a standby current to always flow into the Zener, and the Zener diode drops a voltage of about nine volts. No additional decoupling capacitor is needed, since the original circuit is decoupled by R1 and C6, and the resistor/Zener combination is small enough to fit on the original board. This circuit has given me very good performance; I still think it's the best distortion device "on the market," bar none.

So don't let your synth-oriented 15V power supply keep you from using the circuits in *Electronic Projects for Musicians*. Modify and enjoy!

—Thomas Henry

THE 48 TRACK PC

Great PC Software

THE TOUGH KID ON THE BLOCK:

Musician, Dec '87: "Power is what this program has in spades...raw power."

Joseph Rothstein, Computer Music Journal: "...it does more of what I want a sequencer to do than any other I can think of...this is a powerful program."

HAS JUST GOTTEN CIVILIZED: INTRODUCING VERSION 3.0

Now Version 3.0 with a full Mac-style interface. Pull-down menus, pop-up windows, dialogue boxes.

Also full graphic editing with zoom and controller graphing. Scoring interface, SMPTE and film scoring tools, librarian. 600 pulses per quarternote. Full tempo control. Fast. And more. For the PC or AT and MPU 401 or clones.

The 48 Track PC

Robert Keller
2920 Jefferson
Eugene, OR 97405
503/485-3481

48 Track, $259
Demo Disk $15

MIDI CONTROL YOUR MIXING WITH MIDI-FADER

Midi-Fader™ contains 8 MIDI controlled audio attenuators to automate your mix-down process. Simply connect Midi-Fader to your mixer and to your sequencer to create a MIDI automated mixer. A front panel dial allows you to smoothly change the volume of each attenuator. Midi-Fader sends data over the MIDI channel so your sequencer can record these volume changes. As your sequencer plays your song, it sends MIDI data to Midi-Fader to adjust the levels in real time. Your mix-down will be easy and repeatable.

- 2 Line Back-lit LCD display
- Clear graphical indication of all fader settings
- Each fader assignable to any MIDI channel, and any note or controller number
- Additional units easily added for more channels
- 2U Rack mount box

Iota Systems, Inc.

P.O. Box 8987 * Incline Village, NV 89450
(702) 831-6302
Outside of Nevada: 1(800) 332-1128

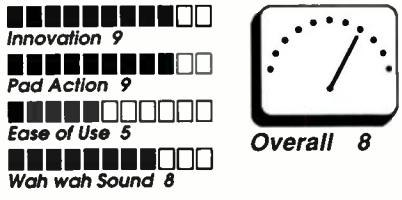
Midi-Fader is a trademark of Iota Systems, Inc.

would find this kind of information intimidating rather than enlightening, this omission is understandable.

For advanced synthesists who want to find answers to their questions without unnecessary delay and for "free spirits" who like to leaf through a book and read whatever seems most interesting or relevant, the book's programmed instruction approach may prove a source of frustration. If, for example, you're trying to find out how use a breath controller to control the amplitude envelope of your new bagpipe patch, sifting this particular information out of five pages of exercises on envelope-generator bias modulation may not be your idea of a good time. This situation is not helped by the absence of an alphabetical index. (In my opinion, a special place in hell should be reserved for publishers who release technical books without indices.) True, there is a "Quick Reference" appendix, which organizes functions according to the front-panel switches which invoke them and refers the reader to the pages where the functions are discussed, but this, while useful, is no substitute for a proper index. Still, this is one of those all too rare books that delivers what the title promises, and would surely be helpful to someone who wants to delve more deeply into what the DX7II can offer. *—David Doty*

AMSCO Publications/Music Sales
24 East 22nd St.
New York, NY 10010
☎ 212 / 254-2100

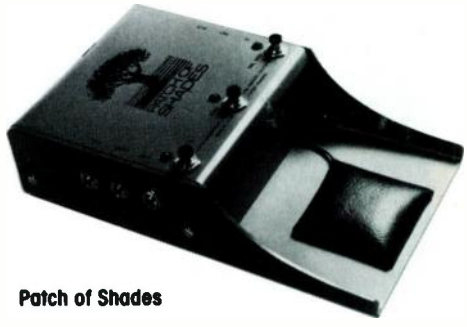
Stick Enterprises' Patch of Shades ($285)



Patch of Shades (POS for short) is an unusual floor box (a rack-mount version is also available for the same price) for signal processing/routing, controlled by a unique pressure-sensitive pad about three inches square. With no pressure on the pad, you hear the straight signal, as processed by whatever signal processor is patched into a "direct" loop. Pressing on the pad does several things at once:

1. Crossfades between the direct loop and a second loop. For example, suppose you had a flanger in the direct loop and a fuzz/compressor combination in the second loop. With no pressure, you would hear flanging; pressing on the pad would fade out the flanging, and fade in the fuzz/compression.
2. Cuts in a built-in wah-wah effect; additional pressure raises the wah-wah cutoff frequency. The wah-wah also includes three footswitches: double wah (produces more of a phasing effect), high Q (increases the sharpness), and wah off (if you don't want the wah effect).
3. Increases the straight level at a separate output jack, from zero to full volume. This output could be used to drive a third chain of effects, and seems particularly well-suited to feeding echo units.

What this all adds up to is a wide variety of swirling, crossfading effects. Time delay devices work very well in this context, as do equalizers, octave dividers, and compressors. However, to get POS working properly requires a fair amount of patience. Levels must



Patch of Shades

be set carefully to avoid distortion with the internal wah-wah, as well as to insure a smooth crossfade between effects in the two loops. Effects that invert phase can be problematic, and since there are several possible patching configurations and outputs, it also takes a bit of time to discover the optimum combination of effects.

To me, one of the device's most important aspects is that unlike most volume pedals, you can keep both feet planted on the floor—just position the toe of your foot over the pad, and shift your weight. This is so much more graceful and sane than balancing on one foot and rocking a volume pedal that I hope Stick Enterprises markets a similar device optimized for regular volume control functions. Meanwhile, if you can afford a $285 volume pedal, you can use just that part of the POS's capabilities.

This is a device that requires a certain amount of work to use effectively, although the effort is worth it. POS isn't for everybody, but if you love the idea of creating subtle crossfades between effects (and adding dreamy wah-wah sounds) just by shifting your weight around, you're gonna go nuts over this device. And by the way—it's built like a tank, and has an internal power supply (no flimsy adapter). *—Craig Anderton*

Stick Enterprises, Inc.
8320 Yucca Trail
Los Angeles, CA 90046
☎ 213 / 656-6878

EM

If you need to translate MIDI to multitrack, here's a pointer.

Getting digital signals onto your multitrack has always involved compromises. But that was before Tascam's MTS-30 MIDI/FSK translator with song pointer compatibility came along.

The converters on sequencers and drum machines are handy, but all too often they slip out of sync due to conversion errors. Besides, they can only play back from the beginning of the song.

The MTS-30 neatly eliminates both of these problems. In addition to providing error-free operation, it uses MIDI Song Position Pointer data to allow you to play back from any point in a composition. A bright, easy-to-read LED display shows you exactly which measure you're on.

Like all Tascam products, the MTS-30 is loaded with features, like powerful error correction and an automatically switched MIDI OUT/THRU terminal to eliminate constant repatching. All at a very affordable price.

So let the MTS-30 simplify your life, with a lot of power and a little pointer.

TASCAM

© 1988 TEAC Corporation of America, 7733 Telegraph Road, Montebello, CA 90640. 213/726-0303.

ONCE YOU'VE EXPERIENCED ADD

Kawai's K5 additive synthesis technology is the most accurate and flexible form of synthesis devised:

"...additive is the *purest method of synthesis* because it allows you to specify all of the harmonics that give a sound its characteristic timbre and to specify how they change over time." Ted Greenwald, *Keyboard Magazine.*

"...in the K5, [Kawai has] rejuvenated one of synthesis's oldest techniques and dragged it into the eighties to make a truly expressive, performance oriented synthesizer." Paul Wiffen, *Sound on Sound.*

PLAY IT YOUR WAY

The K5's 16 rich, expansive voices can be allocated dynamically to any of 15 different tone patches and to any MIDI channel, making the K5 ideal for multi-timbral MIDI sequencer applications. Voices never go unused on one channel when they're needed on another. Up to 15 different tone patches can be assigned to the keyboard in any combination of zones and layers. Each combination can be saved in memory as a Multi Patch. 48 Single Patches and 48 Multi Patches can be conveniently stored in internal memory, and also on external RAM cartridges.

TRUE VELOCITY RESPONSIVENESS

Assign up to 8 velocity levels per key—each with a totally different sound! Or assign timbral variations of the same sound to different velocity levels, allowing the sound to change color as you play louder and softer.

FACTORY SUPPORT

Kawai is sponsoring a worldwide sound development program for the K5. Registered K5 users have free access to this large and ever expanding library of useful and exciting sounds.

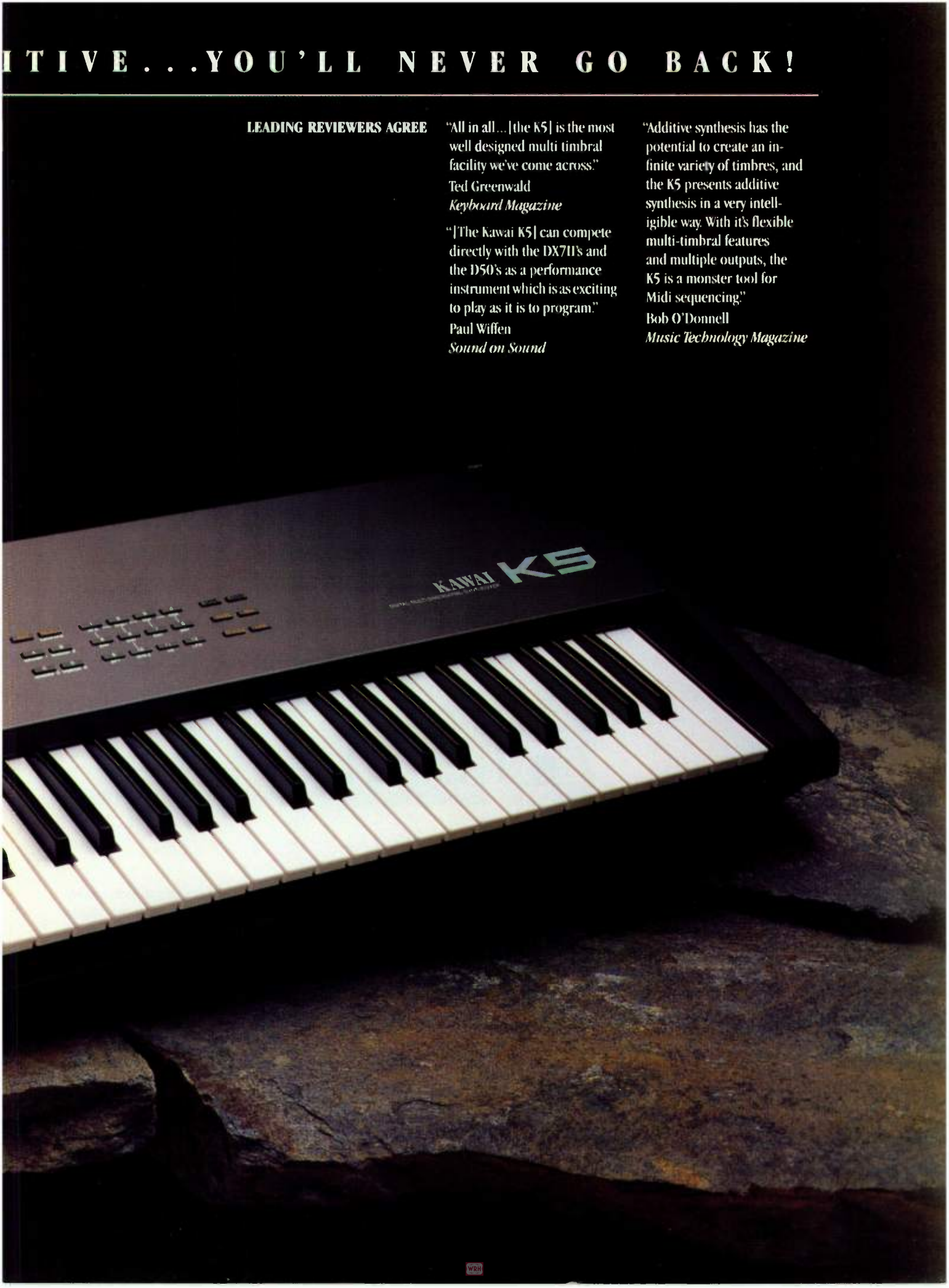
ITIVE...YOU'LL NEVER GO BACK!

LEADING REVIEWERS AGREE

"All in all... [the K5] is the most well designed multi timbral facility we've come across."
Ted Greenwald
Keyboard Magazine

"[The Kawai K5] can compete directly with the DX7II's and the D50's as a performance instrument which is as exciting to play as it is to program."
Paul Wiffen
Sound on Sound

"Additive synthesis has the potential to create an infinite variety of timbres, and the K5 presents additive synthesis in a very intelligible way. With it's flexible multi-timbral features and multiple outputs, the K5 is a monster tool for Midi sequencing."
Bob O'Donnell
Music Technology Magazine

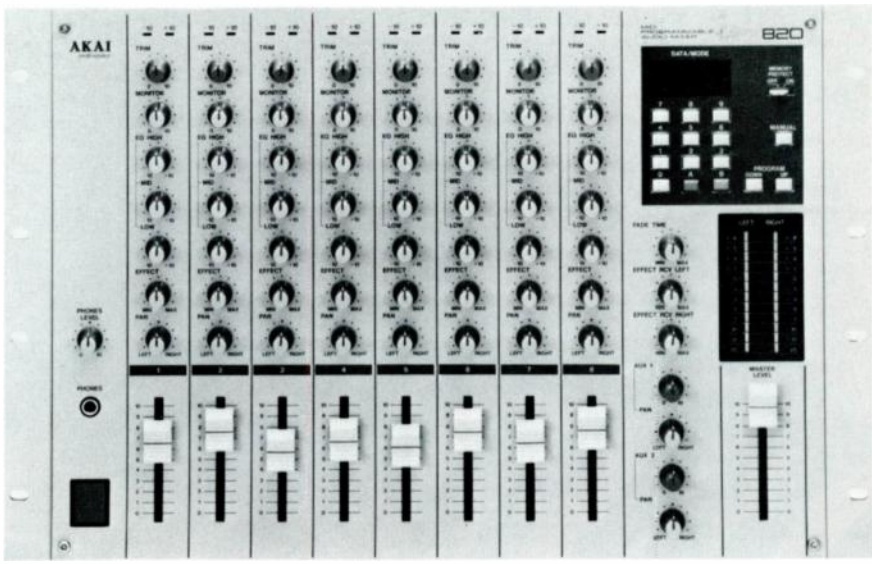


review

Akai MPX820 MIDI-Controlled 8 x 2 Mixer

Akai will sell you a mixer, full automation, and the necessary computer smarts in a compact rack-mount package—but how does that stack up against the proliferation of computer-based automation retrofits?

BY DAVID KARR



IN THE BEGINNING... recording was pretty simple. Think of a blues artist, like Robert Johnson, with his guitar in a hotel room, playing in front of a single microphone; the mic cable crawled under the door into the bathroom, where an engineer with a recording machine and one volume control listened on headphones to the music going onto the disc. As long as the sound was in the range of "not too soft" and "not too loud," and the musician played the right notes, everything was fine. How little time it took to progress to multiple tracks, digital effects, compact discs, digital audio workstations, and console automation!

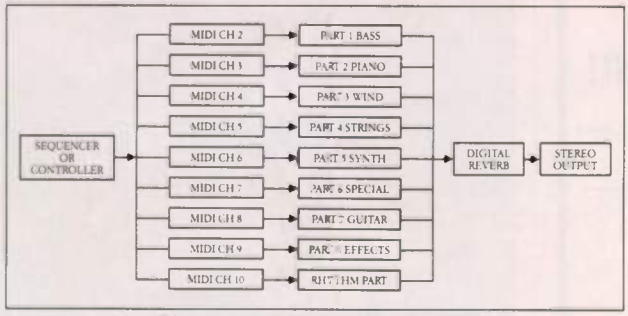
When I first began recording I had one good mic, two lousy mics, and a borrowed mic of indeterminate quality, all of which fed a $5 Lafayette mic mixer. Even though this soon grew to three $5 Lafayette mixers, I still had absolutely no equalization, no compression, no noise gates, no pan, no effects sends, not even any mic pads! All of the "equalization" was done by mic placement and tape on the drums and cymbals; any compression was achieved by saturating the tape over many bounced tracks, for I was using two ¼-track stereo tape decks to do multitrack recording by bouncing back and forth between machines. With so much premixing going on, each premix had to be perfect—no easy task. Even when I graduated to a 4-track deck, I found that mixing was still a complex art requiring a great deal of precision and practice. After

BUY ONE MT-32, GET THE POWER OF EIGHT.

You'll also get the performance of a rhythm machine, too. That's the power of the new Roland MT-32 MIDI sound module ("MT" as in Multi-Timbral and "32" as in 32 voice). An incredibly sophisticated sound allocation scheme in the MT-32 is structured to give you the performance of eight polyphonic MIDI modules (each capable of playing a different sound) with up to 32 voice polyphony *plus* a full set of 30 percussion samples — all of which can be accessed through MIDI computer software, a MIDI sequencer or controller.

Equally impressive is the quality of the sounds produced by the MT-32. All of the 128 preset patches and 64 user-programmable patches are created through LA synthesis — the same synthesis technique used in the Roland D-50 (voted the Technological Innovation of the Year by *Keyboard* Magazine readers). Like the D-50, the MT-32 features 128 PCM digital sound samples, combined with digitally synthesized partials, and built-in digital reverb effects.

The preset sounds are arranged in Sound Groups including several different instruments and timbres from each group: Piano, Organ, Keyboard, Bass, Syn-Bass, Synth 1 & 2, Strings, Wind, Brass, Syn-Brass, Mallet, Special Inst., Percussion and Effects. But don't expect just *any* preset sounds until you hear what the MT-32 can do. Experience the breath of the flute, the bite of the brass voices, the chop of the bow as it moves across the strings — the kind of nuance that gives each patch life other digital synthesizers simply can't touch.



MT-32 MULTI-TIMBRAL CAPABILITIES

The power of the MT-32 really comes through when you combine these voices together under sequencer control. It's almost hard to believe the sheer amount of simultaneous sound the MT-32 is capable of producing — literally like adding eight synthesizer modules plus a rhythm module to a set-up. But fortunately, to get this much sound, you only have to buy one. And with a suggested retail price of just $695.00 that's not too hard to do. See your Roland dealer today.

RolandCorp US 7200 Dominion Circle, Los Angeles, CA 90040 (213) 685-5141.

