Radio-Electronics

COMPUTERS - VIDEO - STEREO - TECHNOLOGY - SERVICE

Build this
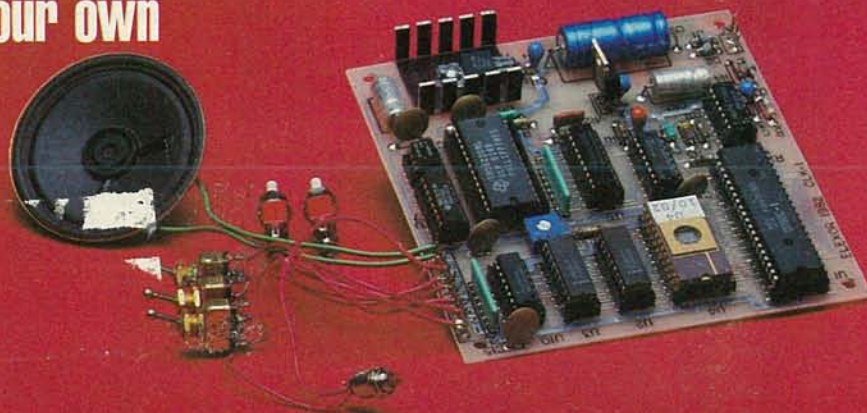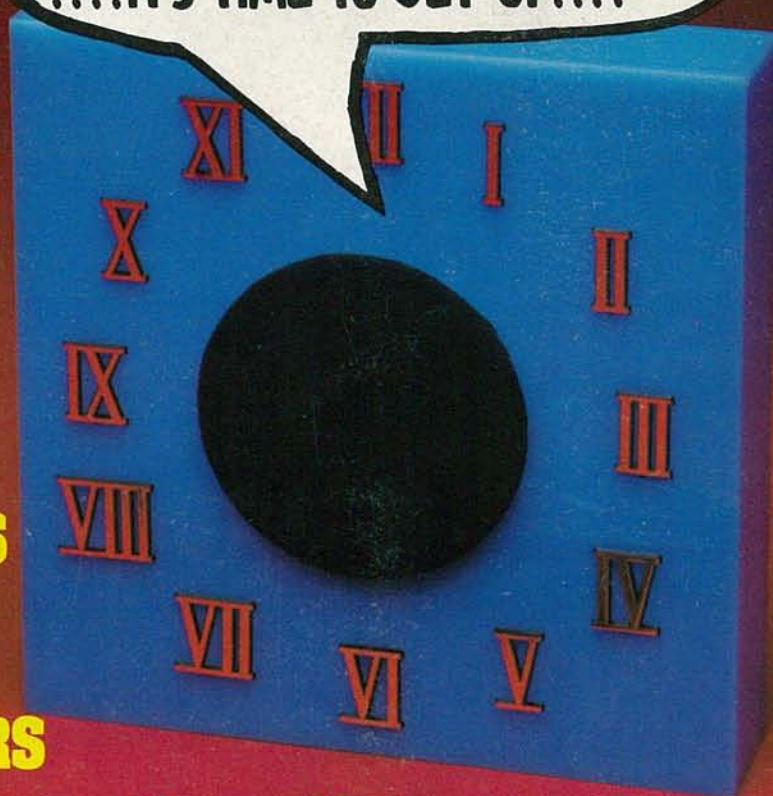**TALKING ALARM CLOCK**
and listen to the time

New IC's for
MUSIC SYNTHESIZERS
simplify design

Build a
VLF ANTENNA TUNER
for your receiver

How to
REWIND TRANSFORMERS
for custom applications

Back-to-school series:
AUDIO POWER AMPLIFIERS
How to design your own

THE TIME IS SEVEN THIRTY AM....
....BEEP... BEEP....BEEP....
....IT'S TIME TO GET UP....

