

'We changed the lives of every human being on Earth'

Sharon resident helped create a new world with the silicon transistor

By **MICHAEL ROKNICK**
Herald Business Editor

SHARON – Computers, cell phones, TVs and slews of other electronic gear might not exist as we know it if it weren't for David Diffenderfer and a team of dedicated scientists.

A Sharon resident, Diffenderfer is a physicist who was part of the team that created silicon transistors – seen as the forerunner of modern computer chips.

"We changed the lives of every human being on Earth," he said.

Now at 87, Diffenderfer enjoys his retirement and talking about the major scientific advancement.

He grew up on South Oakdale Avenue, which he said at the time had a Sharon address but was in Hickory Township, which is now Hermitage. He graduated from Hickory High School in 1955.

Drawn to electronics, after graduating he headed off to the West Coast to attend the College of San Mateo in San Mateo, Calif.

One day while commuting to college he saw a new sign erected in front of a drab building announcing it was Shockley Transistor, overseen by Dr. William Shockley, an



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Relaxing at his Sharon apartment, David Diffenderfer enjoys keeping his camera handy. The retired physicist helped to create silicon transistors, seen as the forerunner of computer chips.

inventor and fellow physicist.

Interested in working there, Diffenderfer presented himself to Shockley, who gave him a test.

"I crashed and burned on that test," he recalled.

Diffenderfer took the test home to come up with the right answers. The following day he returned the test to Shockley who congratulated him for his achievement.

He got hired on the spot. There's lots of science here. A transistor is an electron-

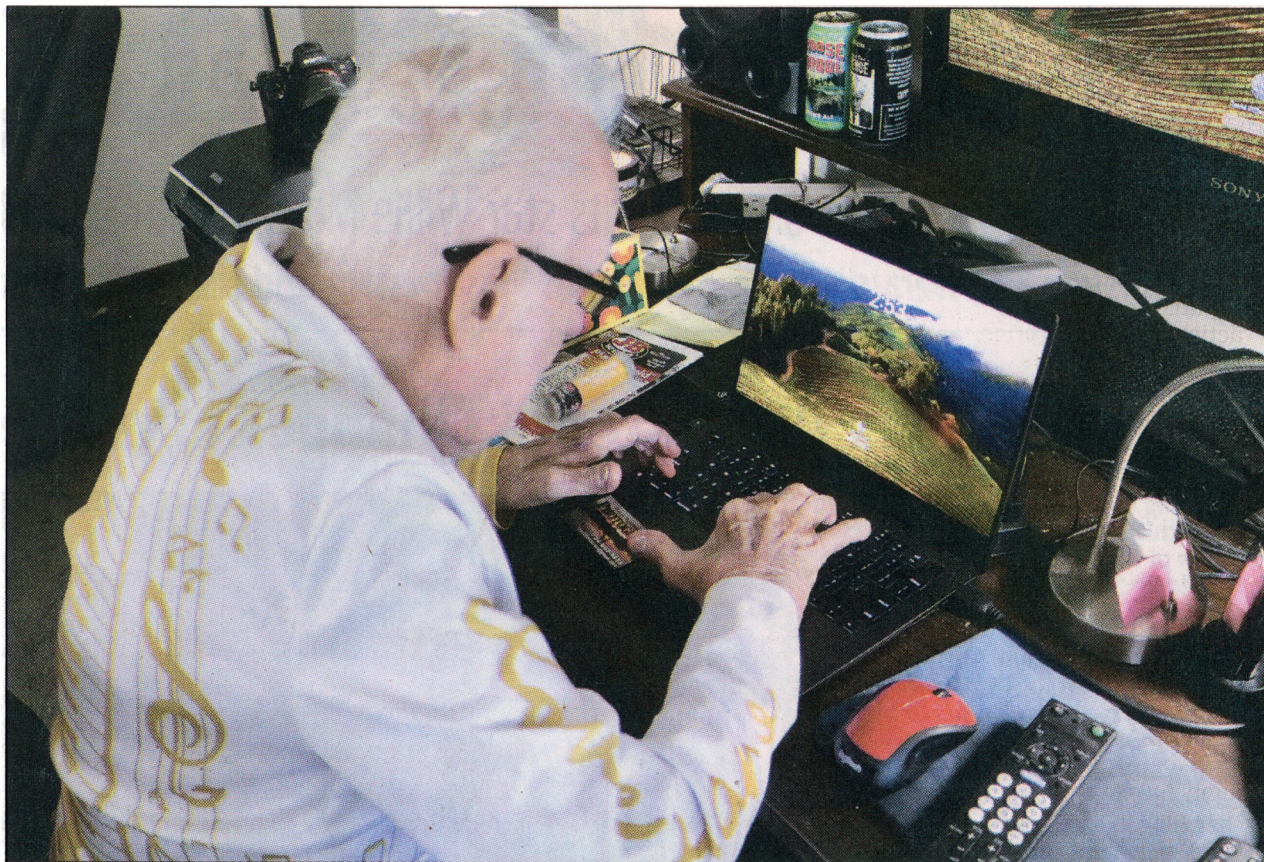
ic circuit part, commonly called a semiconductor, that controls the flow of electrical power and electronic signals. Producing better transistors can allow for such things as faster computers and more pixels in digital cameras creating sharper images.

While previously working at Bell Laboratories years before, Shockley and two other scientists were



David Diffenderfer's high school photo when he graduated from Hickory High School in 1955.

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David Diffenderfer enjoys looking up interesting reading on his computer at his Sharon apartment. The 87-year-old helped develop the silicon transistor, which opened the world up to better computers, cell phones and TVs.

Transistor

Sharon resident helped create
a new world with his inventions

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credited for creating transistors. That team would eventually be honored with the Nobel Prize in Physics in 1956.

When Diffenderfer began working with Shockley the goal was to improve transistors. Silicon was seen as the element to use as it performed better than other materials. Eventually, Diffenderfer was with the team that produced the silicon transistor.

"It would be like going to a Model T Ford to a new space rocket," he said. "The transition was that big."

The discovery also changed the business landscape in that area of California.

Gordon Moore, co-founder of Intel Corp., once said Shockley put the silicon in Silicon Valley.

"What we invented was silicon technology, which is still in existence today," Diffenderfer said.

In time he moved on to Stanford University's physics department, where he worked at the government's nuclear test site in Nevada for 10 years.

He got to labor with legendary physicist Edward Teller.

Teller worked in the Manhattan Project during World War II to create the atom bomb. He later became known as the "father of the hydrogen bomb," which was created in 1951.

His reputation of being autocratic and condescending, Diffenderfer said, was real.

"He deserved that reputation," Diffenderfer said. "I didn't like him. He was awfully hard to get along with."

And the Oscar-winning movie "Oppenheimer" fell way short in portraying Teller's true personality.

"They didn't knock Teller enough," he said.

Diffenderfer laments that he never got to meet Oppenheimer.

Working in the Nevada desert never focused on the hydrogen bomb itself. Rather, it was creating equipment to measure the strength of the bombs, which were tested in the atmosphere and then exclusively beneath the ground.

From there, Diffenderfer moved to a series of jobs dealing with lasers, semiconductors and and electronic warfare.

He moved back to this area in 2011 and became involved in restoring theater pipe organs. He's working on a massive organ now in a private home in Foxburg, Clarion County.

With a lean build and razor-sharp mind, Diffenderfer he constantly searches the internet for information ranging from photography to the latest advances in science.

But he doesn't come off boastful.

Diffenderfer got to see the last atmospheric nuclear tests in the early 1960s. The experience left him humbled.

"You don't know what big is until you see a nuclear explosion," Diffenderfer said.