Roland®
WE DESIGN THE FUTURE

© 1988 Roland Corporation US

DX7 - II (FD/D)
VIDEO MANUAL

THE EASIEST, MOST EFFICIENT WAY TO LEARN THE WORLD'S MOST AMAZING NEW SYNTHESIZER. THIS 2½ HOUR VIDEO EXPLAINS EVERY SINGLE PARAMETER OF **YAMAHA'S** NEW **DX7-II FD/D,** INCLUDING ALL VOICE EDITING PARAMETERS.

- IN DEPTH EXPLANATIONS
- CLOSE-UP DEMONSTRATIONS
- HI-FI STEREO SOUND

THE NEW **DX7-II** VIDEO WAS PRODUCED UNDER THE AUSPICES OF THE **N.Y. SCHOOL OF SYNTHESIS,** N.Y.'S LARGEST SYNTHESIZER SCHOOL*, AND IS PRESENTED BY ITS DIRECTOR, **DEAN FRIEDMAN** AUTHOR OF THE BEST SELLING BOOKS, 'THE COMPLETE GUIDE TO SYNTHESIZERS . . .' AND 'SYNTHESIZER BASICS'.

TO ORDER SEND $59.00
PLUS $3.00 P/H TO:
DX7-II VIDEO, N.Y. SCHOOL OF SYNTHESIS
P.O. BOX 878, ANSONIA STATION
NEW YORK, N.Y. 10023
*(CALL (212) 323-8056 FOR FREE CLASS BROCHURE)

AVAILABLE ONLY ON VHS

CD-LIKE
QUALITY
ON CASSETTES!!

Clarity

REAL-TIME
CASSETTE DUPLICATION

"THE ULTIMATE RESPONSE"

... Find Out How ...

Post Office Square
Waterville, ME 04901

207-873-3911

rewinding tape zillions of time because one level was wrong in one place and I therefore had to redo the mix, I began to see the need for automation.

AUTOMATION TO THE RESCUE

The first automation systems were expensive and sometimes buggy; also, many engineers protested that automation took all the "feel" out of a mix. Those protestations notwithstanding, I knew that automation would allow me to stop making compromises and do a "perfect" mix. Of course, automation won't turn a bad mix into a good one, but it will allow you to perfect a mix to whatever degree you want (hopefully without destroying any "feel" in the process).

Years after I became aware of the need for automation, a British console manufacturer introduced a console with fader automation plus a feature that stored the settings for every knob on the console. Some people who read the ads thought that this console was "totally automated," and that it would remember—*and reset*—all knob movements and settings. I was one of these misguided people, but unlike some others, found out the scoop without buying the console first. Yes, it did fader automation, but settings for all other knobs worked differently: settings at the end of the session were stored, and at a later date, you could then compare the current knob settings with the stored values and *by hand, one by one*, adjust every knob until the new settings matched the old ones. Some economy-minded engineers accomplished much the same effect by using a Polaroid camera to "store" the knob settings with a "hard copy" of the data. The Polaroid partisans often challenged the Big Bucks console owners to a race as to who could set up a console faster; the Polaroiders usually won because they could have two or more people setting up different channels of the console simultaneously, while the Big

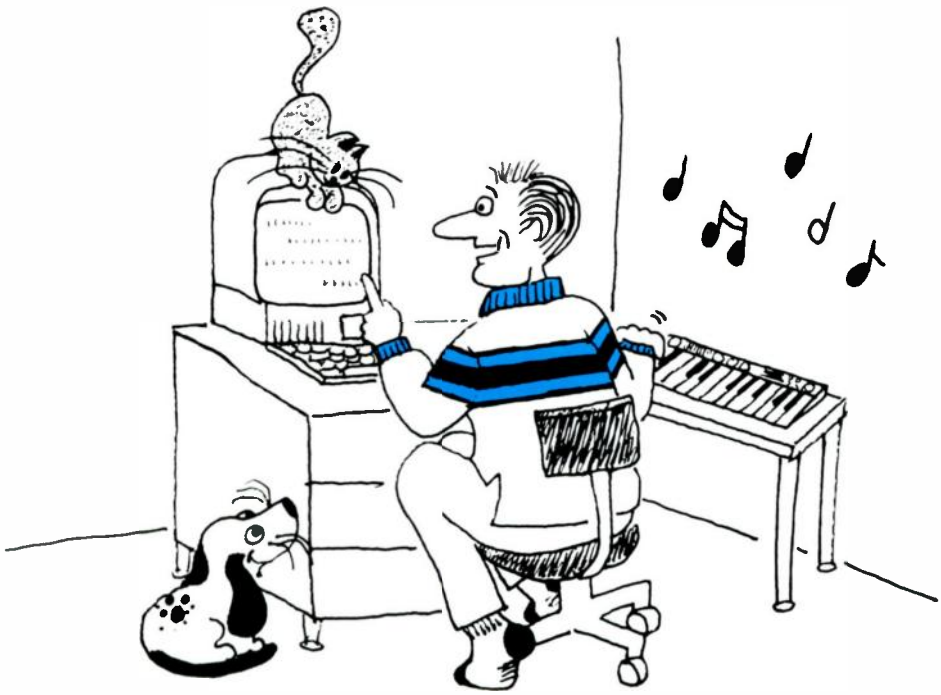
Snapshot Versus Other Automation Methods

A lot of people were saddened initially to hear that the MPX820 used a "snapshot" method of storing mix information. Music is a fluid medium, and all of the spaces in between the notes are as important as the sounds themselves. The same is true for a mix of those sounds. There are an infinite number of combinations of sounds in a mix, and to limit them to 99 choices could be very restrictive—especially if there were no Fade Time control, probably the most valuable single feature of the MPX820.

Storing continuous data (or even a subset of that, such as data changes for 64 different parameters) would require substantial processing power and memory. Compared to this type of approach, at first blush the snapshot method seems to be somewhat limited. But creatively applying the flexibility added by the stored Fade Time control helps reduce any limitations. Suddenly, all of your changes between different sections can be *smooth* transitions, without having to specify each and every element of that transition: just set where you want to start, where you want to end up, and the time required to get from one to the other—the MPX820 will do the rest for you. This can save a bunch of time compared to other methods of adjustment. If you don't want everything to change at once, then break down your transitions between more than two programs. For example, you might want a fast level change from program 01 to program 02, and a long pan between programs 01 and 03. No problem—change level, and pan partway, when going from 01 to 02, then finish the rest of the pan when going from 02 to 03. The big advantage of Akai's approach is that everything—equalization, effects, pan, and level for *all* of the channels—can be changed continuously, and once these changes are stored, can be duplicated time after time.

Another major advantage of snapshot mixing is to make changes in the middle of a piece. Need to have one spot where the levels shift for a fraction of a second? There's no need to go back and re-edit all your moves—simply create a new snapshot.

Now everyone can enjoy MIDI!



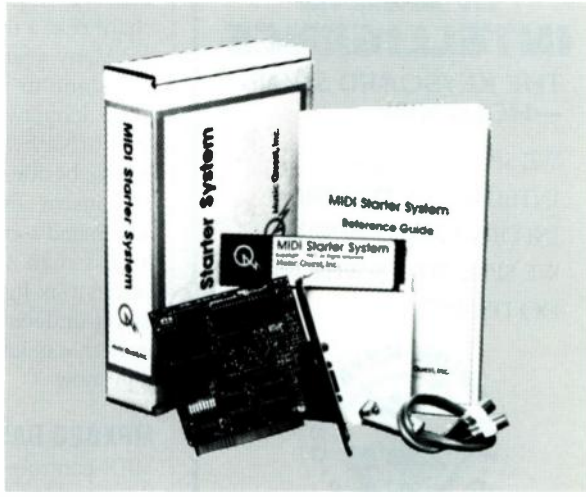
Been thinking about getting into MIDI? Looking for something fast and powerful, yet easy to use? You'll find the **MIDI Starter System™** was designed for *you.* It's a complete hardware and software solution that uncomplicates MIDI. And, it's amazingly affordable.

Just install the **MIDI Co-Processor Card** in your IBM PC, XT, AT or compatible, plug in your MIDI keyboard or MIDI guitar, and you're ready to roll!

The **Easy-8 Sequencer** then puts you at the controls of an 8-track digital tape recorder. Record your tune a track at a time while hearing previous tracks. Perfect your music with powerful cut, paste, copy, merge, auto-correct, and transpose operations. Then, play back and enjoy!

Easy-8 includes an **Accessories Box** where you can put other music programs to be run from right inside the sequencer. For owners of the popular Casio CZ and Yamaha DX-21/27/100 or DX7 synths, we've installed **Editor/Librarian software** to help you manage voice patches. There's also a **MIDI Trace Utility** so you can check out your gear and learn more about MIDI.

But that's just the beginning.
You'll be glad that the Accessories Box holds up to 12 programs, since the Co-Processor Card **runs most IBM PC music software** designed for the MPU-401. So, you'll have plenty of room to grow!



The MIDI Starter System™

- MIDI Co-Processor Card • MIDI Trace Utility
- Easy-8 Sequencer
- Editor/Librarian Software

Introductory Price **$199**

See your local computer or music dealer

Music Quest, Inc. 1700 Alma Drive Suite 260 Plano, Texas 75075 (214) 881-7408

Music Quest product names are trademarks of Music Quest, Inc. Other product names and brands are trademarks of their respective companies.

DEEP MAGIC MUSIC
(The Patch Cassette People) Presents:
THE ELECTRONIC MUSICIAN'S CHECKLIST:

Headphones: check. Digital delay: check. Eclectic collection of synths: check. Dinosaur food: dinosaur food? DINOSAUR FOOD!!! (That is, patch cassettes with hundreds of exciting new pro sounds for vintage synthesizers!) Okay, maybe you program yourself. Great! But it's a known fact that dinosaurs get sick of same old thing. Long to eat out. Hence our fantastic gourmet take-out service! Everything from hard-driving work sounds to rare ethnic instruments and rich space textures. We KNOW you secretly cherish some of these synths, and without Deep Magic, you're missing out on their true potential!

- ☐ DW-8000/EX-8000: 320 SOUNDS $49.95
- ☐ DW-6000: 320 SOUNDS $49.95
- ☐ POLY-800/EX-800: 64 SOUNDS w/seq. $25
- ☐ POLY-61/61M: 64 SOUNDS $25
- ☐ POLYSIX: A mammoth 640 sounds! $49.95
- ☐ PROPHET-600: 100 SOUNDS w/seq. $25
- ☐ MOOG SOURCE: 64 SOUNDS w/seq. $25

FEATURING: Easy tape loading, instructions, patch names, tips for your model synth. Sound charts included for models using parametric data entry.

"Me Caveman, me CHEAP!" you say? Well, you get what you pay for: Order from cheap place, food never come -- or make Dino burp and grow!! Deep Magic's prompt service, time-honored reputation, and critically acclaimed sounds make us the electronic musician's natural choice. In fact, EM gave us four stars! (Feb '87). And KEYBOARD said, *"Deep Magic's imitative patches are accurate, and their imaginative sounds are very appealing. There are a lot of good, meaty timbres among the conventional patches, and a multitude of good ideas in the realm of fantasy sounds."* © 1986 GPI

C.O.D.'s -- 2nd DAY AIR -- DEALERS -- FOREIGN

CALL, OR SEND CHECK/M.O. TO DEEP MAGIC MUSIC, 217 E. 85th ST., SUITE 298-E, NEW YORK, NY 10028. (212) 534-0728. Postage: $2; NY res. incl. sales tax.

SPECIAL INTELLIGENCE

THE KEYBOARD SHOP —HOUSTON

WE SPECIALIZE IN INTELLIGENT, TECHNICAL INFORMATION ON WHAT WE SELL. THAT'S WHY WE DO IT BEST!

THE DRUM·KEYBOARD·GUITAR SHOP

CALL AND ASK FOR OUR TOLL FREE ORDER NUMBER.

713/781-KEYS

THE KEYBOARD SHOP IS A DIVISION OF THE DRUM/KEYBOARD/GUITAR SHOP
5626 SOUTHWEST FREEWAY
HOUSTON, TX 77057

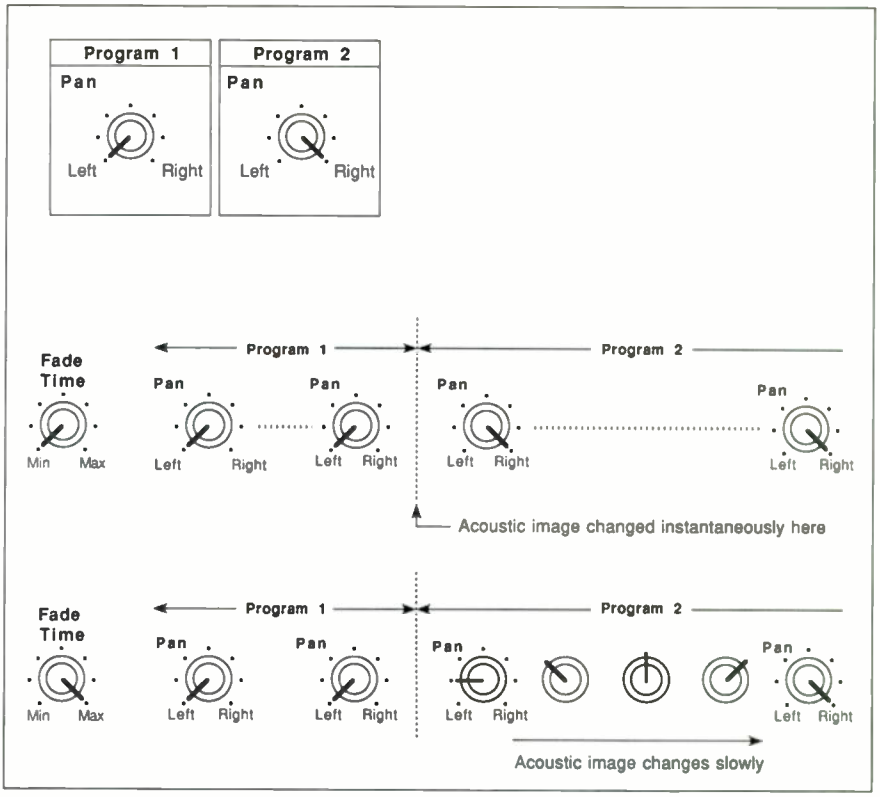


FIG.1: Fading from one parameter setting to another eliminates the abrupt changes usually associated with "snapshot" automated mixing.

Bucks console could access only one channel at a time.

Many years passed and little more was done to "fully" automate consoles. Then about two years ago, Harrison Systems of Nashville introduced the Series X which, besides being the first "true" stereo console, also happens to be "totally" automated—every setting can be recalled in less than 1/15th of a second! It also carries a six-figure price tag, and for some as-yet-undetermined reason, I just don't have that much in my checking account right now.

MPX820 BASICS

MIDI-controlled mixer automation is all the rage these days, with most companies offering computer-based retrofits for existing consoles. However, these aren't the only games in town. Akai Professional's *MPX820* is an American-designed, Japanese-built 8-channel MIDI controllable mixer that memorizes *every* knob setting (except for mic pads and headphone level) and stores 99 of these "snapshots," including a fade time value for *all* parameters between the snapshots. That sounds pretty basic, but as we'll see, Akai's approach offers some novel advantages.

Fig. 1 shows what can happen when you store snapshots (programs) of two Pan settings. In Program 1, the Pan control for a single channel is full left; in Program 2, the same control is full right. With the fade time at minimum, upon changing from one program to the next, the sound goes from hard left to hard right. Increasing the fade time means that the sound will appear to pan continuously from left to right, over the specified fade time. With a maximum fade time of 30 seconds, the panned signal appears to drift lazily from left to right. When you consider that all parameter changes—EQ, levels, and so on—can change in this manner over time, many of the limitations of snapshot mixing (see sidebar, "Snapshot Versus Other Automation Methods") become moot.

Ignoring automation momentarily, the MPX820 is a typical 8-in, 2-out mixer (Fig. 2). There are separate, individually selectable Mic (XLR, pin 3 hot) and Line (¼-inch unbalanced) inputs; both have switchable rear panel pads and a common front panel Trim control. Looking at one of the eight input channels from top to bottom, we find:

- Green and red LEDs that indicate in-

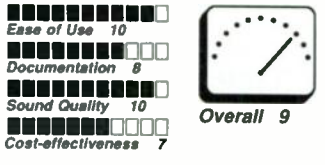
put channel signal levels of -10 and +10 dB respectively. Knowing that a signal is present at a channel, regardless of the fader position, is handy since faders can be kept at minimum level (thus preventing any noise from getting through the mixer) until a signal appears.

- A Trim control (mentioned above) that can attenuate the mic and instrument inputs by -24 dB, and the line input by up to -18 dB.
- A post-EQ, pre-fader Monitor control that adjusts the output level appearing at the Monitor Out jack.
- Three-band equalization (EQ). The three EQ bands are centered at 100 Hz, 1.5 kHz, and 10 kHz, and each have their own ±15 dB boost/cut control. This makes the EQ control rather sharp, but thanks to automation, tonal accuracy can be duplicated time and time again.
- A post-EQ and -fader Effects send control. Note that the eight effect sends are summed to a single out jack; there is no master level control for the sends.
- A Panpot for placing a signal anywhere within the stereo field.
- And of course, a Channel fader.

There are two effects returns with individual level controls (but so many effects units are true stereo these days, I wish there were another effects bus).

PRODUCT SUMMARY

Product:
MPX820
Type:
Rack-mount MIDI-automated 8 × 2 audio mixer
Retail price:
$2,499.95
Features:
Snapshot automation with programmable fade time between parameters, stores 99 mixes in memory, memory can be dumped to tape, simple user interface.
Manufacturer:
Akai Professional
1316 E. Lancaster
Fort Worth, TX 76102
☎ 817 / 336-5114



BEYOND SEQUENCING

The
Promidi Studio System

IS Direct-to-Disk MIDI Recording for IBM Personal Computers and Compatibles.

- No more MIDI Log-Jams!
- Unlimited song length!
- And real security for your music knowing its safe against power outages and glitches. Your performances are captured perfectly and are safe—SAFE ON DISK.

Systems Design Associates Inc.
5068 Plano Parkway—Suite 121—Plano, TX 75075
214-248-8530

PROFESSIONALS DEMAND THE BEST TOOLS AVAILABLE.

MANNY'S SUPPLIES THE BEST SUPPORT SYSTEMS NECESSARY TO HELP ACHIEVE EXCELLENCE—PROFESSIONAL TOOLS TO ASSIST IN CREATING THAT EXCELLENCE.

MANNY'S—THE PROFESSIONAL'S CHOICE.

MANNY'S MUSIC
156 W. 48th Street
NYC, NY 10036

(212) 819-0576 Mon.-Sat. 9:00-6:00

Next Month in Electronic Musician

EM helps you get the most out of your electronic percussion instruments:

- **Modifying the Octapad**
- **Use your TR-707 as a Sequencer**
- **Drumulator/MPU-401 Interface**
- **Creating percussion sounds with FM synthesis**

Understanding Roland's new LA Synthesis

The Mac Power User **—Part II**

Special Report: the newest developments in the MIDI specification!

Reviews:

- **Alesis HR-16**
- **Digidesign's Q-Sheet**
- **Yamaha WX7 wind controller and more!**

Did You Know...

