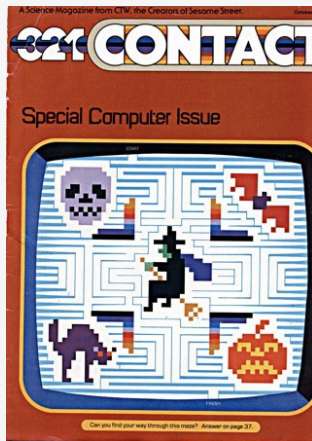




# New Uses for Computers

Sports researchers are using computers to help all kinds of athletes improve their performance.



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| <b>Author</b>       | Michele Lyons   |
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The article discusses the innovative uses of computers in various fields such as sports, music, and zoology. At the Coto Research Center in California, computers are used to analyze athletes' movements and improve their performance. The computer collects data about the athlete's movements, which can then be used to identify and correct mistakes.

In the music industry, Michael Iceberg has invented the Iceberg Machine, a unique musical instrument controlled by three computers. The machine can produce a wide range of musical sounds, allowing Iceberg to play every instrument in his orchestra and serve as the conductor.

Zoos are also utilizing computers to protect endangered animals. The Minnesota Zoo uses a special computer called ISIS to track 90,000 animals from 150 different zoos in North America and Europe. The computer stores a vast amount of information, which can be quickly recalled, saving valuable time and helping in the conservation efforts.

The article concludes by highlighting the versatility of computers and their ability to store and recall large amounts of information quickly and efficiently.

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Below find a reprint of the 4 relevant pages of the article "New Uses for Computers" in "321 Contact":



# 321 CONTACT

## Special Computer Issue



Can you find your way through this maze? Answer on page 37.

stage. It is surrounded by bright lights and smoke. Moments later, sounds from an entire orchestra fill the room. The audience hears trumpets, harps, violins and drums. But no one is in sight. Then the cone's top comes down. Inside is the Iceberg Machine—and its inventor, Michael Iceberg.

Michael is sitting in the middle of this most unusual musical instrument. He is surrounded by three computers, six keyboards and dozens of buttons. This machine produces all kinds of musical sounds plus an assortment of whirs and bleeps. There are even knobs Michael can press to get animal sounds, chimes and human voices.

The Iceberg Machine contains three computers. Two control the synthesizers (SIN-thi-sizers). They are modern musical instruments that can stretch or bend notes to make unusual sounding music. The third computer is in charge of the drums.

Michael says it took him 13 years to make his Iceberg Machine. He began with 16 different musical instruments. Michael played each of these instruments himself. Then he taped their sounds

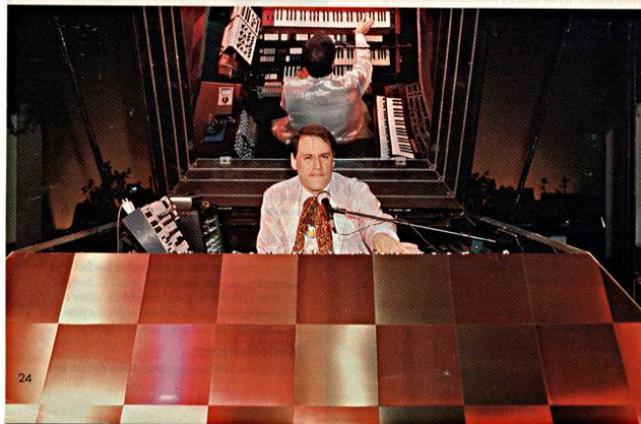
and stored each note separately in the machine's computer files.

The computers help Michael to play every instrument in his orchestra and to serve as the conductor, too. He can play everything from classical music to rock 'n' roll. By putting notes together in different ways, he produces millions of different sounds. He has to decide which instruments to use, when to use them and how to blend all the sounds together. He'll take a note from the violin, then a note from the flute and add a note from the drums. The result is music to your ears!

### Zoo Computer

You know that zoos are fun places to visit. But they have a serious purpose, too. Zoos can help to protect animals, especially those kinds which are in danger of dying off. One zoo that is very active in saving endangered animals is the Minnesota Zoo, near Minneapolis. There, a special computer called ISIS keeps track of 90,000 animals from 150 different zoos in North America and Europe.

