April 1990

COMPUTE!

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HIT IT, MAESTRO!

JOEY LATIMER

THE LATEST SOUND HARDWARE WILL HAVE YOUR PC SINGING

Speed, memory, storage, and graphics have for some years overshadowed the potential that good-quality sound offers to PC software applications. The built-in sound capabilities of most PCs consists of a tiny speaker and a tone generator that produces one note at a time. MS-DOS machines sound tinny; their musical arrangements are confined to a melody. PC owners haven't enjoyed the added dimension that sound brings to software programs. Nowhere is this more apparent than in entertainment and educational software—just how realistic is a flight simulator if the jet "beeps" down the runway?

Fortunately, circumstances have changed. Software companies are looking for sound hardware to make their sophisticated new products sound more realistic on PCs, and hardware manufacturers are popping up with fresh alternatives. Cooperation between hardware and software companies has resulted in several unique and effective solutions that many software developers are including as options in their programs. Foremost among these solutions are add-on sound boards, such as the Ad Lib, Game Blaster, Sound Blaster, Sound Master PC, and Roland MT-32.

Each board offers its own answer to the PC sound dilemma. Choosing from among them is mostly a matter of personal preferences and economics. So, whether you're an audiophile or a transistor radio buff, if you're a game player, a multimedia maven, or a music composer, this overview of the basic features, costs, pros, and cons of the major players in the PC-sound marketplace will have you singing.▷

Ad Lib Personal Computer Music System

The main component of the Ad Lib PCMS is the Ad Lib Music Synthesizer Card, a half-size FM synthesizer card designed for IBM PCs and compatibles. The Ad Lib card can play up to nine different melodic instruments or six melodic and five percussion instruments separately or simultaneously. For audio output, the card features a ¼-inch audio output jack, an amplifier capable of driving a small speaker, and a built-in volume control. The jack (along with the ⅛-inch miniplug adapter) can be connected to headphones, a speaker, or an external stereo system.

In addition to the synthesizer card, the Ad Lib PCMS includes software for composing and playing music. *The Visual Composer* ($89.95) lets you write, listen to, and modify musical compositions without a great deal of music

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knowledge. With the Jukebox program, you can select songs for your computer to play. With yet another Ad Lib program, *Instrument Maker* ($49.95), you can design and edit instrument sounds for use with *The Visual Composer.*

I had no trouble installing the synthesizer card in my PC XT clone and hooking it up to the auxiliary jacks on my stereo. Firing up *The Visual Composer* first, I experimented using the 145 preprogrammed sounds, which include keyboards, strings, horns, and percussion instruments. I loaded *Instrument*

Maker next and experimented by changing various waveform parameters, modifying some of the old instrument sounds to create new ones. All of the instruments sounded a bit electronic to my ears, but most of them are recognizable and, when arranged together, produce as rich an ensemble as sampled instrument sounds.

To get a different perspective on the Ad Lib card's features, I booted up *Leisure Suit Larry Goes Looking for Love (In Several Wrong Places)*—also known as *LSL3*—an adventure game from Sierra that supports the Ad Lib card. The arrangement of Larry's theme song that poured from my stereo system made me feel as if I were playing a completely different game from the one I had played on my non–Ad Lib–equipped PC. It's a welcome and long-overdue game enhancement.

Pros: Heavily supported, large software base, good sound quality
Cons: No stereo, no digital sound/speech, moderately high price

Sound Master PC

The Covox Sound Master PC package includes a half-size card, two stereophonic minispeakers with connecting cables, and a user's manual. The circuit board features a minijack and two digital joystick ports. These joystick ports, unlike those found on most MS-DOS machines, accept Commodore, Atari, and other common game-machine-type joysticks for much smoother arcade action. You should note, however, that unless a game has been specifically designed for digital joystick input, these ports won't be of any use. (Very few MS-DOS programs have digital joystick drivers.)

The Sound Master PC card supports digital speech and sound through a DMA-driven (Direct Memory Access–driven) 8-bit digitizer. In addition, the on-board three-voice sound chip gives you the capability of layering multipart music with special effects in stereo—all while graphics are moving on the screen.

Installing the Sound Master PC board wasn't as simple an operation as was putting in the Ad Lib card. The Covox board has jumpers for setting I/O (Input/Output) ports, DMA channels, and Interrupt Request Lines. When I installed it using the default settings, it conflicted with another card I had installed in my computer. After a bit of detective work and screwdriver wrist action, I discovered that my mouse card and the Sound Master PC card were set on the same Interrupt Request Line. I was able to solve the problem, but nov-

Sound Support

It doesn't do much good to have a sound board if you can't find software to support it. I have a few cards in my garage that died due to little or no software support. To get an idea of the support behind these products, seven of the top entertainment software manufacturers and distributors gave us their strategies for present and planned support as of the start of 1990.