If you subscribe to **EM**, you receive your issue at least a week before it's available on the stands?

Don't wait—subscribe today!

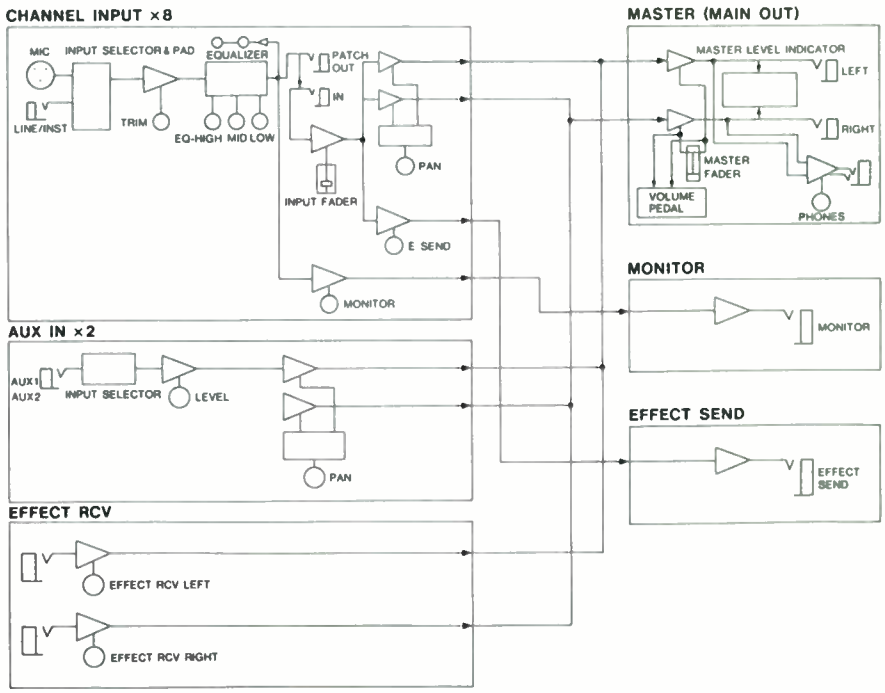


FIG. 2: MPX820 block diagram.

There are eight patch point In and Out jacks (post-EQ, pre-fader) and two Aux inputs (each with a three-position pad and panpot). That's quite a complement of features for a compact (7U), 19-inch rack-mount unit.

Although the front panel pots are just input devices and do not actually perform the labelled functions, this is not something you notice, and the entire controller/memory combination is—dare I say it—user-friendly and transparent.

PROGRAM STORAGE AND EDITING

Pushing the *Manual* button (or sending MIDI Program Change 1) puts the mixer into manual mode (program 00), where all of the front panel controls act as they would if no automation were present. Storing a panel setting at any time requires pressing a button and entering a two-digit number from 01 to 99—that's it! To recall a stored program, just punch in the two-digit number; the mixer controls "fade" to the new settings according to the Fade Time value stored in the new program. (The Fade Time is variable from 40 ms to 30 seconds according to the specs, but a representative from Akai confirmed that the minimum time is more like 15 ms.) Remember that this fade can occur for *every adjustable parameter simultaneously*, not just fader level. For example, EQ on specific channels can slowly change from dull to bright, as some channel pans move and the effects sends on other channels fade to their new values. Programs can also be copied, which is useful if you want to make variations on a particular mix.

Editing works much the same as it does on programmable synthesizers that have knobs. Just change the appropriate control (it must be moved past its stored value to "release" it from memory, as indicated by the program number flashing); as the control changes, a dot appears to the right of the program display showing you have altered the stored value and entered Edit mode. Editing programs is as clear and straightforward as any automation system I've seen; the process is simple to learn and apply. You can edit programs one knob at a time, or make totally radical changes in the mix. Regarding the future, Opcode has just released a librarian program for the Macintosh (see sidebar, "Editing on the Macintosh") that allows for extremely accurate graphic editing.

PROGRAM CHANGES AND MASTER VOLUME

Once you've stored a bunch of snapshots (programs) and fade times in memory,

there are three main ways to select among the various programs:

- Change programs manually by the front panel Program Up and Down switches, or the rear panel Up and Down Program Change ¼-inch jacks. The latter are simple contact closure jacks located on the back.
- Record program changes onto one channel of a tape recorder through the Tape Sync jack on the back. In tape sync output mode, all program Up data is recorded in sync with the mix onto tape.
- Send MIDI Program Change messages on a particular channel to the MPX820. The unit is always in Omni Off/Poly mode.

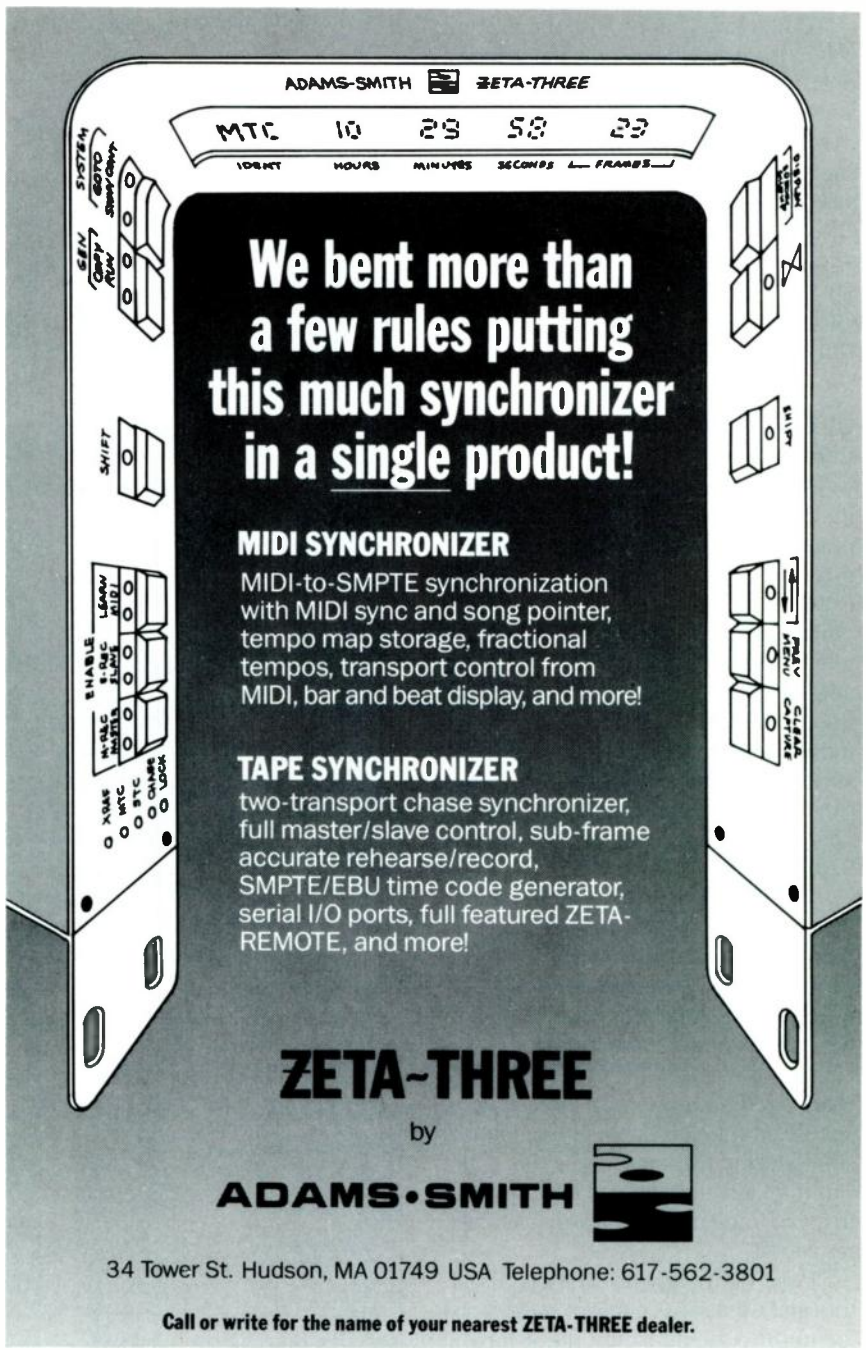
Concerning master volume control, this is also stored as part of the program (ah yes, the ideal fadeout is now at hand). If you need a fadeout longer than 30 seconds, you can stack programs serially and have as long a fade as you want. There is also a rear panel jack for a volume pedal that controls the Master volume of the stereo outputs; this takes priority over the master fader and the stored master fader data. For live applications, this feature allows for easy foot-controlled overall level adjustments. The MPX820 also responds to MIDI controller 7 (Master Level), which controls the overall stereo output level. This could easily be accessed by sending a MIDI command from a keyboard's mod wheel (assuming the wheel, or some similar controller, can be assigned to different controller numbers).

MIXING IN THE REAL WORLD

The fact that the MPX820's operation can be explained so simply should not mislead you into thinking that the unit isn't very deep. Probably the best way to get this across is to describe a typical 8-track studio mixing session using the MPX820.

First, I kept the take sheet close at hand so that I knew what to expect on a given channel at any given moment. I started the mix by going into manual mode and adjusting track one (a premixed bounce of previous tracks) for initial EQ and level. I then re-played the beginning of the tune over and over, setting all channels to the desired levels until the mix was just the way I wanted it (note for future products along these lines: solo and mute switches would be a nice addition, especially when editing an existing program). I then stored the panel settings as program 01, and listened critically to the opening mix. It seemed like it would be a good idea to start the piece with all channels off and fade in those channels that contained sounds. I adjusted program 01's fade time pot and stored the modified program as program 02. Next, I set all the faders to zero for the opening "snapshot" and stored this as program 01. Now if I called up 01 and then pushed the Up button (or called up 02), the faders would go from zero to the levels set in program 02 in the amount of time set by the Fade Time value stored in program 02. Had I wanted to change the fade time, I would have just moved the Fade Time pot towards Min while in program 02, and re-stored it as 02. Simple!

Not wanting to use up a track for sync, I decided to change programs manually. To make life easier, it seemed like a good idea to change programs every eight bars, whether the mix needed changing or not—that way, I wouldn't have to worry about getting the snapshots in the right



places. As the mix progressed, I found myself not only setting up new mix programs, but tweaking the stored programs as desired. When a flute part came in too loud, I just moved the fader until the display blinked, lowered the level a little, played the tape again, and stored. Perfect! And during a flute/bassoon duet, I set up a new program where the two channels were panned to their opposite positions, and added a long fade time. Upon recalling the new program, the two channels panned smoothly and evenly to their opposite channels.

When I was happy with the mix but wanted to play with it some more, I used the *Bank Save* feature and saved the entire bank to cassette. If I got carried away with the changes and wanted to go back to an earlier mix (there's no place like home!) I just re-loaded one of the previous saves. Of course, you don't need to use a cassette player; the mix data can also be saved at the head of the multi-track tape during the leader, along with test tones and tuning notes.

OVERALL EVALUATION

Even without automation, this mixer would still be worth writing home about. Its compact size and features are not unique, but also not the usual for an 8 × 2 mixer. I do wish this unit was a little less expensive, but considering that many other automation systems are actually automation *retrofits* that require a console and computer, depending on your situation the MPX820 could very well be the most cost-effective way to automate your studio. (Remember also that these units can be ganged together for up to 64 channels of snapshot automation for under $20,000.)

All in all, I like the MPX820 very much. Having selectable pads on the inputs and outputs makes for easy interfacing with a variety of audio gear, and the straightforward design eliminates excessive numbers of op amps (which probably accounts for the very low noise level). Another strong point is that there are 256 steps of resolution on *all* of the controls stored in the registers. While this is not "infinite" as with a normal analog mixer, in my opinion it offers more than enough resolution.

I don't have any real complaints, although I do have a couple of suggestions for improvements in my quest for the Ultimate Mixer. While the EQ is very flexible, having that much boost and cut can make it difficult to tame at first, and bear in mind that it is limited to three fixed frequencies (an on/off programmable effects loop would have been a nice addition if you wanted to patch in other devices; or you can use Akai's nifty little rack-mount MIDI-controlled equalizer if you crave more control). I also wish there were a manual EQ in/out switch to compare equalized and non-equalized settings, and center detents on the controls (especially the EQ and panpots) would be helpful. The lack of separate left and right master controls makes me feel uneasy, and finally, it would be nice if the Fade Time control were calibrated. I'd also like to suggest that all console manufacturers, not just Akai by any means, recognize the need for stereo effects sends (though I do realize this adds complexity to a simple mixer design).

I should also add that while this is an outstanding mixer all by itself, it is but one piece in an entire studio line from Akai Professional that ranges from their latest recorder (a 12-track digital device that records 17 minutes of music on an 8 mm videocassette; see the AES Report in

Editing on the Macintosh

Opcode's *MPX820 Editor/Librarian* (by David Zicarelli and Michael Lee; $200 retail) is somewhat similar to the Opcode librarians for synthesizers reviewed in the Dec. '87 "First Take." A *Bank* holds a collection of 100 MPX820 patches, corresponding to MPX820 patches 00 to 99 (**Fig. 3**). Entire banks, as well as individual patches, can be transferred between the Mac and librarian portion of the program.

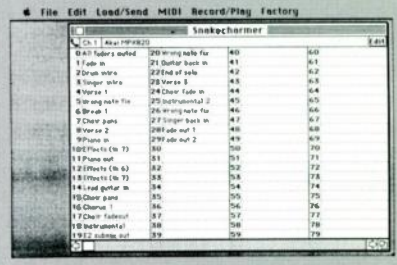


FIG. 3: Librarian screen from the MPX820.

The most interesting part of the program, however, is the ability to edit all MPX820 parameters on-screen (**Fig. 4**). Clicking on a patch in the librarian opens up the edit screen, where there are a variety of ways to change parameters (mouse, typing in parameters, etc.), either one at a time or in groups. Knob and fader positions can be copied easily from one channel to another within a patch, or "cut-and-pasted" into different patches in a bank (or for that matter, a different bank altogether). It's even possible to assign global changes to several patches at once—for example, maybe you'd like to change the EQ on the rhythm guitar only during the patches that occur during the first and second verses. In addition, edits for individual patches can be printed out (a nice convenience), and of course, all your edits and banks can be saved to, and loaded from, disk.

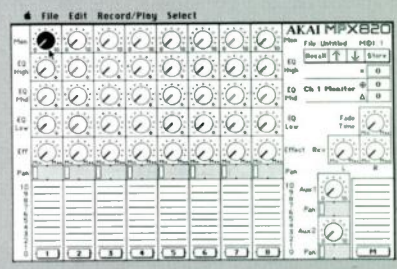


FIG. 4: An unedited edit screen; the Trim for the first channel is about to be adjusted.

Although the MPX820 is quite easy to operate—it's not like some synthesizers, where you have to access dozens of parameters with nothing more than a calculator-style keypad—computer assistance can be very welcome. This is particularly true if you are adding the MPX820 to a "MIDI studio" where the computer, not the mixing board, is the focus of operations. The MPX820 can be stuffed in the nearest convenient rack, with all necessary control manipulation being taken care of at the computer itself. And being able to store all data on disks certainly beats using a cassette interface. If you have an MPX820 and Macintosh, check out this program.

—Craig Anderton

Tech Specs

Inputs: 8 channel inputs (Mic XLR and Line ¼-inch) with panpots, 2 aux inputs with panpots
Outputs: 2 main ¼-inch, 1 monitor, 1 effects send (all 0 dBm)
Effects returns: 2 (¼-inch, 0 dBm)
EQ (all frequencies ±15 dB): High, 10 kHz shelving; mid, 1.5 kHz peaking (Q = 0.5); low, 100 Hz shelving
Monitor sends: 8
Effects sends: 8
Pan controls: 8
Channel faders: 8
Memory locations: 99
Fade Time control range: 15 ms to 30 seconds
Frequency response: 20 Hz to 20 kHz, +0.5/-0.7 dB
THD (Total Harmonic Distortion): 0.04% (20 Hz to 20 kHz, +20 dBm out)
EIN (Equivalent Input Noise): -128 dBm maximum
Output noise: 1 mV (all faders down, master full up, pans centered)
Crosstalk: 70 dB at 1 kHz
Battery backup lifetime: Approximately ten years
Tape backup time: Approximately 2 minutes, 15 seconds
Program Change: Receives MIDI Program Changes over any channel
Programmable controls: All channel levels, all monitor levels, all EQ controls (low, mid, high), all effects sends, all panpots, both effects returns, both aux inputs, both aux pans, fade time control, and master level (every knob except channel input trims and headphone level)
Control resolution: 256-step (8-bit) resolution (levels, 0.03 dB resolution; EQ, 0.12 dB resolution)

the January 1988 issue) to a series of MIDI-controlled audio processors and accessories. The MPX820 is not only a very strong link in the Akai studio chain, but at $2,500, is a more powerful mixer for my needs than anything else out there for twice the price. EM

David Karr, electronic composer, producer, video director, and all-around nice guy, is searching for sanity in a musical world gone mad. "Only our technology can save us now!"

Nobody gives you more sound for less than Sam Ash.

You'll find everything you need to make music at Sam Ash at consistently low prices. It's a fact that Sam Ash has been filling America's playing and recording needs for more that 60 years. So whatever your needs may be, you'll find that the helpful and expert people at Sam Ash will bring music to your ears.

YOUR SOURCE FOR MUSIC AND SOUND

Call Toll Free: 1-800-4-SAM-ASH
OR 1-718-347-7757

Sam Ash®

124 FULTON AVENUE HEMPSTEAD, N.Y. 11550 **MUSIC STORES**

Sync-Link: L.D. Systems

As always, LD Systems is in step with the most recent MIDI technology—we are now your MIDI time code connection. The Adams-Smith Zeta-Three, Fostex 4030, Hybrid Arts SmpteTrack ST, J.L. Cooper PPS System and Southworth JamBox are all on display in our showroom and immediately available to you. Naturally, we also have the cables, connectors and knowledge to make sure your new technology is totally integrated.
So when you think sync, think LD.

LD SYSTEMS

467 W. 38th Street, Houston, Texas 77018
(713) 695-9400

We can be contacted electronically on ESI Street.
professional sound and lighting sales, services, rentals

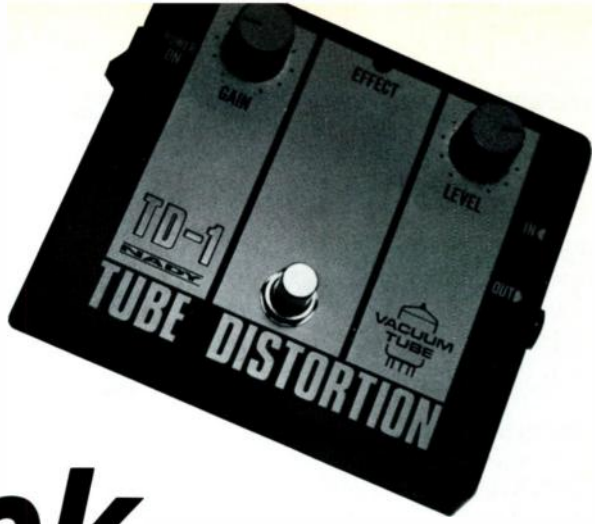
A complete line of software for Atari, Commodore, IBM, Macintosh, Apple IIC, IIE and GS, by:

Bacchus
Club MIDI (Pro MIDI)
Digi Designs (Sound Designer)
Doctor T
Hybrid Arts
Mark of the Unicorn (Performer, Professional Composer)
Magnetic Music (Texture)
Jim Miller (Personal Composer)
Octave Plateau (Sequencer Plus, Patch Master)
Opcode
Passport Designs
Sonus

We have cables, patchers, mergers, blenders and a full line of MIDI peripherals by:

J.L. Cooper
Garfield
360 Systems

review



Almost every electric guitarist is on that path—the quest for the ultimate fuzz box; does such a device exist or is it only a dream? We test the latest and you decide.