XI XII I II III IV V VI VII VIII IX X

Radio-Electronics

THE MAGAZINE FOR NEW IDEAS IN ELECTRONICS

Electronics publishers since 1908

MAY 1983 Vol. 54 No. 5

ON THE COVER

Timepieces have come a tremendous way in the past few years—from wind-up and electric clocks to those with LED and LCD displays and—now—to clocks with no display at all! The talking alarm clock featured in this issue will announce the time either automatically or on request, and can also be set to *tell* you when it's time to get up. Modern speech-synthesis IC's make it extremely easy to build, as you'll find out starting on page 57.
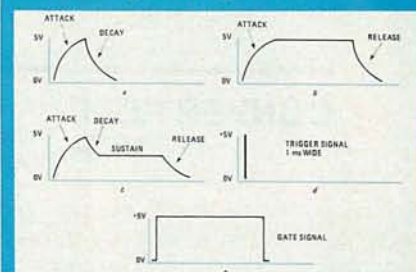
THE MAINSTAY of today's popular music is the synthesizer. Once incredibly difficult and expensive to design and build, its current popularity is due in part to the versatility built into the LSI IC's that are found at its heart. The story of those IC's can be found on page 65.

COMING NEXT MONTH
On Sale May 19

- **Special Videogames Section:** What's new for 1983...and what's in store for the future.
- **Add-on RAM.** A non-volatile 8K memory expansion you can build for your Timex/Sinclair *1000*.
- **LF Loop Antennas.** The next installment on our continuing series on VLF-LF receiving techniques.
- **And lots more!**

VIDEOGAMES

A tale of two synthesizers

DANNY GOODMAN, CONTRIBUTING EDITOR

MATTEL AND ODYSSEY HAVE IN-troduced us to a new technology that will add new excitement to home videogames: electronic speech synthesis. Both voice boxes are complementary add-ons to their respective consoles. They are attached to the game system through the cartridge slot, and game cartridges, in turn, plug into the voice add-ons. Both synthesizers use the same high quality speech technique from Texas Instruments, called Linear Predictive Coding (LPC). LPC allows different voices and accents to be stored digitally in ROM (*Read-Only Memory*) IC's that are packed inside the game cartridges.

Despite the similarities, the two companies have entirely different philosophies on how to approach videogames using voice. That diversity is not so much in hardware (although *Intellivoice* plays through the TV speaker and the *Odyssey 2* voice module, shown in Fig. 1, has its own built-in speaker) but in the specially coded software cartridges that make the modules move their electronic lips.

Odyssey's voice cartridges are initially aimed at educational applications, although one popular action cartridge, UFO, is reportedly being re-designed to incorporate voice. One of the educational

cartridges, *Type and Tell*, lets the "player" type in any word, name, or jumble of letters, and the synthesizer attempts to speak the word—expletives not deleted.

But most of the *Odyssey 2* voice cartridges for action games will be compatible with the same console without the voice module. That is, the cartridge will be playable without the module. That way, Odyssey believes, those without *The Voice* will still have the opportunity to play all the cartridges.
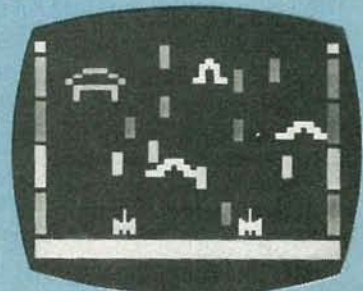
Mattel, on the other hand, seems to take the position that voice should be an integral part of the game play. In its voice cartridge *B-17*, for example, you're busy watching for ground targets below the plane when the plane's co-pilot alerts you that there are bandits at 3 o'clock. With that verbal alert, you know how to change your screen view to get the bandits in your gunsight. Some of the voices on that cartridge, however, are purely for decoration, like when the bombardier shouts "Bombs away!"

My initial reaction is that the Mattel approach will appeal to more *Intellivision* owners than the Odyssey idea will attract *Odyssey 2* owners. While it's "neat" to have a talking game, there is more incentive to go the voice route if the voice is

integrated into the game play, instead of being put on only for extra trimming. One driving force behind all videogame development is the player's demand for more—more detailed graphics, greater strategic realism, and more challenges. If an electronic voice adds to those dimensions of the game, then there is a real incentive to invest in the voice add-on.

Atari is forecasting a speech add-on for the *5200* for 1983. I hope the software designers are doing more than just adding a Howard Cosell voice coming from the press box of a football game.

Fox Video Game's
Worm War I
for Atari 2600

CIRCLE 101 ON FREE INFORMATION CARD

Fox Video Games	Worm War I

You might expect games coming from Twentieth Century Fox to bear titles licensed from Fox's motion pictures. Not just yet, they tell me. In the meantime, Fox Video Games has jumped into the scene with four Atari *VCS*-compatible games designed by a respected personal-computer-software developer, Sirius Software. *Worm War I* is an

FIG. 1

VIDEOGAMES

unusual creation that pits a conventional tank against a horde of not-so-conventional giant worms that wiggle back and forth across the screen. The worms, plus other wall-like obstacles on higher levels, scroll from top to bottom, giving you the illusion of tank motion down a wide avenue. You control left-right movement of the tank and the scrolling speed.