Accolade. Supports the Ad Lib and Game Blaster; is working on MT-32 support.
Electronic Arts. Supports the Ad Lib; 50 percent of its new programs will support the Sound Master PC; looking at Game Blaster and Sound Blaster; one new program (an Indianapolis 500 simulation) supports the MT-32.
Lucasfilm. Supports the Ad Lib, Game Blaster, and MT-32; is looking at the Sound Blaster.
MediaGenic. Supports the Ad Lib; is developing support for the Sound Master PC, Game Blaster, Sound Blaster, and MT-32.
Mindscape. Supports the Ad Lib; plans support for the Game Blaster.
Origin. Supports the Ad Lib; is looking at the Sound Master PC and Game Blaster; *Ultima VI* will support the MT-32.
Sierra. Supports the Ad Lib and MT-32; is looking at the Sound Master PC and Game Blaster.

Other Voices

Besides add-on sound boards, there are other solutions for solving the PC sound problem. Tandy and Access Software have each come up with acceptable, yet very different, solutions.

For its 1000 TL and SL computers, Tandy has built in a custom sound chip, a headphone jack, and a microphone jack. The chip features three tone generators and a white-noise generator for three-part harmony and sound effects. Also included is a digital-to-analog converter for translating prerecorded digital sound, voice, or music into analog audio output (to play back through the internal speaker or headphone jack). You can use the microphone jack and audio input circuitry for recording analog sound, voice, or music and then convert those sounds to digital data. Many software developers and distributors support or plan to support Tandy sound in their products.

Access Software's RealSound allows the internal PC speaker to play back digitized sounds such as speech, music, and sound effects without adding any hardware. RealSound master recordings are electronically enhanced and then digitized on custom hardware. The effects are then edited for inclusion in computer programs. Software companies pay a fee to use RealSound in their programs.

Access suggests that you improve your PC's sound by replacing your PC speaker with a 3½-inch speaker. If you'd rather, you can follow the instructions in the pamphlet included with RealSound products to build a cable to connect your PC to your stereo.

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TOUR THE ORCHESTRA PIT

Take a look at the inner workings of two of these electronic orchestras. The card pictured on top is the Ad Lib synthesizer card; the card pictured at the bottom is the Game Blaster. We've labeled the major components so that you can see the principal players.