Attack of the Hi-Tech Fuzz!

BY ALAN GARY CAMPBELL

ANNUALLY IT OVERCOMES me, a restless longing deep within my soul. I'm propelled by cosmic forces I can't understand. I must resume my quixotic quest, my tireless trek for the *holy grail of guitar grunge*—the ultimate fuzz, that is.

Since time began (well, since the '60s anyway) engineers have sought to capture the essence of speaker distortion in a stomp box, to save the hearing (what's left of it) of our rebellious MIDI youth, and to make peace with the neighbors (temporarily). Have they succeeded? Judging from last year's sales of Marshall amps, probably not. But they keep trying.

MORE MUSIC!

SOFTWARE

m=Mac I=IBM a=Apple at=Atari am=Amiga c=Commodore

SEQUENCING and RECORDING

Aegis Development
Sonics — am
Dr. T's Music
KCS — at,c
KCS — a
MRS — at
Magnetic Music
Texture II — I
Mark of the Unicorn
Performer 2.0 — m
Opcode Systems
Sequencer 2.5 — m
Passport Designs
Master Tracks Pro — m,at
Master Tracks Pro — a,c
Master Tracks PC — I
MIDI 8 Plus — a,c
MIDI 4 Plus — a,c
Midisoft Studio — I
Midisoft Studio — at
Voyetra
Sequencer Plus Mk III — I
Sequencer Plus Mk II — I
Sequencer Plus Mk I — I

SCORING and COMPOSITION

Digidesign
Q-Sheet (SMPTE/MIDI) — m
Dr. T's Music
The Copyist — at,I
PVG — at
Dr. Drums — at,a,c,
Dr. Keys — at,a,c,
Algorithmic Composer — c
Convert:File — c
Echo Plus — c
Electronic Arts
Delux Music Construction Set — m,am
Great Wave Software
Concert Ware+ — m
Concert Ware+ MIDI — m
Impulse
Studio Session — m
Intelligent Music
Jam Factory — m
"M" — m
"M" — at
Upbeat — m
Jim Miller
Personal Composer — I
Mark of the Unicorn
Professional Composer — m
Opcode System
Music Mouse — m
Music Mouse — am,at
Cue 2.0 — m
OvalTune — m
Strawberry OvalTune — m
Passport Designs
Score — I
Polywriter — a
Polywriter Utilities — a
Music Shop — c

PLEASE CALL FOR LATEST PRICES AND PRODUCT UPDATES •

VOICE LIBRARIANS and EDITORS

Bacchus
TX81Z Graphic Editing — I
Voice Manager Series (DX, TX7) I
Beam Team
XSYN Graphic Editor — at
Digidesign
Sound Designer (E II, Emax)
all others
FX Designer (PCM 70) — m
Softsynth (digital synthesis) — m,at
Digital Music Services
Yamaha FB Pro — m
Yamaha TX81Z Pro — m
Dr. T's Music
CX Patch — at
CZ Rider — a,c
VDS — at
VDS — c
4-OP Deluxe — a,c
4-OP Deluxe — at
DX Patch (DX/TX7) — a,c
DX Heaven (DX/TX7) — at
ESQape (ESQ1) — I
ESQape (ESQ1) — at
FB Master (FB01) — I
Waveform — I
Magnetic Music
Pyramid (DX, TX) — I
Opcode Systems
Yamaha DX/TX w/DX7 — m
Oberheim Matrix 6 — m
FB-01, CZ, K-3 — m
All Others — m
Passport Designs
MIDI Voice Librarian — m,a,I
MIDI Voice Editor — a,I
MIDI Voice Editor (IBM feature) I

PLEASE CALL FOR LATEST PRICES

SOUND LIBRARIES

We carry all of the most popular libraries. Available on disk, cartridge, cassette, and CD ROM . . . call

EDUCATION

Baudville
Guitar Wizard — m
Passport Designs
Music Tutor — a
Resonate
Listen — m

AND PRODUCT UPDATES •

HARDWARE

MIDI INTERFACES

CMS
CMS 401 w/Cakewalk sw — I
Music Quest
MSS-1 — I
Opcode Systems
Studio Plus Two — m
Professional Plus — m
Timecode Machine — m
Passport Designs
MIDI Interface w/cable — m
MIDI Interface w/Tape sync — c,a
MIDI Interface w/Drum sync — c,a
MIDI Pro — a

SYNTHS/KEYBOARDS/SAMPLERS

E-mu Systems
Emax Keyboard w/20mbHD
Emax Rack w/20mbHD
Korg
DS-8
SG-1DX
Kurzweil
K-1000
PX-1000
Roland
D-50 Keyboard
D-50 Rack
Yamaha
DX-7

CALL FOR LATEST PRICES

IBM PC COMPATIBLE MIDI SYSTEMS

XT 10 mhz 640K w/20mbHD/MIDI interface, plus complete sequencing and publishing software
AT 10 mhz 1MB w/20mbHD/MIDI interface, plus complete sequencing and publishing software

MACINTOSH MIDI SYSTEMS

Mac Plus MIDI interface, plus complete sequencing and publishing software
Mac SE SE 20SC, Mac II also available

Wait. There's more! We carry many more products than we can list here with new ones coming in all the time. If you don't see something you want, please call and ask.

800/333-4554

Good anywhere in U.S.

OUR POLICY

- We accept VISA/MASTERCARD with no added service charge.
- Your credit card will not be charged until we sh p your order.
- Personal and company checks accepted; allow one week to clear.
- For faster service send certified check, cashiers check, or money order. Sorry, we can't accept CODs.
- California residents, please add local sales tax to your order.
- We accept purchase orders from qualified corporations, schools, and volume purchasers.
- To order, call us anytime Monday thru Friday 9 to 5, or Saturday 10 to 4 PST. You may call our business office at (415) 328-5773 Monday thru Friday 9 to 5.

SHIPPING

Accounts on net terms pay actual shipping. **Continental US:** For hardware products add 2% for UPS ground shipping. Call for UPS Blue or UPS Next-Day-Air. For all other items, add $3 per order to cover UPS shipping. We will use UPS 2nd-Day-Air at no additional charge if you are more than 2 days from us via UPS ground.

Hawaii: For hardware products, actual UPS charge will be added. For all other items, add $3 per order.

Alaska and Outside Continental US: call for information.

soundware

(800) 333-4554

Your resource for the best buys in MIDI hardware, software & accessories.

Soundware Corporation, 200 Menlo Oaks Drive, Menlo Park, CA 94025, (415) 328-5773 or (800) 333-4554 Telex: 650-348-5268.

© Copyright 1987 Soundware Corporation. All items subject to availability. Prices subject to change without notice.
Defective software replaced immediately. Defective hardware replaced or repaired at our option.

So I keep tryin' 'em out! My criteria for the ultimate fuzz? It should: **1.** Sound like speaker distortion, without any outside help (from preamps, etc.); **2.** *Still* sound like speaker distortion, albeit milder, when you lower the instrument input level; **3.** Have a minimum amount of intermodulation distortion, to let chords through; **4.** Have tone controls that *work* (not just a passive treble control); **5.** Have excellent sustain, even at low levels; **6.** Work with keyboards too; **7.** Have minimal residual noise; **8.** Accept low- or line-level signals; **9.** Have both input *and* output level controls; **10.** Have a high input impedance and a low output impedance; **11.** Have pop-free switching; **12.** Be AC powered; and **13.** Be rugged, reliable and attractive.

APPLICATION NOTES

When I tried out these boxes, I drove them first with a Gibson SG Standard, with stock passive electronics; then with the guitar preamped, with the treble turned up (turned down at the amp). I had no impedance-related problems with any of them, and all took low- or line-level signals, within reason; but they sounded much better driven from the high-pass preamp.

With keyboards, I had to really back off on the distortion levels to keep right-hand lines from sonically interfering with left-hand chords.

CHANDLER TUBE DRIVER

The **Tube Driver** is an AC-powered speaker distortion simulator that contains an actual 12AX7 vacuum tube in the distortion circuit. There are Tube Drive, High and Low EQ, and Output Level controls, and a bypass footswitch (but no power switch), and Power and Effect LEDs.

The Drive and EQ controls provide a wide range of sounds. Depending on your guitar characteristics, effects, and all that, you can get this thing to sound a lot like a strainin', screamin' amp—and it still sounds realistic at lower input levels. IM distortion is slight. It even sounds great with keyboards. I fed it my nastiest Memorymoog "Overdriven B3" patch, hooked up to an old Leslie, and it sounded like the amp was going to *melt down.* Compared to a fuzz, the sustain is less (that's to be expected from the design),

Get Serious.

You're a serious musician. You wouldn't use 6 single voice keyboards, so why bother with an awkward computer setup?

The new ***bandwagon*** LCD portable computer is the serious choice for MIDI control. One small, lightweight, easy to use package, instead of individual components and cables.

And ***bandwagon's*** technology, including a revolutionary back lit flat panel display, makes it the most advanced machine available today. At a price even a weekend musician can afford.

So if you're serious about your music, get serious about your computer.

Get on the ***bandwagon.***

8088, 286 & 386 MODELS

bandwagon by PASS MICRO incorporated

Computers by musicians, for musicians.
400 Main Street
Hickory, PA 15340

See your local dealer or call **412-356-4000**

PRODUCT SUMMARY

Product:
Tube Distortion
Type:
AC-powered vacuum-tube-based distortion unit
Controls:
Gain and Level controls, Bypass footswitch, Power switch
Enclosure:
Stomp box
List Price:
$145
Manufacturer:
Nady Systems, Inc.
1145 65th Street
Oakland, CA 94608
☎ 415 / 652-2411

Features 5
S/N Ratio 6
Distortion Quality 7
Overall 6

but still good; and the unit's quieter though a bit noisier than I expected. Switching is popless. The case is heavy-duty and roadworthy. It's not an inexpensive unit, so shop around—it's probably worth it.

PRODUCT SUMMARY

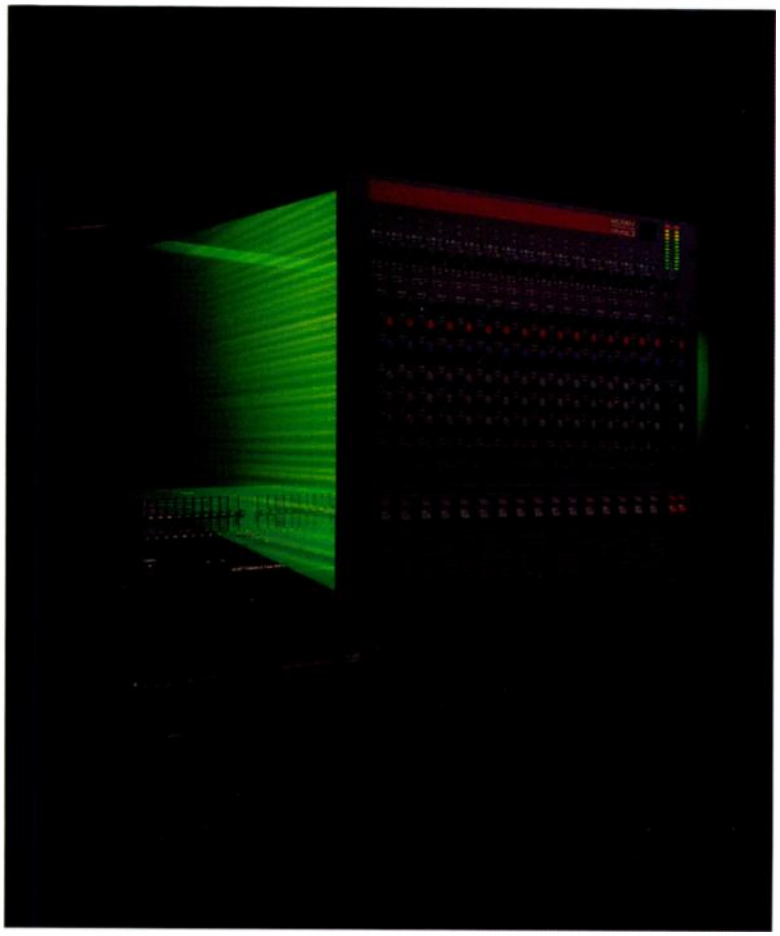
Product:
Tube Driver
Type:
AC-powered vacuum-tube-based distortion unit
Controls:
Tube Drive, High & Low EQ, Output Level, and Bypass footswitch
Enclosure:
Stomp box
List Price:
$179.95
Manufacturer:
Chandler Industries, Inc.
PO Box 15-B, Station A
San Francisco, CA 94115
☎ 415 / 626-1742

Features 7
S/N Ratio 6
Distortion Quality 7
Overall 7

PRODUCT SUMMARY

Product:
Tube It
Type:
Battery-powered solid-state distortion unit
Controls:
Output, Bass, Treble, Sustain, Boost switch, Bypass footswitch (power switched at input jack)
Enclosure:
Stomp box
List Price:
$140
Manufacturer:
Bartolini Pickups
2133 Research Drive, Unit 15
Livermore, CA 94550
☎ 415 / 443-1073

Features 6
S/N Ratio 5
Distortion Quality 6
Overall 6



Room At The Top For You!

• **A 16-Input Stereo Mixer in a Rackmount Configuration.** Synthesizers, drum machines, and multiple microphones. . . RACKMAX is a new high-performance, full feature 16-channel mixer especially designed for those solo performers and small groups that have a lot of equipment, but not much room.

• **BIAMP makes room for you.** Only 10 spaces high, and 3 inches deep, including power supply, RACKMAX is compact but totally complete. You won't have to compromise sound quality or features for the extra room it gives you.

• **Features and Performance of Mixers Twice its size!**

• 3 separate sends per channel, fully configurable.

• Integral Digital Reverb (optional).
• LED indicators at each channel for signal present and clipping.
• 48 volt phantom power-switchable at each channel.
• Mic/line switching.
• Complete cue/solo system.
• Discrete Transistor Low Noise and Distortion Front End.

RACKMAX. **NEW FROM BIAMP!**

biamp
AMERICAN SOUND CRAFTSMANSHIP
Biamp Systems, P.O. Box 2160, Portland, Oregon 97208 (503) 641-7287

COMMODORE OWNERS

Introducing :

JiffyDOS/64 and JiffyDOS/128

Speed Enhancement Systems

JiffyDOS© is a ROM upgrade for your computer and drive that **increases load speed** up to **1700%!**

JiffyDOS Rates 10 with ELECTRONIC MUSICIAN

" JiffyDOS .... Finally makes the venerable C64 sequencers suitable for live performance." James Chandler, January 1988

- Guaranteed compatible with all software and interfaces
- Easy do-it-yourself installation, uses no ports or extra cables
- Perfect for studio and live use, also great for non-MIDI applications
- Speeds up loading, saving, formatting and adds valuable new commands
- Works with C-64/SX-64 and C-128 computers
- Works with 1541, 1541C, 1571, 1581, FSD1 & 2, MSD1 & 2, BlueChip1541
- JiffyDOS/64 only $49.95 and JiffyDOS/128 only $59.95, Addl. Drive $24.95
- Add $3.00 Shipping, COD, VISA/MC, Money Orders accepted
- Specify drive and computer when ordering

Creative Micro Designs, Inc
P.O. Box 789
Wilbraham, MA. 01095
Phone: 413-589-7624 FAX: 413-589-0431

Fuzz Tips

TO GET a more speaker distortion-like sound, try putting a preamp or EQ unit *ahead* of your fuzz. This works with a wah-wah pedal, too; but you'll probably want to put your Phaser or Flanger after the fuzz, to get the most whoosh.

If your fuzz is noisy, try a noise gate with some envelope-following circuitry (placed after the fuzz). It'll sound a lot better than one that simply switches on and off.

For added sustain, try putting a compressor in front of your fuzz—but don't overdo it; a little compression goes a long way. For the *ultimate* in sustain, you simply must get a Maniac Music *Sustainiac*™ (6052 N. Guilford, Indianapolis, IN 46220 ☎ 317/251-0470), the electroacoustic marvel that amplifies the guitar signal and feeds it back to the guitar body. If you haven't seen one, please read the review in the June '87 "First Take," and extricate yourself from the dead-note dark ages.

For the punchiest sound, make sure the batteries are fresh; better yet, use an AC adapter. If your fuzz hums with an adapter, add a 470 uF, 16V cap across the DC input (*observe proper polarity*); it'll help. If your fuzz doesn't have an adapter input, adding one makes a good DIY project.

—Alan Gary Campbell

BARTOLINI TUBE IT

The **Tube It** is a battery-powered solid state speaker distortion simulator. It comes in this incredible chunky orange stomp box with Radio Shack knobs that looks like something Mr. Wizard put together out of rocket parts in the garage. I love it.

It has Output, Bass, Treble and Sustain controls, and a three-position Boost switch (power is switched on by plugging in the audio cord). The Boost switch sets the gain of the distortion stage; the first two positions give half-hearted distortion effects with that "solid state" sound—but the third setting will fry eggs on a hood!

Unfortunately, the quality of the effect is input-level sensitive (as with most solid state units); backing off on the guitar volume, for subtler effects, sounds plastic.

This thing really needs a hot pickup or a preamp to sound good. But there's a catch: if you drive it too hard it cuts out, and I had trouble finding a happy medium. Still, when you crank it up, it's outrageous; and the *sustain* is great!

Compared to its tube counterparts, IM distortion is greater (it doesn't sound as good with keyboards), as is the noise. Switching is silent. It runs on a single 9 Volt battery, but there's no adapter input; otherwise, it's well-constructed.

NADY TUBE DISTORTION

The **Tube Distortion** is also a 12AX7-vacuum-tube-based speaker distortion simulator. Controls are simple: there's a Gain control, a Level control, a Power switch, and a Power LED. The Gain control doesn't give a very wide variety of sounds; I found it best just to leave it wide open, then back off on the guitar volume for subtler effects—which sound very natural with this unit.

The Tube Distortion definitely kicks. Sustain is just slightly less than that of the Chandler Tube Driver, but the sound is a little more "open," more of a Keith Richards crunch than a Van Halen volley (more guitar, less fuzz); overall noise is about the same, but there was a slight hum in mine (bad capacitor?). IM distortion is minimal; it sounds good with keyboards. Switching is silent, the case is rugged, and (tube-wise) it's comparatively less expensive.