The object is to clear off each successive wave of wriggly worms. If one scrolls off the bottom, it "wraps around" and re-appears at the top for another chance. Each wave materializes on the screen, along with an occasional gas station.

Gas station? Yes, your tank's fuel supply is limited, so you've got to pass though a station (more like a garage door) as quickly and as squarely in the center as possible to pick up the most fuel. As you soon learn, it's not so easy to hit a moving worm in the right spot on purpose, but it's all too easy to blast away a garage by accident.

The worm graphics are not greatly detailed, but the worms are unique in their movement. To some players, a fresh wave of worms will look like an oscilloscope pattern run amok. The sound consists of blaring barrages similar to the *Yar's Revenge* sequence after hitting the elusive *Qotile*.

Worm War I may not rank among the all-time great *VCS* cartridges, and inexperienced players may find the difficulty progression rather fast, but the original scenario and game play make it a worthy addition to larger libraries.

Parker Brothers' Frogger Jumps to the Atari 2600

Frogger was one of those non-combatant arcade games that helped draw quarters from the female audience once *Pac-Man* had whetted their appetites. The game's scenario was cute and simple: get the frog across a busy highway and a river in 30 seconds. Controlling the frog meant simply moving him forward, backward, left or right—just like a maze game. In spite of its simple scenario, and ease in picking up how the game works, the game advances rapidly into harrowing experiences for that homebound frog.

There is a lot going on on a *Frogger*
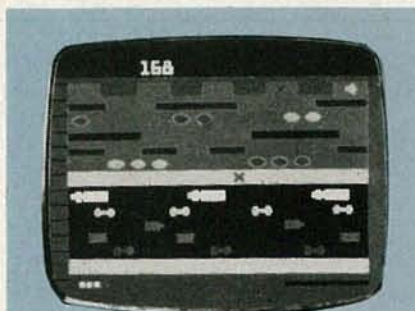
CIRCLE 102 ON FREE INFORMATION CARD

Parker Brothers									Frogger
GRAPHICS									
SOUND									
EASE OF LEARNING									
CHALLENGE									
VALUE									
1	2	3	4	5	6	7	8	9	10

Poor   Fair   Good   Excellent

screen, especially in the river. That includes things like moving logs, turtles that dive (disappear) into the water, alligators, snakes, lady frogs, and flies (the last two account for bonus points). When Parker Bros. announced it had purchased the rights to *Frogger* from Sega/Gremlin, I had some doubts as to how much of the original could be convincingly transferred to an Atari *VCS* cartridge, given that system's limited memory and graphics-addressing capabilities. However, I was pleasantly surprised when I finally saw Parker's rendition. With the exception of one hazard (the otters), Parker's *Frogger*

manages to capture most of the subtleties of the original graphics. More importantly, the game play is at least as challenging as the arcade version, with the difficulty increasing at a brisk but not frustrating pace.

One advantage of the home game over the arcade version is the number of game levels available. The cartridge contains 6 variations, three each for one and two players, called "easiest" (not that easy), "more difficult," and "speedy." In "speedy," *Frogger* continues to jump in one direction as long as you push the joystick that way. In other games, it's one push of the joystick per jump. *VCS* difficulty-switches also give you the option of letting the frog scroll around the screen on turtles or logs, instead of biting the algae when it reaches the screen edge. That's highly recommended for novice players.

Scoring is one-tenth that of the arcade version (e.g., 100 points for getting all five frogs home vs. 1000 at the arcade). Extra frogs are earned for every 1000 points, up to a maximum of four reserve frogs at any time. That may sound more generous than the arcade game (only one extra *Frogger* at 2,000 equivalent points), but it indicates the greater challenge that the Parker *Frogger* cartridge offers.

Players get a brief *Frogger* musical interlude between levels and the theme music at the game's outset. If you're intent on replaying the game, that intro music seems to take forever, but unlike Parker's *Empire Strikes Back*, you've got to wait for the music to stop before *Frogger* can start.

Even if you've never played the arcade original, you'll enjoy *Frogger*, as will the young and novice game players in your home. **R-E**

"Would you like to hear my secretary in stero?"