The Minnesota Zoo is particularly concerned



# IN ACTION

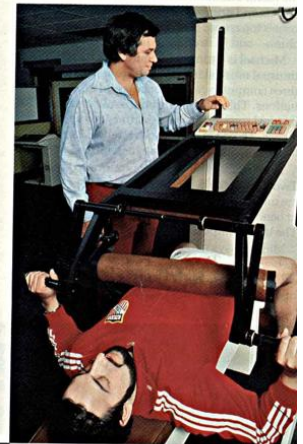
## NEW USES FOR COMPUTERS

Sports researchers are using computers to help all kinds of athletes improve their performance. At the Coto Research Center in California, swimmers, runners, divers and other sports champions all come for help. It all starts when trained technicians make a movie of a particular athlete in action. Then they play the film in super slow motion on a special screen. The screen is divided into thousands of numbered squares. Using a special wand, the technicians touch every square. That gives the computer information about how an athlete moves.

The computer matches the person's body with the numbered parts of the person's body with the information. Later an athlete, with the help of a technician, asks the computer specific questions about how he or she is performing. Using all the information it has collected, plus some basic rules about gravity, strength and force, the sports computer comes up with the answers.

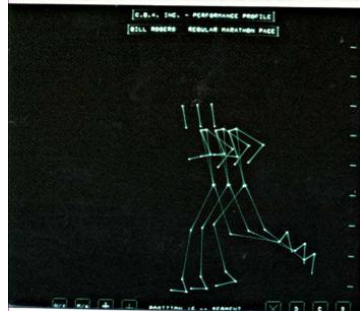
The computer also lets athletes see what they're doing wrong. It can make a true-to-life picture of the player appear on a TV screen. This lets an athlete see mistakes that he would miss in real life. And once the athlete spots the mistakes, it becomes easier to start practicing new and better ways of performing.

Of course, a computer can't turn just any person



**Above:** Dr. Ariel uses machines to collect information about an athlete's strength, rate of breathing and heart beat.

**Left:** Stick figures on a computer screen help athletes to take a look at how they perform. This one shows marathon racer Bill Rodgers jogging.



into an Olympic champion. But it can help talented people perform better. Before Al Oerter came to the Coto Research Center, his farthest discus throw in competition was 212 feet (64 m). But with the help of computers, other new training techniques and hard work, he threw it nine feet (2.7 m) farther than ever before!

### Music Computer

A 12-foot-tall copper cone slides out on ➤

# ELECTRONICS

by Michele Lyons

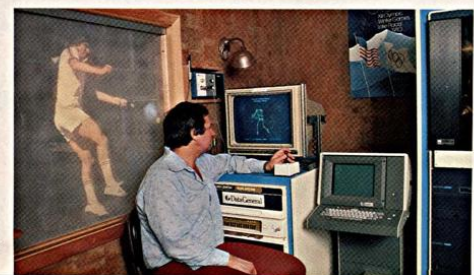
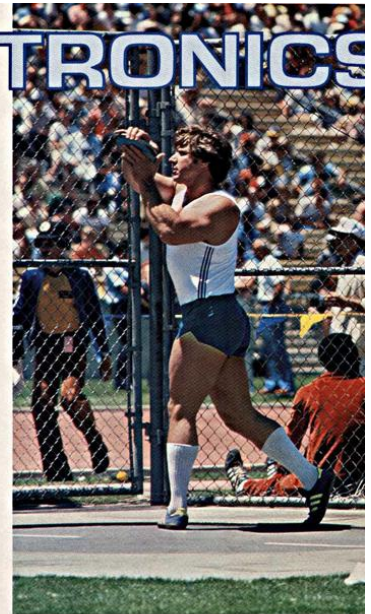
Computers are everywhere. Even computers that you never see are often helping you in some way. They now create some of the exciting images you see on a movie screen. Other computers guide the large roller coasters you love at amusement parks.

Computers are very useful machines. They store a huge amount of information and recall it quickly. That saves valuable time. Computers are handy for another reason. They store information so that it can be kept and used forever. And, when you consider how much information they hold, they hardly take up any room at all.

No doubt about it, computers help people a lot. Some help doctors find out what causes people to get sick. Others simulate or copy the experience of flying a plane so future pilots can get trained. Want to know more about new uses for computers?

### Sports Computer

Al Oerter is an Olympic champion. His specialty is throwing the discus. In four straight Olympics he hurled this heavy metal disk far enough to win the gold medal. Al hopes to compete in future Olympics, too. With this in mind he went to a sports computer for help.



**Above:** Al Oerter throws a discus farther after getting help from a computer at a sports center.

**Left:** Dr. Gideon Ariel watches a stick figure on his computer screen. It is an animated representation of Jimmy Connors' tennis swing. Dr. Ariel runs two computer centers to help athletes.