WRAP IT UP

Okay, so none of these boxes is the ultimate fuzz that I seek—they're *all* ripe for musical mayhem! The two tubers do sound more like tube amps: the Tube Driver has more variability, but the Tube Distortion has better definition. For something more conventional, try the Tube It.

I like all three of 'em, but what do I know? After eight straight hours of guitar gesticulation, *everything's* kinda fuzzy. (Take some advice from a weekend warrior: try 'em before you buy 'em.)

At last, I'm nearly satisfied with the state of the fuzzbox art—at least 'till next year! EM

Alan Gary Campbell is owner of Musitech,™ a consulting firm specializing in electronic music product design, service, and modification.

Future Fuzz

I THINK TODAY'S fuzzbox engineers are on the wrong track. I mean, everything is digital now, right? To build the ultimate fuzz, all you have to do is borrow a mainframe computer and some data acquisition stuff long enough to generate a transfer function based on how a Marshall stack, run wide open, affects an instrument signal at various levels. Then you use an A/D converter to interface the guitar to the computer, do a few gigabytes worth of real-time digital signal processing, and use a D/A converter to turn the guitar bits back to audio. Piece of cake! (*Byte* of cake? Nibble?)

I haven't quite figured where to put the mainframe computer on stage, but I don't see letting a few details spoil a perfectly good idea. —AGC

PROSONUS®

Give Full Play To Your Emotions

A slow, sleepy modulation; the bouncing melody of octave cello; a frenzied electronic scream – all convey a particular emotion that only the right kind of synthesized sound can give you.

With Electronic Volume 1, you can achieve the precise effects you're looking for. Volume 1 offers you a complete dynamic scope – from the digital clarity of the upper harmonics to the analog warmth of the lower tones – a combination and range of sounds virtually unattainable with any single synthesizer.

You'll also find Volume 1 offers you sounds sampled in 4ths, to maintain the full integrity of sound throughout the entire range of the keyboard.

Plus, Electronics Volume 1 is first generation digital, with all sounds designed and created by professionals.

So sample Prosonus. The professional's sound library.

Because better sounds make better music.

For more information, visit your favorite music store or call Prosonus at 213-463-6191.

E L E C T R O N I C 1

Dealer Inquiries Welcome

Roland Not Copy Protected
ZERO ONE
D-50™ $49.95
PATCH LIBRARIAN
● Complete manipulation of Patches,Upper & Lower
● 64 New Patches
Roland PG-1000 Simulator $69
● Controls all Parameters
● D-50 Visual Editor
D-50 EDITOR
● Graphic Parameter Display
$99 ● Smart Patch Generator
● Edit in Musical Terms
All Software is DA/Memory Resident!
Runs concurrently with Sequencers!
Available on the Macintosh™& IBM
ZERO ONE Research
PO Box 301 Brisbane, Calif. 94005
(415) 467-5007

synthetic PRODUCTIONS
CZ~SUPER CASIO PROGRAMS
·64VOICE RAM CARTRIDGES·
VOLUMES:1,2,AND 3(NEW!!)
·THE MOST UNIQUE AND MUSICALLY USEFUL SOUNDS AVAILABLE FOR ALL CZ SYNTHESIZERS
·AN EXTENSIVE ARRAY OF DIGITAL,ANALOG,AND EMULATIVE VOICES
·KEYBOARD·
"Among the best we have heard,crafted with great care".
·ELECTRONIC MUSICIAN·
"Exceptional,Outstanding,(Five Stars)".
·MUSIC TECHNOLOGY·
"Highly recommended for all CZ owners!".
ENDORSED BY CASIO INC.
THERE ARE NONE BETTER ANYWHERE!
$69.95 EACH
CALL or WRITE FOR INFORMATION and DISCOUNTS!
SYNTHETIC PRODUCTIONS
545 WEST END AVE. NEW YORK,NY 10024
(212) 877-6557

115 ROM presets, and 64 user-programmable RAM locations (these are initially empty as they come from the factory). A program can be as simple as a single multi-sampled sound, or as complex as a split/layered/zoned sound with effects. You store and retrieve programs using the Store and Enter buttons and ten number buttons (not found on the rack modules), or the increment/decrement switches.

There is virtually none of the noise and grit typical of samplers.

You can access your favorite programs via three programmable, ten-program "performance" banks, each with their own buttons (also not found on the rack modules).

By far the best presets are the Grand Piano, Acoustic Bass, Strings, Choir, Vibes, Trumpet, Horn, and Clarinet; they definitely have that "Kurzweil" sound. Are they as good as their counterparts on the K250? In an A/B comparison, they were really close. For the money, the sound is phenomenal. Like its big brother, the K1000 employs Kurzweil's *Contoured Sound Modeling*;™ there is virtually none of the noise and grit typical of samplers. Most of the sounds extend the full range of the keyboard, and even respond to the additional notes on external 88-note controllers.

Some of the variations on these presets are outstanding. The Octave (doubled) Piano, Chorus Piano, and two Honky Tonk pianos are great; Stereo Piano and Extended Piano pan the bass strings to the left, treble to the right, and midrange somewhere in-between—like stereo miking. Several Vibes programs provide stereo tremolo (autopan) and chorus effects. Slow Strings, Medium Strings, and Fast Strings provide different basic attack rates and "bite," while Slow to Fast Strings provides a dramatic velocity crossfade; Octave Strings is fat and orchestral-sounding. Hall Strings, Cathedral Choir, and New Age Piano (a piano/string stack) are ethereal timbres to which I keep returning.

There are numerous organ presets—with and without percussion—but none sounds enough like a Hammond B3 to inspire me. The Electric Basses are unrealistic; and the Electric Piano and Celesta are synthy-sounding constructions, nothing like the great Rhodes and Celesta on the K250. There are no guitar presets, and also no flute, pan pipes, calliope, or other chiffy sounds. But when you think about it, many players are quite happy with the organ, bass, guitar, electric piano, and chiff sounds of modules such as the Roland MT-32, Yamaha TX7, and Yamaha TX81Z. Could this be the ultimate lounge duo—a K1000 and an inexpensive synth module?

PROGRAMMING IT

The K1000 is not just a sample player; you can program your own variations on these sounds. In K1000 terminology, a *program* consists of up to four *layers*. Each layer consists of one of 50 available *Soundfiles*—multi-samples or synthesized waveforms—with programmable multi-segment amplitude and pitch envelopes, and complex modulation and processing effects. There are preset *Compiled* effects, including vibrato, tremolo, chorus, phaser, rotating speaker, and echo; or you can make up your own *Modular* effects, any way you like: there are LFOs (two per layer and two global—with 22 waveforms each, and programmable phase!), envelopes, and digital signal processors galore—mixers, DCAs, inverters, "negators," level scalers—it's amazing. Altogether, this architecture gives the K1000 a basic sonic capability somewhere between a Kawai K3 and an Ensoniq SQ-80, though the fidelity, sample quality, and controllability of the Kurzweil are markedly superior.

The K1000 (like the PX) has a whopping 24 voices; however, programs that have more than one layer (some Compiled effects take up two layers) use up voices proportionately. For example, a four-layer program allows a maximum of eight-voice polyphony. (Interestingly, this restriction is not explained anywhere in the manual.) Fortunately, the basic presets (Piano, Strings, Choir, etc.) use only one layer.

The level of control the K1000 gives over program parameters is incredible.

This thing really needs a hot pickup or a preamp to sound good. But there's a catch: if you drive it too hard it cuts out, and I had trouble finding a happy medium. Still, when you crank it up, it's outrageous; and the *sustain* is great!

Compared to its tube counterparts, IM distortion is greater (it doesn't sound as good with keyboards), as is the noise. Switching is silent. It runs on a single 9 Volt battery, but there's no adapter input; otherwise, it's well-constructed.

NADY TUBE DISTORTION

The **Tube Distortion** is also a 12AX7-vacuum-tube-based speaker distortion simulator. Controls are simple: there's a Gain control, a Level control, a Power switch, and a Power LED. The Gain control doesn't give a very wide variety of sounds; I found it best just to leave it wide open, then back off on the guitar volume for subtler effects—which sound very natural with this unit.

The Tube Distortion definitely kicks. Sustain is just slightly less than that of the Chandler Tube Driver, but the sound is a little more "open," more of a Keith Richards crunch than a Van Halen volley (more guitar, less fuzz); overall noise is about the same, but there was a slight hum in mine (bad capacitor?). IM distortion is minimal; it sounds good with keyboards. Switching is silent, the case is rugged, and (tube-wise) it's comparatively less expensive.

WRAP IT UP

Okay, so none of these boxes is the ultimate fuzz that I seek—they're *all* ripe for musical mayhem! The two tubers do sound more like tube amps: the Tube Driver has more variability, but the Tube Distortion has better definition. For something more conventional, try the Tube It.

I like all three of 'em, but what do I know? After eight straight hours of guitar gesticulation, *everything's* kinda fuzzy. (Take some advice from a weekend warrior: try 'em before you buy 'em.)

At last, I'm nearly satisfied with the state of the fuzzbox art—at least 'till next year!

Alan Gary Campbell is owner of Musitech,™ a consulting firm specializing in electronic music product design, service, and modification.

Future Fuzz

I THINK TODAY'S fuzzbox engineers are on the wrong track. I mean, everything is digital now, right? To build the ultimate fuzz, all you have to do is borrow a mainframe computer and some data acquisition stuff long enough to generate a transfer function based on how a Marshall stack, run wide open, affects an instrument signal at various levels. Then you use an A/D converter to interface the guitar to the computer, do a few gigabytes worth of real-time digital signal processing, and use a D/A converter to turn the guitar bits back to audio. Piece of cake! (*Byte* of cake? Nibble?)

I haven't quite figured where to put the mainframe computer on stage, but I don't see letting a few details spoil a perfectly good idea. **—AGC**

PROSONUS®

Give Full Play To Your Emotions

A slow, sleepy modulation; the bouncing melody of octave cello; a frenzied electronic scream – all convey a particular emotion that only the right kind of synthesized sound can give you.

With Electronic Volume 1, you can achieve the precise effects you're looking for. Volume 1 offers you a complete dynamic scope – from the digital clarity of the upper harmonics to the analog warmth of the lower tones – a combination and range of sounds virtually unattainable with any single synthesizer.

You'll also find Volume 1 offers you sounds sampled in 4ths, to maintain the full integrity of sound throughout the entire range of the keyboard.

Plus, Electronics Volume 1 is first generation digital, with all sounds designed and created by professionals.

So sample Prosonus. The professional's sound library.

Because better sounds make better music.

For more information, visit your favorite music store or call Prosonus at 213-463-6191.

E L E C T R O N I C 1

Dealer Inquiries Welcome

Kurzweil seems to know what the people want: great sounds that you can also tweak, all at a reasonable cost. Is the affordable Kurzweil finally here?

Kurzweil K1000 Keyboard

BY ALAN GARY CAMPBELL

I *HATE* GOING TO THE KURZWEIL DEALER. By the time the salesman is through with his perfect-piano super-strings screaming-sax it-also-samples how-can-you-live-without-one spiel about the Kurzweil 250, I'm ready to trade in my car and make 60 years of monthly payments on the thing—only I can't drive a Kurzweil to work.

What's worse, my company's a Kurzweil service center, so I can't hide from temptation. But I do take extra bench time to thoroughly "test" (read: *play*) each one that comes through—just to make sure it's okay, of course. Oh, if only someone would put that kind of sound quality in an affordable package!

Somebody did. Kurzweil adapted the best sounds from the K250

to create a family of rack-mount MIDI sound modules, and a new keyboard—the K1000. If you don't need the sampling and sequencing features of the big machine, this approach gives you just the sounds and features you really want, at prices a working stiff can afford. Nirvana.

THE K1000

This "Baby Kurzweil" has a 76-note weighted, velocity-sensing keyboard (no aftertouch, though). The action has a rather stiff, springy feel that some players probably won't like, but some people just don't like anything. The instrument is light and small enough that one person should be able to transport it without too much strain—a real plus for solo gigs.

The K1000 is essentially a PX module (see sidebar, "Livin' In a Box") with the addition of a Data Entry slider and extra front panel buttons. Connections consist of MIDI In, Out, and Thru jacks; left and right line outs; two footswitch inputs; a three-wire line cord socket; and a front-panel stereo headphone jack.

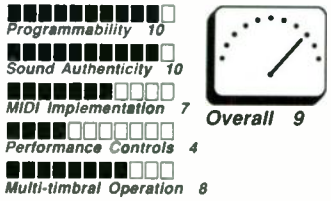
The left-hand controls are the usual Kurzweil mutations that can't decide whether to be bad paddles or merely substandard wheels. (Just what every keyboardist needs, performance controls with an identity crisis!) It's hard to believe that Bob Moog actually works for Kurzweil and *didn't* throw himself bodily in front of the fork lift truck screaming "No! Stop! Those poor musicians. . . for God's sake, replace those wheels!" About the only good thing about them is that the "Mod" wheel is a center-off, dual-function, bi-directional controller that can do the job of two wheels (with your choice of MIDI controller numbers).

IS IT LIVE, OR. . .?

The K1000 has 179 programs, including

Product Summary

Product:
Kurzweil K1000 Keyboard
Type:
Sample player/synthesizer
Keyboard:
76-key, E to G, weighted velocity-sensing action
Performance Controls:
Assignable wheels, footswitches, and Data Entry slider
Features:
Fifty soundfiles; multi-layer programming; extensive sound processing and control features; 16 preset alternate tunings; performance banks; multi-timbral MIDI operation
Size:
48 3/16 × 14 3/8 × 5 3/4 inches
Weight:
55 pounds
List Price:
$2,595
Manufacturer:
Kurzweil Music Systems
411 Waverly Oaks Road
Waltham, MA 02154
☎ 617 / 893-5000



PROSONUS

More Sound Reasons To Sample Prosonus

The sizzle of an electric guitar, the crash of a cymbal, or the fluttering tones of a woodwind passage, will bring your musical idea to life.

The Prosonus Sound Library offers an on-going series of sounds in eight categories of: brass, electronic, keyboard, percussion, effects, stringed, voice, and woodwinds.

Just connect any CD player to any sampler. You get complete and easy access to hundreds of error free sounds.

Each volume displays the instrument's complete musical depth, with several hundred sound variations per disc.

All Prosonus CDs are first generation digital and are performed by the highest caliber professional musicians and recorded by seasoned studio engineers.

So sample Prosonus. The professional's sound library.

Because better sounds make better music.

For more information, visit your favorite music store or call Prosonus at 213-463-6191.

S O U N D L I B R A R Y

Roland Not Copy Protected
ZERO ONE
D-50™ $49.95
PATCH LIBRARIAN
● Complete manipulation of Patches, Upper & Lower
● 64 New Patches
Roland PG-1000 Simulator $69
● Controls all Parameters
● D-50 Visual Editor
D-50 EDITOR
● Graphic Parameter Display
$99 ● Smart Patch Generator
● Edit in Musical Terms
All Software is
DA/Memory Resident!
Runs concurrently with Sequencers!
Available on the
Macintosh™ & IBM
ZERO ONE Research
PO Box 301 Brisbane, Calif. 94005
(415) 467-5007

synthetic PRODUCTIONS
CZ-SUPER CASIO PROGRAMS
·64 VOICE RAM CARTRIDGES·
VOLUMES: 1, 2, AND 3 NEW!!!
·THE MOST UNIQUE AND MUSICALLY USEFUL SOUNDS AVAILABLE FOR ALL CZ SYNTHESIZERS
·AN EXTENSIVE ARRAY OF DIGITAL, ANALOG, AND EMULATIVE VOICES
·KEYBOARD·
"Among the best we have heard, crafted with great care"
·ELECTRONIC MUSICIAN·
"Exceptional, Outstanding, (Five Stars)"
·MUSIC TECHNOLOGY·
"Highly recommended for all CZ owners!"
ENDORSED BY CASIO INC.
THERE ARE NONE BETTER
ANYWHERE!
$69.95 EACH
CALL or WRITE FOR INFORMATION and DISCOUNTS!
SYNTHETIC PRODUCTIONS
545 WEST END AVE. NEW YORK, NY 10024
(212) 877-6557

115 ROM presets, and 64 user-programmable RAM locations (these are initially empty as they come from the factory). A program can be as simple as a single multi-sampled sound, or as complex as a split/layered/zoned sound with effects. You store and retrieve programs using the Store and Enter buttons and ten number buttons (not found on the rack modules), or the increment/decrement switches.

There is virtually none of the noise and grit typical of samplers.

You can access your favorite programs via three programmable, ten-program "performance" banks, each with their own buttons (also not found on the rack modules).

By far the best presets are the Grand Piano, Acoustic Bass, Strings, Choir, Vibes, Trumpet, Horn, and Clarinet; they definitely have that "Kurzweil" sound. Are they as good as their counterparts on the K250? In an A/B comparison, they were really close. For the money, the sound is phenomenal. Like its big brother, the K1000 employs Kurzweil's *Contoured Sound Modeling;*™ there is virtually none of the noise and grit typical of samplers. Most of the sounds extend the full range of the keyboard, and even respond to the additional notes on external 88-note controllers.

Some of the variations on these presets are outstanding. The Octave (doubled) Piano, Chorus Piano, and two Honky Tonk pianos are great; Stereo Piano and Extended Piano pan the bass strings to the left, treble to the right, and midrange somewhere in-between—like stereo miking. Several Vibes programs provide stereo tremolo (autopan) and chorus effects. Slow Strings, Medium Strings, and Fast Strings provide different basic attack rates and "bite," while Slow to Fast Strings provides a dramatic velocity crossfade; Octave Strings is fat and orchestral-sounding. Hall Strings, Cathedral Choir, and New Age Piano (a piano/string stack) are ethereal timbres to which I keep returning.

There are numerous organ presets—with and without percussion—but none sounds enough like a Hammond B3 to inspire me. The Electric Basses are unrealistic; and the Electric Piano and Celesta are synthy-sounding constructions, nothing like the great Rhodes and Celesta on the K250. There are no guitar presets, and also no flute, pan pipes, calliope, or other chiffy sounds. But when you think about it, many players are quite happy with the organ, bass, guitar, electric piano, and chiff sounds of modules such as the Roland MT-32, Yamaha TX7, and Yamaha TX81Z. Could this be the ultimate lounge duo—a K1000 and an inexpensive synth module?

PROGRAMMING IT

The K1000 is not just a sample player; you can program your own variations on these sounds. In K1000 terminology, a *program* consists of up to four *layers*. Each layer consists of one of 50 available *Soundfiles*—multi-samples or synthesized waveforms—with programmable multi-segment amplitude and pitch envelopes, and complex modulation and processing effects. There are preset *Compiled* effects, including vibrato, tremolo, chorus, phaser, rotating speaker, and echo; or you can make up your own *Modular* effects, any way you like: there are LFOs (two per layer and two global—with 22 waveforms each, and programmable phase!), envelopes, and digital signal processors galore—mixers, DCAs, inverters, "negators," level scalers—it's amazing. Altogether, this architecture gives the K1000 a basic sonic capability somewhere between a Kawai K3 and an Ensoniq SQ-80, though the fidelity, sample quality, and controllability of the Kurzweil are markedly superior.

