EXCERPT TO WRITE ABOUT

"The Computer"

From *What a Great Idea! Inventions That Changed the World*

by Stephen M. Tomecek

Today computers are just about everywhere, from the ignition system of our cars to the tuners in our digital radios. Millions of us use personal computers in our homes for everything from video games to home finances. This very book was written on one!

Although computers are thought of as modern, high-tech devices, they actually date back to 1822, when Charles Babbage, an English mathematician, was looking for an easier way to count numbers.

How It Works

To understand how the computer was invented, we must first define exactly what a computer is. Simply stated, it's a programmable device that helps solve problems by processing information following a series of instructions. In 1812, Babbage came up with the idea of using punched cards to input data into an "analytical engine." He built a series of calculators leading to his prototype machine. Unfortunately, Babbage's groundbreaking ideas couldn't be turned into reality due to the limits of the equipment of the day.

Picking up on some of Babbage's ideas, an American inventor named Herman Hollerith was determined to come up with a way of automatically tabulating census data. Hollerith had worked on the 1880 U.S. census and found it to be very time-consuming. By the 1890 census, he had a working device which used punched cards to input data via an electric card reader.

Impact

Through the early part of the twentieth century, electric calculators flourished, but they had their limits. Small improvements were made along the way, but clearly mechanical systems were a dead end. For a device to be really fast and versatile, it would have to use the same type of electronic tubes that made radio and television possible. In 1939, American physicist and mathematician John Atanasoff built a prototype of an electromechanical digital computer. His model was the first ever to use vacuum tubes to do computations, and the only thing keeping it from being a modern computer was the lack of programming.

To say that computers have changed society would be a gross understatement. There is hardly any part of our daily lives that isn't affected by a computer in some way, shape, or form. But as sophisticated as computers are, they still need people to program them.

Children of the Invention

The first truly digital, multipurpose, fully electronic computer, designed by J. Presper Eckert and John W. Mauchly, was unveiled at the University of Pennsylvania in 1946.

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GRAB & GO

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> Called ENIAC (Electronic Numerical Integrator and Computer), the system contained over 18,000 tubes, and used more than 100 kilowatts of electricity (that's 1,000 100-watt lightbulbs on at the same time!), but it was a thousand times faster than anything before it. In a few short years, this, too, would change, because at that same time, in another part of the United States, the transistor was being invented.

▶ **What is this article nudging you to continue reading about?**_____

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▶ **What questions are you left with?**_____

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Note: In this excerpt, Stephen M. Tomecek shares information about the early scientific work and inventions that led to the digital technology we use today. He doesn't include Ada Lovelace, the daughter of the famous poet, Lord Byron, who worked with Charles Babbage. She was an English mathematician and writer who is said to have developed an algorithm for a computer. It's possible that historians didn't know about Lovelace's contributions at the time this book was published, in 2003, or it may be that as a writer, Tomecek researched and decided Babbage alone deserved mention. This piece provides a good forum for a discussion about how any nonfiction writing is a product of its time and what was known then. As readers, it's important to consider that! Think about it—the book was published in 2003, before smart phones and other recent advancements. Before Steve Jobs of Apple became so famous that many young people assume *he* invented the computer! In the last paragraph, Tomecek describes the ENIAC, unveiled in 1946. Can you imagine its size? Find a photo of it online? As a reader, even without seeing a photo of it, can you use your background knowledge to compare it to the size of the computers you use today? By heading the section "Children of the Invention," Tomecek signals to his reader that yes, technological/digital inventions will continue to spawn new generations of faster, smarter computers.