1   Dual JK Positive-Edge Flip Flop

2   Expandable 3/8 Decoder

3   Octal Bus Transceiver Noninverting

4   Hex Inverter

5   Low-Voltage Audio Amp

6   Volume Control

7   Audio Jack

8   Dual D Flip Flop

9   Tristate Quad Buffer

10   Quad Two-Input AND Gate

11   Quad Two-Input Positive OR Gate

12   CMS Sound Generator

13   Stereo Audio RCA Jacks

14   Stereo Mini-Jack

15   Interrupt Address Jumper

16   Quad Op Amp

17   Stereo Power Amplifier

18   Digital-to-Analog Controller

19   FM Sound Generator

20   CMS Digital Controller
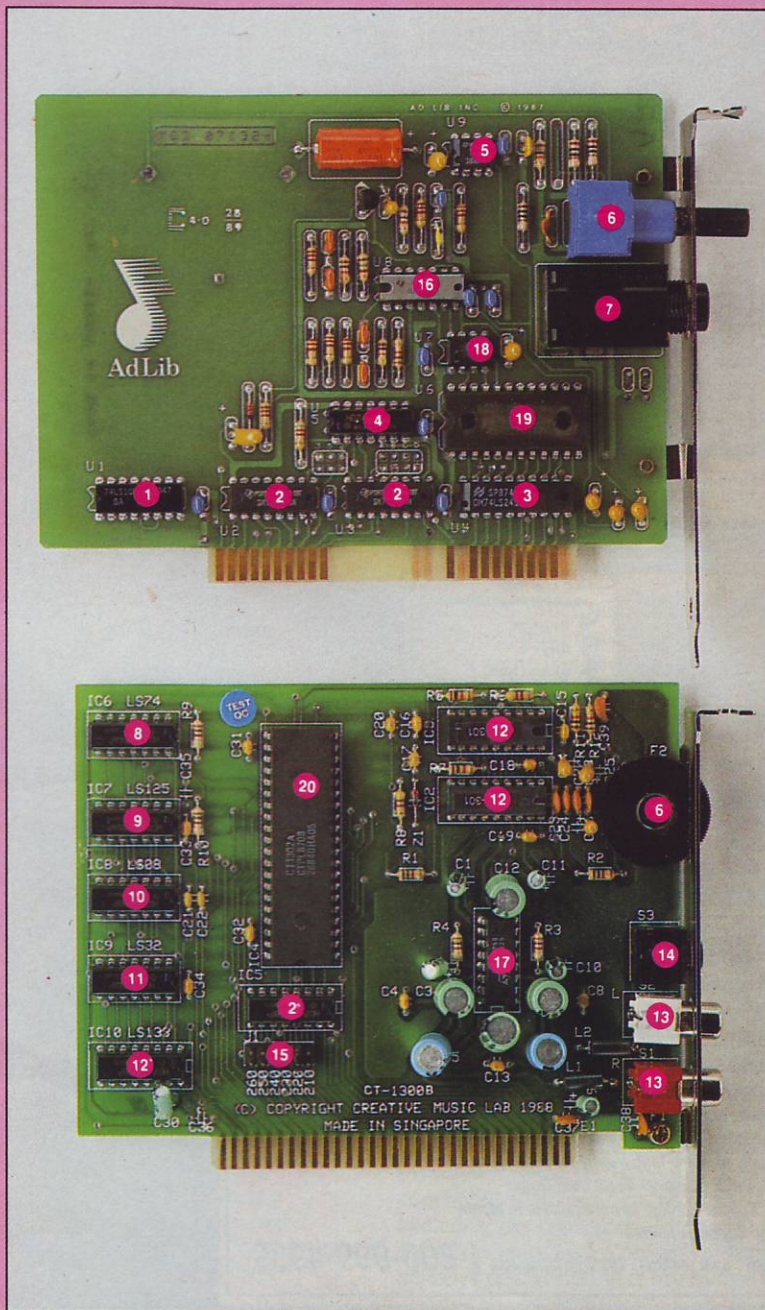
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ice PC users may need assistance.

The Sound Master PC has been out since the spring of 1989, but there isn't as much software available for it as there is for some of the other devices (this may change, however). One popular game, *SimCity* (Maxis Software), does take advantage of Sound Master PC's features. The realistic sounds of tornadoes, earthquakes, monsters, and more came through my stereo speakers and enhanced the program to the extent that I can't imagine playing *SimCity* again to the beeps from a standard PC. The best comparison I can make is to the digital sounds I've heard from Tandy TL or Apple IIGS games.

Pros: Gaining support, low price, supports digital sound/speech, includes stereo speakers and two digital joystick ports

Cons: Small software base, only three-voice sound chip, difficult installation, digital joystick ports don't work with analog joysticks

Game Blaster

The Game Blaster, a 12-voice synthesizer card from Creative Labs, resembles the Ad Lib and Sound Master PC cards. It plugs into any internal slot in your PC and includes a built-in power amplifier (2.5 watts), volume control, and a stereo output (⅛-inch stereo and two RCA plugs) for feeding headphones, external speakers, or your stereo system. It can play 12 channels of music simultaneously, panned left or right in the stereo mix. Installing the Game Blaster card posed no serious obstacles. I used an RCA-to-RCA cable to hook up the card to my stereo system.

I ran two programs through this card—*The Intelligent Organ* (an electronic player piano) and *Silpheed* (a sci-fi adventure game from Sierra). *The*

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Intelligent Organ comes with over 80 songs stored on disk. You can select different instruments and various rhythm patterns to use while playing along on your computer keyboard. If you prefer, you can have the computer play Auto bass, Auto chords, and/or Auto arpeggios, much like a small Casio or Yamaha keyboard. The sound quality from the Game Blaster is very good, with great stereo imagery and texture.

To my ears, the Game Blaster sounds much like the Ad Lib, but in stereo—which is quite an improvement. *Silpheed,* which is bundled with the Game Blaster, uses the card to produce a stunning musical backdrop for its plot and provides an extra premium to users interested in buying a sound card for their PC.

Pros: Heavily supported, large software base, good stereo sound

Cons: No digital sound/speech

Sound Blaster

The Sound Blaster card just started to ship to stores last Christmas (see the COMPUTE! Choice for Entertainment article on page 88 in the December 1989 *COMPUTE!*). This 24-voice, half-size synthesizer card is an extension of the Game Blaster and offers compatibility with the Ad Lib. It includes 11 Ad Lib–compatible voices, 12 Game Blaster–compatible voices, one digital input and output, as well as decompression

hardware (for decompressing speech and sounds that have been compressed by software to save storage space). Like the Sound Master PC, the Sound Blaster contains a DMA-driven digitizer; but, unlike the Covox unit, you can plug a microphone or audio source directly into the Sound Blaster and digitize sounds. To top it off, the card includes a PC analog joystick port and stereo output jacks for hooking up to headphones, speakers, or a stereo, all driven by a four-watts-per-channel amplifier.