The K1000 (like the PX) has a whopping 24 voices; however, programs that have more than one layer (some Compiled effects take up two layers) use up voices proportionately. For example, a four-layer program allows a maximum of eight-voice polyphony. (Interestingly, this restriction is not explained anywhere in the manual.) Fortunately, the basic presets (Piano, Strings, Choir, etc.) use only one layer.

The level of control the K1000 gives over program parameters is incredible.

MUART™

4 PORT MIDI

For IBM* XT's, AT's and Compatibles

Record 4 MIDI networks at the same time.
Edit and mix your music with precision.
Record and play back with ultra-high resolution.
SMPTE compatible.

Urlike other MIDI systems, the MUART™ 4-PORT MIDI allows the simultaneous recording of up to 4 separate MIDI networks. Everything from keyboards, guitars, electronic percussion to lighting control data. Each network records and plays back with a timing resolution of 600 pulses per quarter note. This enables you to edit and re-mix with ultimate precision and control.

Also included with the MUART™ 4-PORT MIDI interface is the SPIRIT™ Sequencing Software. SPIRIT™ has been custom designed with the look and feel of a state of the art multi-track studio recorder. SPIRIT™ features 48 tracks, complete individual MIDI event editing, and real-time interactive controls that let you get closer to your music.

The MUART™ MIDI interface comes complete with a PC controller card, MUART™ junction box, SPIRIT™ software and cable.

Spirit

The SPIRIT™ Sequencing Software is an enhanced version of Robert Keller's acclaimed 48 track PC II redesigned to accommodate MUART™'s four ports.

"The 48 track PC II has the best note/event editor I've seen on any sequencer to date."
MUSIC, COMPUTERS & SOFTWARE, August 1987

"The simplicity of 48 Track PC II's screen design belies its extensive range of functions — so extensive, in fact, that there's no way we can describe them all here."
Ted Greenwald, KEYBOARD MAGAZINE, August 1987

The MUART™ 4-PORT MIDI interface, including the SPIRIT™ Sequencing Software comes complete and ready to install. No additional purchase is necessary. For more information, contact your local Mellotron® dealer. Suggested retail price: $695.00.

MELLOTRON®
DIGITAL CORPORATION

36 Main Street
Port Washington, NY 11050 USA
(516) 944-6789

*IBM XT and AT are registered trademarks of International Business Machines Corp. © 1987 Mellotron Digital Corporation.

Now playing to rave reviews

Listen 2.0

Interactive Ear Training Software for the Macintosh™

"New standards for music education software in ease of use and flexibility" -- Erik Holsinger, **Macworld**

"Something for everyone. If you have even half the fun with it that we did, it'll be worth every penny of its $99 price tag." -- David Leytze, **Keyboard Magazine**

"A full featured ear-training program ... no pain, but real gain in a short amount of time." -- **Guitar World**

- triads, 7th, 9th, 11th, and 13th chord exercises
- inversions, intervals, simple and complex melodies
- on-screen piano and guitar
- full Mac and MIDI compatibility
- adjustable degree of difficulty
- Newly revised and expanded manual

$99

by Resonate

PO Box 996, Menlo Park, CA 94026
Ask for Listen at your dealer or order by phone at **(415) 323-5022**

Just about any parameter that you'd ever want to control in real time, such as LFO Rate, Envelope Attack Time, Pan, Layer Enable, etc., can be controlled by any of an astonishing number of sources (it takes three pages to list them in the manual), including not just your basic "Aftertouch," "Breath Controller," and all that, but some really esoteric sources such as "Note State," "Negator 2 Output," "Inverted Release Velocity," and "Sample Playback Rate"! I've never before seen this degree of control in an affordable synth. I read through the *big* manual twice and was still coming up with new things to try (one of my favorites is the *Velocity Switch*, which lets you set velocity trigger levels to toggle program parameters). The only missing element is some kind of dynamic VCF, or its digital equivalent.

Just about any parameter that you'd ever want to control in real time can be controlled by any of an astonishing number of sources.

Global parameters, that affect all programs, include preset and *programmable* MIDI Program Change maps and velocity response curves (to match the K1000 to other controllers—including three preset curves for the ubiquitous DX7). And get this: there's a software routine that measures the *ppp* and *fff* velocity levels from an external controller, and rescales the current curve to match!

There are *16* preset alternate tunings, including four Just tunings, Werkmeister, 1/5 and 1/4 Comma, Indian Raga, Arabic, three Bali Java variants (try these with the bell or vibes presets—what a gas!), Tibetan, Carlos Alpha, and two Pythagorean tunings; and an Intonation Table compiler, for creating your own tunings—you simply select a base key, then adjust each interval with the "Value" buttons; the display shows interval deviation in cents. There is even a *MIDI Reference Key* function that lets you change the base key in real time via MIDI note numbers 00-11 (C1-B1). While only a few controllers will send these normally out-of-range notes, this feature has the potential to make microtonality far more musically useful by allowing easy modulation and transposition.

Of course there are the usual Tune, Transpose, Set Basic Channel, and other features; and you can disable *Confirmation* mode, so it doesn't ask "Do You Want To: Y/N?" before every edit.

Programming involves monitoring a backlit LCD and pushing eight front panel buttons that select modes, menus, parameters, and values. The programming architecture is very logical, and the K1000 has a data entry slider, which the rackmounts haven't; but even so, each program has 170 parameters to access via the 2 × 16 character LCD, which is extraordinarily tedious. Thankfully, Kurzweil is coming out with *ObjectMover*,™ a voice-editing package for the Mac, and no doubt independent developers will follow suit with software for other computers.

Livin' in a Box

The K1000 series includes four rackmount sound modules: the 1000 PX Professional Expander (the rack version of the K1000 keyboard discussed in this review), 1000 SX String Expander, 1000 HX Horn Expander, and 1000 GX Guitar Expander.

The PX contains a selection of the K250's best-known sounds, sort of a "Kurzweil's Greatest Hits" (as described in the review). No doubt this box will appeal to a wide range of users.

The other modules concentrate exclusively on specific instrument families, as the names indicate. Why would anyone pay two thousand bucks for a box that makes only one kind of sound? Just this: the sound quality of these modules is superb, *and* they're multi-timbral. For studio owners, or independent artists/producers, freeing up a multi-megabuck Kurzweil, Fairlight, or Synclavier previously occupied with string, horn, or guitar sounds, for the price of a pro digital reverb, is a bargain. (Maybe the rest of us can save up for a K1000!)

I HEAR VOICES

The K1000 is *definitely* multi-timbral. You can assign a different program (including multi-layer programs) to each of the 16 MIDI channels, with separate volume, MIDI volume, and pan (these functions have priority over volume and pan at the layer level). Think about it. With 24 voices you can assign one to bass, *16* to piano, and four to strings, and still have three left over for choir or brass—if you stick to single-layer programs. The K1000 uses dynamic voice allocation; but you can set the maximum number of voices allowed per program or per channel.

Unfortunately, with only two audio outputs, individual processing for each timbre is severely restricted. Hard-panning programs left or right provides only two processing paths, and wastes the internal pan and autopan capabilities. And as you might expect, the more timbres I used together, the more I felt that some needed separate EQ, at least. Some form of simple two-band digital EQ, per program, could largely alleviate this, but none was implemented in the review unit. A retrofit to provide a separate output for each voice (or groups of voices) would be great.

MIDI

As a keyboard controller, the K1000's MIDI implementation is rather basic. It can transmit as a whole on any MIDI channel, but has no split/stack/zone capability (except for multi-layer *internal* programs), no Aftertouch, and can't transmit on more than one channel at once; however, you can program the mod wheel, footswitches, and data entry slider to transmit as whatever MIDI controllers you like (the mod wheel can serve as two). The Program Change maps are bi-directional; you can set the K1000 to send the source program when you select the destination program from the front panel.

Local control can be turned off, so you can play another synth from the K1000 while a sequencer or other controller plays the internal voices. I tried it as a controller with synths and modules from Yamaha, Roland, and Korg; the output velocity curve was compatible, and fairly easy to get used to.

The K1000 can receive in Omni-On Poly, Omni-Off Poly, or Mono mode. It recognizes every MIDI controller there is, including Polyphonic Aftertouch. A *MIDI Chain Link* function lets you link up to *12* units together, for greater polyphony (a 288-voice mega-Kurzweil!). You can send and receive program data between units via System Exclusive commands, and you can tell the unit to ignore All Notes Off commands. There's even a built-in MIDI data analyzer that identifies received data via the LCD!

SUMMING UP

In context, this axe is awesome. The sound quality is great. True, its selection of really good sounds is not all-encompassing, but piano, acoustic bass, strings, choir, vibes, brass, and clarinet cover a lot of traditional sonic ground—the meat and potatoes for most gigging musicians. With 24 voices, just add a sequencer and drum machine and you've got a veritable "Kurzweil Kombo." The K1000 also serves as a decent, though not fancy, controller; and 76 keys is probably enough for many

—continued on page 122

Now! A Single Channel BBE with Mic Level, Line Level and Phantom Power!

The clarity, definition, presence, texture and voice intelligibility for which BBE has become world renowned is now in a single channel format. For *all* microphone uses—from vocalists to instrumental soloists and lecturers to distributed sound systems, the BBE 401 will become indispensable.

High or low impedance mics and musical instruments can plug directly into the front or rear panel jacks. The BBE 401 has its own preamp with gain controls, can be used as a direct box and will accept – 10dBu line levels. 24 volts of phantom power are available from the low impedance mic output.

The BBE processors achieve time alignment of harmonic and fundamental frequencies that were present in the live performance but became reshuffled in the often convoluted paths of recording, playback and broadcast of audio.

The BBE 802

For use in broadcast, recording and large concert systems and industrial audio. Balanced and unbalanced lines +24 dBu headroom, hard wire bypass. The ultimate BBE for professional use.

The BBE 402

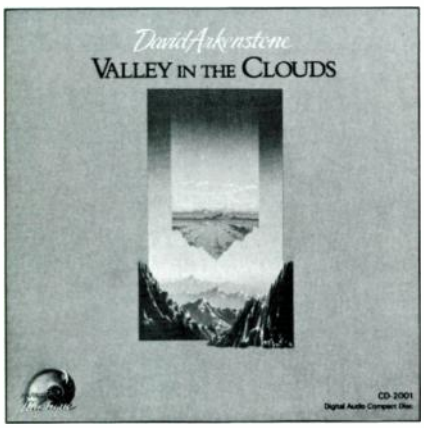
For use in home recording, clubs, discos, and systems using unbalanced lines. +14 dBu headroom –10 dBu levels. Home audio and cassette copies are greatly improved.

BBE™ 5500 Bolsa Ave., Suite 245, Huntington Beach, California 92649
714-897-6766 • 800-233-8346 (USA) • 800-558-3963 (CA)
(In Canada contact Daymen Audio, 3241 Kennedy Rd. #22 Scarborough, Ontario M1V2J9 or call 416-298-9644

BY ROBERT CARLBERG

The term "CD" used to refer to Civil Defense or Certificate of Deposit, but these days it's mainly used to mean compact discs, those 4.5-inch spiral galaxies of 1s and 0s that translate into unparalleled fidelity. The crown for compactness has since been passed down to the 3⅛-inch CD single, or "subcompact disc," with up to 18 minutes of music selling for only $3 to $4. They've been primarily used for radio station promotions, but Delos is in the middle of making available 50 mini-samplers from their all-digital classical, jazz, and blues catalog, and Rykodisc has recently released a three-song Zappa teaser from ***Hot Rats, Cruising with Ruben and the Jets,*** and ***Joe's Garage*** (more on that in a minute).

As I write this I'm in the middle of reading February's article on do-it-yourself CDs, so in honor this column will be devoted to some of the new releases (DIY or not) in this medium—which perhaps should be called a "maximum."



But first, an editorial. The ultimate fidelity of CDs poses some problems. What is an opportunity for the listener can be a challenge to the record companies, and may become a temptation to the artists.

For the listener, studio master-quality playback means the opportunity to quite possibly hear things never before audible, such as the temple blocks in the Beatles' "I Will." On low-volume details like Pink Floyd's sound effects or Emerson Lake & Palmer's fade-ins, no vinyl can match the CD's dead silent noise floor.

Record companies are challenged by this absolute fidelity because there is no longer a curtain of hiss, surface noise, and rumble to hide behind. Sloppy edits, missed fades, unnatural EQs, hums, buzzes, and distortion are suddenly front and center, glaringly obvious in digital's bright spotlight. The eightfold increase in dynamic range further challenges the record companies—although not all apparently feel the need—to go back to the original uncompressed, unequalized masters and give us exactly what the artist recorded. Sometimes this requires attempting to recreate the stereo mix from the raw multi-track masters, resulting in some interesting diversions from the original release (in the case of the Beatles, a mono mix "because there wasn't time"). Finally, the over 70-minute capacity of CDs challenges the record companies—and

very few seem to feel the pressure here—to release outtakes, singles, or consecutive albums on one disc. Whether through apathy, sloth, or simple greed, most CDs are direct reissues of existing albums—at up to three times the price.

Compact discs may present temptations to the artists involved: to hold out for higher royalties (Beatles), to resequence the albums (Paul Horn), or in the case of Frank Zappa, to completely remix the works based on his current tastes. The aforementioned *Hot Rats* has several mixing variances, including a newly flanged and double-tracked bass channel, nearly obscuring the virtuoso performance of Max Bennett. Zappa added all-new digitally recorded bass and drums to ***We're Only In It For The Money***, supposedly because the original tapes had deteriorated. On the plus side, the addition of 45 minutes of movie dialog to the soundtrack album of ***Uncle Meat*** makes the deal sweeter, though I would have put it at the end instead of the middle.

You can't blame Zappa for wanting to "clean up" his catalog. Artists will always want to do things differently 20 years down the road; if they didn't, they wouldn't have grown much as artists. But they ought to resist the temptation to fiddle with history.

There's an extremely fine line between "cleaning up" the sloppy fades and noise between tracks, and remixing the whole album. Whereas the new five-second pauses between tracks on ***Magical Mystery Tour*** are debatedly minor, I feel that Zappa is stepping over the line. If I'd received Ryko's sampler before buying *Hot Rats*, I probably wouldn't have bought it. It's simply not the same album I'd come to know and love.

Okay, enough editorializing.

An example of the way CD reissues should be handled is ***In Time*** (KIT 1) by Kit (Watkins) and Coco (Roussel). The album was originally released in 1985 on Watkin's own Azimuth Records, and has just been reissued on disc by East Side Digital, 200 N. 3rd Ave., Minneapolis, MN 55401 ($14 list). The sound quality is preceivably improved, which is amazing considering it was originally recorded in Kit's basement on a Tascam 38. Kit's synthesizers (DX7, Poly-61 and Poly-800) and Coco's percussion, both real and imagined (Linn, Simmons, DMX) are paragons to home recordists everywhere. The cover (and all of its information!) are reproduced in miniature, and three new tracks are tacked on to approach an hour's running time. Why does it take the little operators to show the big guys how it should be done? I can only hope that ESD will tackle Kit's group Happy The Man next...

Another disc that takes full advantage of the "maximum" is Michael William Gilbert's ***Point of Views*** (Gibex 004). It's his second self-issued CD, following and improving on 1986's ***The Light in the Clouds*** (Gibex 003). *Point of Views* is stronger musically, and uses extensive samples of "real" instruments for a more familiar feel than *Clouds*' atonality. Recording direct to digital, Michael achieves a tactile presence in everything from the sampled bass guitar to the breathy flutes and tinkly percussion. There's even a Zappaesque "Jazz from Heck." Distribution is being handled by JCOA/New Music Distribution, 500 Broadway, New York, NY 10012; write for a catalog.

Prism Entertainment, source of those awful symphonic renditions of music by ABBA, Queen, and the Beatles, has ventured into new age music with their New Horizons series. It consists of five CDs: ***Elegy*** by Gordon Giltrap (CD 101), ***Flying*** by Phil Thorton (CD 102), ***Prelude*** by Irene Hume (CD 103), ***Sunrise*** by Steve Parsons (CD 104), and a sampler of these four called ***Total Eclipse*** (CD 105). They range from surprisingly good (Thornton, Parsons) to surprisingly bad (Hume). Giltrap is in the middle, playing heavily reverberated acoustic guitar solos which bear little resemblance to his five elaborately accompanied previous albums. I like the Thornton disc the best. It's his second, after ***Cloud Sculpting*** (a minor new age hit for JCI last year). *Flying* gets a lot of mileage out of some unspecified sampler (it sounds expensive), reproducing big and small percussion, exotic instruments (shakuhachi, mandolin, pizzicato violin, and a pipa or samisen) as well as some first-class constructs. Thorton's devotion to Baumannesque sonorities makes *Flying* extraordinarily good. Hume is another matter, if only because vocalists who try to sound like synthesizers with their mouths rub me the wrong way. Guitarist/synthesist Steve Parsons, whose first solo ***Dreams of Gold*** was also on JCI, rounds out the collection with a carefully crafted aural adventure. It's a little more new age (read repetitive) than *Dreams of Gold*, but *Sun-*

NEWS FROM SOUTHWORTH

Simpty, Vitsy, or Emm Tee See

No matter whether you use a Macintosh, Atari, IBM PC or hardware sequencer, there's a JamBox™ for your MIDI synchronization needs. All Southworth JamBoxes read and generate SMPTE time code, send MIDI Time Code, and provide a tempo map for microsecond accuracy.

SMPTE Time Code is a synchronization standard adopted by the Society of Motion Picture and Television Engineers and the European Broadcasting Union (EBU). It was originally developed for video editing and is based on video or film frames as the basic unit of time measurement. Unlike FSK sync, with SMPTE you can position anywhere on the tape and read out the absolute time position accurate to within half a millisecond.

SMPTE time is specified in hours, minutes, seconds frames and bits. The number of frames in each second depends on the SMPTE "format" and may be either 24, 25, 30 or drop-frame (29.97). In the United States, 30 frames is the most commonly used format for audio and video. In Europe it is 25 frames. Film runs at 24 frames per second. Drop frame is a special format for color television in which the last two frames of each minute are "dropped" except on even multiples of ten minutes. Each SMPTE "bit" represents the actual resolution of the time code and is one eightieth of a frame. In actual practice it is more common to edit by hundredths of a frame.

To use SMPTE, you pre-record the SMPTE signal on a track of your audio tape. This is called striping the tape. You can then position anywhere on the tape and read out the SMPTE position while recording on another track. To stripe the tape with SMPTE as an audio signal and read the pre-recorded position you can use either a Southworth JamBox/4 or JamBox/2. This form of SMPTE is called "longitudinal time code".

An additional form of SMPTE is "vertical interval time code" (pronounced vitsy). This is a video only format in which the time code is stored in the video on each frame. The advantage of VITC is the ability to read back the position while the video tape is stationary. The Southworth Video JamBox reads and writes VITC as well as audio SMPTE and also can superimpose the SMPTE time over a video signal.

VITC lets you lock to video frames one at a time.

SMPTE provides an absolute time reference. This must be converted into beats to control a sequencer. The JamBox can record the position of the beats from an external drum machine, sequencer, or live performer. This "tempo map" can be used to synchronize any sequencer capable of accepting MIDI Song Pointer and an external clock.

Some sequencers such as Southworth MidiPaint™, and Mark of the Unicorn's Performer 2.0™, are capable of interpreting the SMPTE time directly for a much tighter lockup (SMPTE Direct Lock™). Other programs, such as Q-Sheet™ and Cue™, require MIDI Time Code, which encodes the SMPTE time as a message protocol within MIDI.

New JamBoxes

The JamBox/2 provides the Atari, IBM or hardware sequencer user with two-cable merging and all the JamBox/4 synchronization features, such as sync-to-click for locking to a click track or live performer, and full support of MIDI Time Code (MTC) and SMPTE Direct Lock. The JamBox/2 can save its tempo map directly to tape on the same track as the SMPTE stripe. In addition, the JamBox/2 provides push buttons for transparent operation with most sequencers. Push buttons let you adjust the SMPTE offset with hundredth frame precision while your sequencer and tape are playing.

The Video JamBox is a 19" rack-mount version of the JamBox/2 which also reads and writes vertical time code and provides a genlock frame and status display. Besides the convenience of seeing your frame numbers and metronome superimposed over your video and being able to read frames while the tape is stopped or jogged frame by frame, the Video JamBox is a must if your video tape is pre-striped with VITC, or you need to generate vertical time code.

One-Step™ Beyond

Southworth's newest sequencer, One-Step, brings a new level of operating simplicity to MIDI sequencing on the Apple Macintosh. The concept of One-Step is total graphic control of your MIDI editing. The MacPaint style editing pioneered in Total Music and MidiPaint has been extended far beyond anything available on any other sequencer.

You can graphically move notes, groups of notes, bar lines and SMPTE hits. Controllers, pitch bend and tempos can be painted in and graphically edited.

One-Step provides full color support for the Macintosh II and allows you to graphically edit multiple tracks simultaneously in different colors.

Full support of MIDI Files lets you transfer your sequences to and from other Macintosh music programs for specialized sequencing and notation. You can also use One-Step sequences directly from MidiPaint and Southworth's MidiStack™ for playing sequences from within HyperCard™.

For more information or the name of a dealer near you:

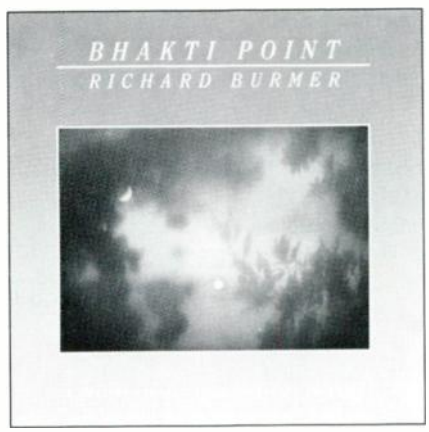
SOUTHWORTH MUSIC SYSTEMS INC.
91 Ann Lee Road, Harvard MA 01451
(617) 772-9471

The following are trademarks: Cue (Opcode Systems), Q-Sheet (Digidesign), Performer (Mark of the Unicorn), Macintosh, HyperCard (Apple Computer), JamBox, One-Step, SMPTE Direct Lock, MidiPaint, MidiStack (Southworth Music Systems).

rise's combination of digital synthesis with the trumpet of Guy Barker really rings my bell. As with Mark Isham and Billy Smiley, the partnership of pure clear horn with diffused digital synthesis seems to bring out the best in both.

Higher Octave Music has also entered the new age arena, battling to the death for consumer dollars with Peter Davison's ***Winds of Space*** (HOMCD7001) and William Aura's ***Half Moon Bay*** (HOMCD7002). Davison's six previous LPs were Buchla synthesizer and flute, but *Winds of Space* finds him reaching for a saxophone and a more contemporary keyboard as well. Unfortunately, after the first couple of tracks, he falls into a Kitaroish string-synthesizer rut, becoming kind of snooze age by the end of the hour. Aura's *Half Moon Bay* is a much better album, and I'm not saying that just because I wrote the liner notes. It's also pretty firmly in the crystals and healing vibrations realm, but William did use an Ensoniq and digital drumbox for some real sonic variety. Considering his previous eight albums were totally blissed-out it's a remarkable advance for him, closer to *Flying* than snoozing.

Narada has consistently put out some of the snappiest new acoustic music, and entered the electronic age with their Narada/Equinox releases ***Indian Summer*** by Friedemann and ***Natural States*** by David Lanz and Paul Speer (reviewed last October). Much in a similar vein is David Arkenstone's ***Valley in the Clouds*** on the related Narada/Mystique label (CD-2001). Playing Mirage, Emulator,



DX-TX and Memorymoog as well as piano, guitar, and fretless bass, Arkenstone and percussionist Daniel Chase create another monument in the growing catalog of great digital synthesis/live percussion coalitions. (I didn't write the liner notes, but EM's editor-in-chief is listed as the mixdown/technical consultant.)

Finally, my favorite CD of the recent arrivals has got to be ***Bhakti Point*** by Richard Burmer (Fortuna 17047-2), even though modesty prevents me from mentioning who wrote the liner notes. I went kind of ga-ga for Burmer's first album, ***Mosaic***, back in 1985, so it was with eager anticipation that I tore into the long-awaited follow-up. Can two years of suspense end in anything but disappointment? My skepticism melted with the first track. The chords of Eno, the percussion of Gabriel, and the production of Baumann—Burmer has it all. It's exactly what I'd like to record if I had the skill and talent. Is there any higher praise than that?

And it's all captured forever (well, at least until the disc's polymers give up the ghost) in glorious digital sound. Who needs Civil Defense or Certificates of Deposit? I have an unparalleled spiral galaxy in my compact disc.

Please send as much music as you possibly can as soon as you can to Robert Carlberg, PO Box 16211, Seattle, WA 98116, where it will lay in a pile of dust waiting for a free weekend. Opinions expressed herein are probably not shared by any other living being.

THE IBM MUSIC FEATURE

The revolutionary "all in one" MIDI studio from IBM

WE'VE GOT IT! $495

Description: Full-length music option card with 8-voice multi-timbral polyphony and MIDI converter box providing MIDI In/Out/Thru.

Features: Yamaha FB-01 sounds and functions, 240 preset voices, 96 user-programmable voices, RCA stereo outs, independent microprocessor, MIDI interpreter for data stream, digital-to-analog converter for output, miniature headphone jack and audio preamp to drive headphones.

NOTE: Using two Music Feature cards doubles the above capacities.

Hardware: IBM PC, XT, AT, PS/2 Models 25 & 30

MIX BOOKSHELF*
6400 Hollis St. #12
Emeryville, CA 94608
(415) 653-3307, TOLL FREE (800) 233-9604

***MIX BOOKSHELF** is an Imagine Computers & Software authorized limited sales agent for IBM music-related products.

EM Classifieds

ELECTRONIC MUSICIAN CLASSIFIED ADS

Electronic Musician Classified Ads are the easiest and most economical means to reach a buyer for your product or service. See page 121 for complete information on price and deadlines.

EMPLOYMENT OFFERED

New York-based publishing company is now looking for finished high-quality masters of instrumental material (**all styles**) for use on **national network and syndicated television programs.** All music must be copyrighted. For further info call (516) 367-8728.

ALIEN PLANETSCAPES reforming, Spacerock musicians into: Hawkwind, Gong, Sun Ra. Needed: Gtr, Bs, Dms, E-Sax. Rehearse in Brooklyn, NY. Call (718) 965-0841. Own equipment & transportation. Serious only, Space Out!

EQUIPMENT FOR SALE

New, Used, Demo Equipment Roland, Yamaha, Soundcraft, J.L. Cooper, Tascam, Southworth, Mark Of The Unicorn, Fostex, Otari, Trident, TAC, JVC, T.C. Electronic. Full SMPTE/MIDI multi-track and scoring packages. Buy and sell used equipment. **E.A.R. Professional Audio/Video (602) 267-0600.**

We want your MIDI synth or well maintained recording equipment. We'll give you **cash** or take it in on trade. Do it all through the mail. Call or write for prices and details. **Caruso Music,** 20 Bank St., New London, CT 06320, (203) 442-9600.

Emulator II, CD ROM & Vol 1, Iotsa disks, Sound Designer $5,900. **3M model 56 16-track** remote with 8-track stack $6,500 FOB cont. USA. Ampex 8-track 440B remote, clean $3,500. (317) 783-2960-Jack.

Yamaha SK50D two manual string/solo synthesizer/organ with bass pedals $2K OBO (818) 339-2516. John, Covina, CA.

Wray Music: supplying the music world with all the biggest brand names since 1955. Free shipping, advice and after the sale support. Call or write. Wray Music & Pro Sound Center, 370 Market St., Lemoyne, PA, (717) 761-8222.

Buchla-400, Hyperdrive 20-Meg hard disc for Mac, Prophet-600, SixTrax, Axxess Mapper, JL Cooper, Channel-Filter, Channelizer, Blender. (212) 645-6319.

Fairlight Series Ix w/SMPTE MIDI interface and complete sound library $7,500. (818) 996-6770.

Fostex A8-LR; TEAC patch cables; patch bays. Excellent condition. $1,200 OBO. John (203) 872-9210. Evenings, weekends. EST.

360 Systems Digital Keyboard—Kurzweil-type instrument: $1,495. **Tascam** MM-20 mixer: $200. **Fender Rhodes** Stage Piano: $495. **Oberheim** OBxa synth, DMX drum machine and DSX sequencer system complete: $1,995. (214) 750—7476.

Yamaha TX416 MIDI rack—studio use only. $1,900. (716) 691-7219.

Yamaha QX5 sequencer $325, MDF1 w/40 discs $175, Ultimate Support double keyboard stand $75. (814) 425-8200.

Drum triggers—only $10 each. Turn practice pads into electronic drums! Trigger electronic sounds from acoustic drums. Small, high-output disc attaches easily. Compatible with your pad-to-MIDI converter/sound module or money back. MK Recording, Box 143, Mequon, WI, 53092.

Recording, in-home studio, Fostex B-16, Ramsa WR-T 820 console Lexicon, Roland, Rocktron, dbx, many extras. (813) 868-7508.

We're out of room! Incredible once in lifetime deals on excess demo studio equipment! Do it yourselfers: huge list of electronic parts! Send SASE for list. Blacet Research, 18405 Old Monte Rio Rd., Guerneville, CA 95446.

PARTS & ACCESSORIES

POLY-800 owners: replacement ROM adds voice/sequencer bulk dump/restore (like POLY-800 II), fixes bugs. For info write: R.E. Haas, PO Box 1455, Tualatin, OR 97062.

MIDI accessories/parts—free catalog. **Inno-Cept** PO Box 277, Jacksonville, OR 97530.

PUBLICATIONS & BOOKS

The Sequencer Previewer... newsletter highlighting **your** sequences. Send **SASE** for "Previewer" news brief. **TSP,** PO Box 720635, Orlando, FL 32872.

RECORDING SERVICES

Attn: all original bands seeking production. We work individual tech. and appearance; overall band sound and presence. We'll prepare you for stage show and DD complete multi-track production. Call for more info. (201) 835-2991.

Real-Time Cassettes—super fidelity duplicated on Nakamichi decks from your master. Dolby A, dbx, PCM masters OK. Album length $1.50 ea./100 in shape shells. Promote yourself or sell your music with limited investment. Grenadier, 10 Parkwood Ave., Rochester, NY 14620. (716) 442-6209 evenings.

A. SOUNDMAN audio services. Audio consultation and recording. Sound advice for all your audio needs. (408) 426-9085.

RECORDS, TAPES & CDs

Hear all the MIDI music you've imagined...on compact disc Periodic Music is a CD forum for new and interesting developments in electronic music. MIDI ensembles, algorithmic composition, alternate tunings and digital orchestras are just some of the ideas we'll be featuring. Ask for us at your favorite CD shop or write for free catalog to PERIODIC MUSIC, 271 Madison Ave. Suite 908 New York, NY 10016.

SOFTWARE & PATCHES

MidWest MIDI Consultants, Inc. specializes in MIDI computer applications. We sell all the major software so you can pick the programs that will meet your needs and expectations! **MidWest MIDI Consultants, Inc.,** POB 30995, Midwest City, OK, 73110, (405) 736-6676, **MIDI BBS (405) 733-3102.**

Public domain MIDI programs and patches for **IBM PC** and **Atari ST.** $6.00 per disk. Send $2.50 for the catalogue disk, to: IEMUG, POB 30995, Midwest City, OK, 73140. **MIDI BBS** (405) 733-3102.

Sequenced hit songs for Sequencer Plus (IBM). All parts. SASE information/song list. Tran, PO Box 1061, Hollywood, CA 90068.

TX-81Z, DX-9, DW-8000, DX-21/27/100 patches: TX-81Z 256 super FM voices expertly programmed for the TX-81Z/includes perf & efx; on cassette $24.95; **DX-9** data tape with 180 FM voices $24.95; **DX-21/27/100** data tape 192 FM voices $24.95; **DW-8000** mega-library data cassette with 1,280 voices (20 banks) $49.95. Send for yours today! Precision Synthi-Data, Box 433-EM, Grand Island, NY 14072-0433.

Roland D-50: 64 new **Solid Sounds** patches. Incredible brass, strings, percussion, plucked, more. Data sheets/your RAM $30.00. RAM card $130.00. Demo cassette $5.00. **Xpander/Matrix-12** volumes one and two. Great reviews by *Keyboard* and *User's Group.* Tap the power! 100 patches per volume on cassette. Specify volume $30.00. Both $50.00. Solid Sounds, 7207 45th St., Chevy Chase, MD 20815.

MC500 users group. Trade songs/patches/info. Over 250 members. Contact Parker Adams, 9 a.m.-12 M-F (213) 459-0160.

8000 DX7, TX7 and DX7IIFD Voices. Organized by categories, no duplicates. Available on DX7IIFD disks, TX7 data cassette, Opcode Macintosh format (indicate 400K or 800K drives). Also the following Commodore 64 formats: Valhala, Syntech, Passport, Sonus or Dr. T. Only $50 for all voices, specify format. All USA orders paid by U.S. postal money order shipped the same day received! Alaska, Hawaii and Canada send $55. Canadian orders by Canadian postal money order in USA funds only. Music Direct, Inc. PO Box 266-D, Hazel Park, MI 48030.

Attention: SQ-80 owners! Introducing "SOUND BANK." 1,000+ plus voices on disk. Fred's Music Shop, 212 W. Lancaster Ave., Dept. EM, Shillington, PA 19607. Phone orders (215) 777-FRED (3733).

Mirage International User's Group. Join the largest, fastest growing club in the world. Receive monthly lists of quality user samples. Correspond with members. Special discounts!!! One-year membership, $20 (1 free disk) outside U.S. $30. Lifetime membership $65 (2 free

EM Classifieds

SOFTWARE & PATCHES

disks) outside U.S. $75. Checks or M.O. payable to: G-4 Productions, M.U.G. Dept. EM, 622 Odell Ave., Yonkers, NY 10710.

MUSIC SOFTWARE CATALOG Just published! Our new **Musician's Music Software Catalog** and it's better than ever! Over 80 pages of detailed information on the leading MIDI software programs, interfaces and accessories—everything for the modern musician. Send $3 for a 2-year catalog subscription including updates. Digital Arts & Technologies, Dept. ELM1, PO Box 11, Milford, CT 06460, (203) 874-9080.

CZ Super Casio Programs: three different 64-voice RAM cartridges loaded with the most incredible collection of studio quality, analog, digital and emulative voices. Rated "5 Stars" in **EM, endorsed by Casio Inc.!!** Simply the best CZ sounds available anywhere! RAM #1, #2, #3; $69.95 each. Call or write for more information. Synthetic Productions, 545 West End Ave., Box 14B, New York, NY 10024, (212) 787-3544.

MIDI sequencing software for **IBM-PC** and compatibles...introducing **Tape 'n Step**, a full function sequencer and composer. MPU-401 format. Completely professional in features; the price/performance leader at $150. Demo available, write for specifications. Authorized distributor: **Silver City Midi**, PO Box 173-E, Middlefield, CT 06455.

New: **TX81Z** and **FB-01 Editors** for C-64/128 features full voice and performance editing with graphic envelope editing, only $75 each. Jack Deckard's full-featured **FB-01** Editor for the **Amiga** only $90. The only **MIDI Arpeggiator** available, with real-time control and full MIDI sync, only $40! Write or call for details or include $2.50 P/H **Triangle Audio**, PO Box 1108, Sterling, VA 22170, (703) 437-5162.

ESQ—Q-SPECTRUM—The Professional ESQ/SQ library against which all others are measured! Critics rave: "Innovative...Impressively huge and lush...Extremely useful sounds!"—(**Keyboard** review Jan/88). "Ultimate recommendation!"—(Transoniq Hacker review). Two 80-voice "volumes," both complete assortments of sizzling hot acoustic and synthetic sounds: pianos, Hammonds, DX7s, analogs, **real** drums, basses, strings, percussion...160-sound cartridge: ROM $79.95—RAM($E^2$) $129.95! 80-sounds (Volume 1 or 2)—Cartridge: ROM $44.50—RAM($E^2$) $69.95-Cassette $29.95. **Blank E^2** cartridges! 80-voice $44.95—160-voice $94.95! Z-Spectrum—Ultimate Casio CZ Club/Top 40 sounds! Lithium 64-RAM cartridge: $49.99! 64 superb **Poly/EX800**(mk I) sounds: $14.95! Send check/money order, call for COD! Shipping $2.50 (foreign $4.50). Demo tapes $5.50 (ppd., refundable) to: **Patch/Works** Music Software, PO Box 450, Dept. EM, New York, NY 10024 (212) 873-2390.

D-50 sounds by Cesium! Do yourself a favor. You're going to hear about these sounds eventually anyway. We have two hot volumes on ROM cards for $50 each, or RAMs for $90 each. Add $2 shipping, CA residents add 7% tax. Sound list $1 Cesium Sound, 1640 Walnut St. #C, Berkeley, CA 94709, (415) 548-6193.

JUKEBOX MIDI BBS—Free access to 1,000+ MIDI programs/patches. Call 24 hours. 1200/300 (203) 283-6352.

TOP-40 MIDI SEQUENCES Complete arrangements $20 each IBM/MAC formats 100+ songs (203) 283-6104 after 6 p.m. EST or data (203) 283-6352.

TX81Z sounds by Cesium! We have 160 sounds for $125. All are useful. You can't go wrong with sounds by Cesium. Free listing. Cesium Sound, 1640 Walnut St. #C, Berkeley, CA 94709, (415) 548-6193.

Famous ESQ-1 sounds by Cesium! Our sounds are great. You don't have to take our word for it. We have the testimonials to prove it. 640 sounds for $95 on cassette, Mirage disk, ESQ-upade, Opcode, Blank librarians. ROMs and RAMs also available. Write or call: Cesium Sound, 1640 Walnut St. #C, Berkeley, CA 94709. (415) 548-6193.