The Sound Blaster package comes with three software programs, including *The Intelligent Organ*. The other two programs take advantage of the Sound Blaster's digitizing capabilities. VoxKit, a voice-development kit, lets you record, compress, store, and play back digitally recorded speech and sounds. The Talking Parrot features a parrot on the screen that mimics your speech, talks back, makes outrageous remarks, and screams when you tickle it.

For an additional $49.95, you can add a MIDI box to the Sound Blaster. It plugs into the analog joystick port and includes one MIDI In and three MIDI Out jacks, plus a joystick port (to make up for the one it uses). The Sound Blaster won't work with MIDI software from other companies, but Creative Labs says it's working on the problem.

Pros: Heavily supported (both Ad Lib– and Game Blaster–compatible), large software base, good stereo sound, supports digital sound/speech recording and playback, includes analog joystick port

Cons: No software to use all 24 voices at once; no built-in MIDI interface (contrary to its advertising), moderately high price ▷

Melody Makers

To get in tune with the products surveyed in this article, contact the companies listed here.

Ad Lib
50 Staniford St.
Boston, MA 02114
(800) 463-2686
Ad Lib Personal Computer Music System (synthesizer card, *The Visual Composer,* and Jukebox)—$245; Ad Lib synthesizer card with Jukebox—$179

Covox
675-D Conger St.
Eugene, OR 97402
(503) 342-1271
Covox Sound Master PC—$89

Creative Labs
Distributed by Brown-Wagh Publishing
Suite 210
16795 Lark Ave.
Los Gatos, CA 95030
(800) 451-0900
(408) 395-3838
Game Blaster, *Intelligent Organ, Silpheed,* manuals—$129
Sound Blaster, *Intelligent Organ,* Parrot and VoxKit programs, manual—$239; Ad Lib, Game Blaster, or CMS card owners who send in their old cards when ordering—$139

RolandCorp
7200 Dominion Cir.
Los Angeles, CA 90040
(213) 685-5141
MT-32 Sound Module, Roland MPU IPC MIDI Interface, Roland EASE Music Software, manuals—$550; Micro Channel Architecture version—$650

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Roland MT-32 Multi-Timbral Sound Module

The Roland MT-32 is definitely the Mercedes in this group of sound boards. Rather than sliding into any open PC slot, the MT-32 has its own case and power supply. Because the MT-32 is actually a stand-alone MIDI module, it requires a MIDI interface to connect to the computer. The package I evaluated for this article included a Roland MPU-IPC MIDI interface, an MT-32 module, a MIDI connecting cable, and a Roland EASE MIDI recording program, made especially for using a MIDI keyboard with the MT-32.

Not lacking in performance value, the MT-32 is a 32-voice synthesizer (in a sense, it's eight synthesizers in one, with a percussion sound module) featuring 128 preprogrammed instrument sounds, 30 percussion sounds, and ten different digital reverb settings. It has MIDI In, MIDI Out, and MIDI Through ports, volume and tuning controls, and stereo outputs. For all practical purposes, it's a complete electronic orchestra—and you're the conductor.

Installing the unit takes about ten minutes and requires that you place the Roland MIDI card inside your computer. After closing your computer, you'll have to connect the Roland MIDI processing unit to the MT-32 and then connect the MT-32's stereo outputs to your stereo. In addition, you must run a DC power supply between the sound module and a local wall socket. Roland has eased this installation process by bundling many of the MT-32's features into its LAPC-1 sound card ($595).

I was eager to see how the MT-32 handled the theme music to *Leisure Suit Larry*. After reinitializing the program to recognize the MT-32, I experienced the most beautiful music I'd ever heard coming from a computer program. The sounds reminded me of the New Age CDs I've heard. Amazingly, though, the MT-32 seemed to sound *better* than most of my CDs. That makes sense, because it's coming right from the horse's mouth—directly from the synthesizer.

After booting up EASE, the recording program included with the MT-32, I plugged in my Kawai K1 MIDI keyboard and laid down some tracks of my own, finding that I could quickly come up with songs using the same instruments as I'd heard in *LSL3*. I dubbed some chirping birds to my Polynesian melody, but that was just the beginning. I ended up messing with the MT-32 all night long. Al Lowe, watch out. Here I come.

Pros: Moderately supported, growing software base, fantastic stereo sound, large note capacity (32 voices), MIDI ports
Cons: High price, no digital speech

All Around, Sound

PC sound hardware has come a long way from beeps and boops. Recent developments have brought prices down, making sound and music peripherals available to a majority of home PC owners, not just to professional musicians. Although each solution to the PC sound dilemma offers different benefits and trade-offs, one thing is for sure: Stick a sound board in your computer and it will be music to your ears. ▫

Joey Latimer composes music in his home-based MIDI recording studio in Idyllwild, California.