SQ-80 Owners! Our famous ESQ-1 library is available adjusted for SQ-80 for $95 on diskette. We also have two new volumes for $25. Cesium Sound, 1640 Walnut St. #C, Berkeley, CA 94709 (415) 548-6193.

ANNOUNCING: **Music Design's** new users' group **Newsletter** designed to provide useful tips, articles and features alongside product descriptions from our complete catalog of innovative MIDI software, samples and patch libraries (including many items new for 1988!). Subscriptions are FREE. Please include a list of your MIDI equipment. **Music Design**, Box 28001, Crystal, MN 55428. (612) 537-5457—**Software you'll use everyday!**

Compaq portable III model 20 compatible w/MPU interface, new sequencer & librarian software. 203/283-0748 or 203/283-6352 (BBS).

Public domain MIDI software for **C-64, CZ** patch editor, librarian w/**200+** patches! MIDI terminal, sequencer, monitor & MORE! Debugged, documented, any interface, menu driven! $5 covers cost per disk. **Inno-Cept** PO Box 277, Jacksonville, OR 97530.

ALGY—MIDI, algorithmic controller for the Commodore 64. $20 prepaid only. Don Malone, 21806 River Road, Marengo, IL 60154.

C-64 software: **Roland JX-8P** editor/archiver/randomizer—includes 5 banks of new sounds (2,656 sounds per diskette). **SCI Drumtraks** editor/archiver—includes 1 set of standard patterns (11 banks per diskette). **$49.95** each (plus $2 s/h). DataCat Musicware, PO Box 740264, Dallas, TX 75374-0264, (214) 341-8752.

TIRED OF COPY PROTECTION?

If more musicians would buy, not copy, their favorite software programs, then programmers wouldn't need to resort to copy protection to get paid for their efforts. Many software developers spend years creating a program to help you create better music—just because you don't personally know the programmers isn't any reason to steal the program by copying it.

By paying for your programs, you are allowing software companies to develop new, better programs. If you don't want copy-protection, don't let your friends steal the programs by copying them.

Honest People Don't Copy Software.

Amiga MIDI Synergy I Super C and Assembly written MIDI sequencer and recorder. Mouse controlled modulation, pitch, tempo, and transpose. **OpCode MIDI File Format** load, save, and IFF-SMUS conversion. Full source code included for MANX users. This is an Amiga programmer's dream brought to you by the programmers of the **MindLight**. Only $37, includes color space art. Geodesic Publications, PO Box 956068, Duluth, GA 30136 (404) 822-0566. MindLights (707) 822-4800.

First Time in USA! All New Sounds on ROM, disk and cards for **Korg DDD-1, DP-2000/3000, Roland D-50, Yamaha DX-7** (1,024 Sounds on ONE MEGA-ROM!) & **DX-7IIFD** disk. StudioSamples for: **Roland S-50, Korg DSS, Akai S900, Oberheim DP-X1**. Call or write for FREE catalog or send $5 for StudioSamples demo cassette to: COMM SCI CORP, 24355 Dry Canyon Cold Creek Rd. Calabasas, CA 91302. (818) 999-1040.

KORG DSS-1 digital sounds and samples. New and totally unique. $16.50 each disk, $40 for 3. Make check to M. Brainard, at **Musique Concrete**, 110 Termino Avenue Suite 104, Long Beach, CA 90803-2882.

Amiga Librarian/Editor for the **Casio CZ100/1000.** Mouse driven. No more "What patch number?" questions. Edit and send blocks. Play simple sequences from the computer to hear patches. Print out block and patch data. $35 postpaid. CRB Productions, 15 Norton St., Nashua, NH 03060.

1,500 SAMPLES! Vol. I: 1,000 musically oriented multi-samples: strings, choirs, D-50, DX7II, Matrix, & more, $19.95! **Vol. II:** 500 drum and percussion sounds, $17.95! All on quality Maxell cassettes. Specify Dolby or dbx. ($2.50 p/h on each cassette) **Triple S Productions**, PO Box 121465, Nashville, TN, 37212-1465.

MISCELLANEOUS

S-Tech is now offering 20 seconds of memory and audio sampling for the **Lexicon PCM-42.** Modifications available for other Lexicon products upon request. Call (617) 641-1175 or write S-Tech Electronics, 23 Wellington St., Arlington, MA 02174.

PUT EM CLASSIFIEDS TO WORK FOR YOU!

Over 75,000 issues of EM are distributed every month to reach the right buyer for your products!

Pricing: **$1.40 per word; add $0.50 per bold word. Phone # = 1 word; address (any length) = 3 words.**
$40 MINIMUM CHARGE for each ad placed.

Special Saver rate: $20 for up to 15 words plus phone #, includes first word bold; only available to individuals, not commercial; no additional copy allowable for this rate.

Payment must be included with copy; check, Visa, MC or Amex accepted. Sorry, no billing or credit available. No agency, frequency or other discounts apply.

Closing: 1st of the month, two months preceding the cover date (for example: the April issue closing is February 1). Ads received after closing will be held for next month unless otherwise stated.

Other requirements: full street address (no PO Boxes) plus phone number must accompany all requests, whether included in ad or not. All words to be bold should be underlined. Copy must be typed or printed legibly; publishers not responsible for errors due to poor copy.

The small print: only ads dealing with music, computers or electronics will be accepted. No stated or implied discounts allowed on new equipment sales. Publisher reserves the right to refuse any ad deemed not appropriate.

Send all ads to:
Lauri Newman
Electronic Musician Classifieds
6400 Hollis St. #12
Emeryville, CA 94608
(415) 653-3307

SEND THIS COUPON TODAY FOR YOUR EM CLASSIFIED AD!

Insert this ad in the _____ **issue of EM.**

Categories available (check one):

☐ Employment	☐ Instruction & Schools
☐ Equipment for Sale	☐ Parts & Accessories
☐ Wanted to Buy	☐ Software & Patches
☐ Records, Tapes & CDs	☐ Publications & Books
☐ Recording Services	☐ Miscellaneous

Please attach your classified ad copy on a separate sheet, typed double-spaced or printed clearly in CAPITAL and lower case letters.

Cost: _____ **words @ $1.40 =** _____
_____ **bold @ $0.50 additional =** _____
_____ **Special Saver rate = $20**
Total payment included _____

☐ **Visa** ☐ **MasterCard** ☐ **American Express**
Card # _____ **Expiration Date** _____

Signature _____
☐ **Check or Money Order #** _____
Company Name _____
Name _____
Address (no PO Boxes) _____
City _____ **State** _____ **Zip** _____
Phone ( ) _____

Need More Control Over Your MIDI?

Computer Music Systems
MIDI Software & Interfaces
Full Training
Customer Support

Systems for Recording • A/V Editing • Education • Scoring • Synthesizers • Guitars

MIDI ECH
"LET THE MUSIC PLAY!"

312-949-6744

Specializing in Amstrad IBM Compatibles

—from page 115, KURZWEIL

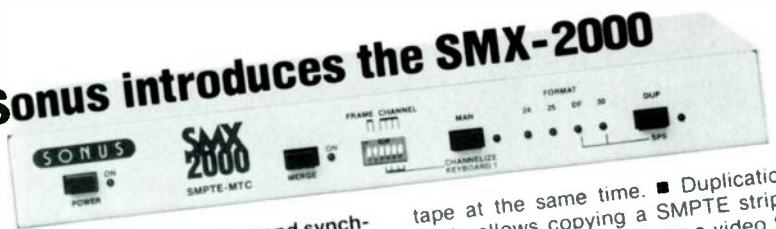
applications. What's more, this instrument is in the price range of most sampled grands (yet probably "out-pianos" some of them), and includes a good keyboard. Moreover, after spending several days with the K1000, I felt that I'd barely scratched the surface of its synthesis capability.

Quibbles? I wish they'd add a good Rhodes multi-sample, even if it meant losing one of the resident instruments (perhaps the Vibes; many players seem to be happy with vibes sounds from synths). And a separate-output mod would be great (failing that, a software update with digital EQ). Regarding the pitch and mod wheels: in a word, yuk.

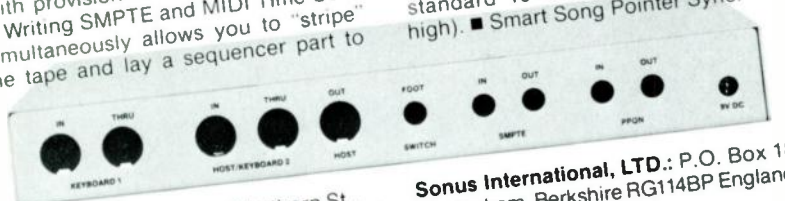
But if you've dreamed of having that "Kurzweil Sound," stop dreaming. Whip out your credit card, sell your furniture, even hock your car, but check it out. EM

Alan Gary Campbell is owner of Musitech,™ a consulting firm specializing in electronic music product design, service, and modification.

Sonus introduces the SMX-2000



The SMX-2000 MIDI merger and synchronization device has multiple operation modes enabling a wide range of synchronization features for both SMPTE to MIDI Time Code and Smart Song Pointer Sync. Reading and writing all SMPTE formats, the SMX-2000 incorporates the latest in SMPTE to MTC syncing. ■ Read and write SMPTE in 24, 25, 30 and drop-frame formats. ■ Converts SMPTE Time Code to MIDI Time Code. ■ MIDI System Exclusive protocol to remotely Start/ Stop SMPTE writing with provision for offset and user bits. ■ Writing SMPTE and MIDI Time Code simultaneously allows you to "stripe" the tape and lay a sequencer part to tape at the same time. ■ Duplication mode allows copying a SMPTE stripe from a master tape such as a video to another tape, or from one track to another on audio tape. LED indicators show if bad or unreliable data is encountered. ■ Writes and Reads PPQN click tracks and converts PPQN click tracks to MIDI timing bytes. ■ Merge Mode allows you to sync sequencer playback to the tape and to record a live synth part into the sequencer at the same time, or to act as a full two input/ one output merge box. ■ Stand-alone unit or capable of being mounted in a standard 19 inch rack (1 'rack unit' high). ■ Smart Song Pointer Sync.



Sonus Corporation: 21430 Strathern St., Suite H, Canoga Park,CA 91304 USA
(818) 702-0992 ■ Telex: 650-297-9928
FAX: (818) 704-0638

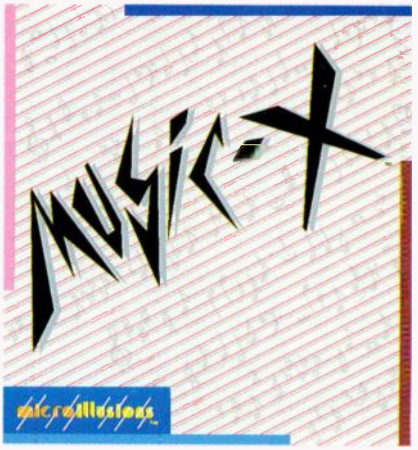
Sonus International, LTD.: P.O. Box 18 Wokingham, Berkshire RG114BP England
44 0734 792699

SONUS

Advertiser Index

ADVERTISER	PAGE
Adams-Smith	101
Akai/I.M.C.	27
Alesis Studio Electronics	30, 31
Altech Systems	9
Aphex Systems	61
Apple Computer, Inc.	28-29
Sam Ash Music	103
Astra Systems, Inc.	79
Atari Corporation	10-11
Barcus-Berry Electronics (BBE)	115
Beaverton Digital Systems	66
Biamp Systems	107
Clarity Cassette Duplication	96
CodeDisc	43
CompuSound	81
J.L. Cooper Electronics	37
Creative Micro Designs, Inc.	108
Deep Magic Music	98
Digidesign	7
Dr. T's Music Software	57
Electro-Voice, Inc.	12
Ensoniq	50-51
Eye & I Productions, Inc.	60
48 Track PC	90
Fostex Corporation	54
Four Designs Company	49
Future Music	60
Gotcha Covered	59
Guitar Shack	108
H.B. Imaging, Inc.	65
Intelligent Music	47
Invisible Products	43
Iota Systems, Inc.	90
JBL Professional	124
Kaleidasund	17
Kawai	92-93
The Keyboard Shop	98
Korg	2-3
LD Systems	103
Leigh's Computers	66
LT Sound	68
Manny's Music	99
Mellotron Digital Corporation	113
Micro Illusions	123
Micro Music	82
MidiTech	122
Mix Bookshelf	45, 118
Music Quest, Inc.	97
Musication	49
New York School of Synthesis	96
Otari Corporation	18
Passport Designs	35
Prosonus	109, 111
Reliable Music	37
Resonate	114
Rhythm City	63
RolandCorp US	4, 95
RPmicro	106
Sonus	39, 122
Sound Quest	25
Soundware Corporation	105
Southworth Music Systems, Inc.	21, 117
Steinberg/Jones	41
Synthetic Productions	112
System Design Associates, Inc.	99
T.G. Data	68
TASCAM	91
Temporal Acuity Products, Inc.	63
Thoroughbred Music	77
360 Systems	69
Twelve Tone Systems	89
Ultimate Support Systems	67
Valhala	84-85
Voyetra Technologies	23
Wise Music	89
World Records	40
Yamaha Music Corporation, USA, Digital Musical Instrument Division	15, 74
Yamaha Music Corporation, Professional Audio Division	52-53
Zero One Research	112

MUSIC-X™



MUSIC X SOFTWARE, *like a fine instrument is crafted from the heart. It is more than an excellent tool, it is also a work of art.*

COMMITMENT: *We have committed ourselves to pushing ahead state of the art in professional music software, enabling you to open new worlds of creativity at a cost, both in hardware and software, that is well within the budget of any serious musician.*

NO COMPROMISES *or shortcuts have been tolerated as we designed this product. The master clock is accurate to 1 millisecond with a resolution of 192 clocks per quarter note. Sequences and library data can be any length, limited only by available memory — if you want, you can dump a 100K or larger sample into a library entry!*

KEYBOARD MAPPING *features allow almost any function of the sequencer to be controlled from a MIDI keyboard, footpedal, or other MIDI device. This includes starting/stopping the sequencer, initiating sequences, and even changing the key map itself!*

REAL TIME: *The system supports real-time recording of systems exclusive data, as well as full graphic-oriented and event-oriented editing of sequences. You can even record while in edit mode and watch notes appear on your edit display as you play them!*

LIBRARIAN: *A configurable librarian is included with the program. You can teach the librarian how to communicate with any MIDI instrument which outputs system exclusive data.*

EDITING: *An impressive battery of editing features will be supported. In fact, new editing features are being added daily as we interact with our network of working, professional musicians whose input has greatly contributed to the quality of this program.*

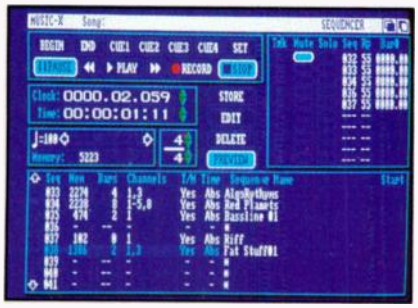
COMMITMENT: *Our commitment to music production does not stop here. A future product, Patch Editor Construction Kit, will allow you to create graphical patch editors for virtually any synthesizer you may own. Some technical knowledge will be required, but since patch editors, once created, can be traded between users, you should have no problem getting an editor for your needs.*

THE POWER: *Part of the power of Music-X comes from the computer it was created for: The Amiga, one of the most powerful and inexpensive personal computers available. At last you can run these many powerful applications in an environment that is a pleasure rather than a chore to use!*

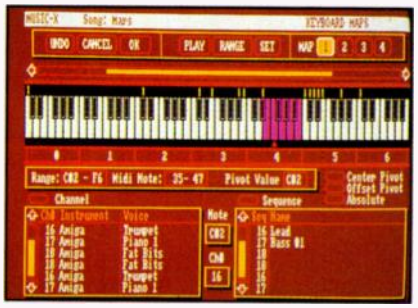
MICRO MIDI: *Although Music-X will work with any of the many MIDI interfaces for the Amiga, we offer our own MIDI interface which we feel is a cut above. It features six outputs (each output switchable as OUT, THRU or OFF), two switch-selectable inputs, a channel loading indicator, and an external clock output (sync/start stop) for synchronizing older, non-MIDI drum machines, and a serial pass-thru!*

MICRO SMPTE: *This complete SMPTE Reader will allow Music-X to synchronize with video or audio tape decks. It connects to the Amiga parallel interface and includes a pass-thru so as not to interfere with printer operation. Our Micro SMPTE is compatible with all Amiga models (A500/A1000/A2000).*

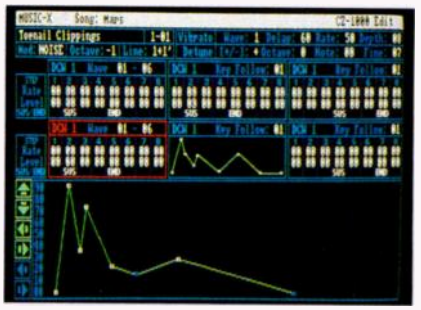
PHOTON VIDEO: *Photon Video is a complete, integrated video animation system. It includes facilities for both 2-D and 3-D animation, as well as automatic tape transport control and real time playback of rendered images. Our 3-D rendering module supports variable light sources, shadows, transparency, and reflections in a 3-D environment. Other modules include Cel Animator, Object Editor and Transport Controller with SMPTE support.*



SEQUENCER PAGE: *Tape transport-type controls allow manipulation of up to 250 sequences; each contain 16 MIDI channels worth of data.*



KEYMAP EDITOR PAGE: *Create keymaps by dragging the mouse over a selected area of the keyboard. The highlighted region can then be redefined in terms of real-time behavior.*



PATCH EDITOR: *A sample patch editor (CZ-1000) of the type that will be included with the product.*

COMMODORE AMIGA™

microillusions™

17408 Chatsworth St., Granada Hills, CA 91344
Inside CA 818/360-3715 •
Outside CA 800/522-2041
FAX 818/360-1464

Commodore is a registered trademark of Commodore Electronics, Ltd., Amiga is a registered trademark of Commodore-Amiga, Inc., and the Commodore-Amiga logo is a trademark of Commodore-Amiga, Inc.


DON'T JUST
TAKE THE STAGE.
OWN IT.
Whether you're playing for 20 people or 20,000, you have to control every aspect of your sound. JBL's new Performance Series is a complete line of speaker systems that incorporate the same unique technology that has made us the dominant force in international tour sound. They let you rock louder, longer, and with more versatility than any other stage speakers in their class.
There's a Performance Series system for every stage need: monitor, vocal and instrument reinforcement, even a high-frequency power pack for custom loading.
JBL's new Performance Series. They're the perfect speakers for the next important stage in your career . . . the one you command tonight. Hear them perform at your local JBL dealer today.
JBL
JBL Professional
8500 Balboa Blvd.
Northridge, CA 91329
THE NEW PERFORMANCE SERIES BY JBL.