

1958:

# The man and the microchip

Texas Instruments' Jack Kilby worked through a summer vacation and changed the world

By GRETCHEN HEBER

American-Statesman Staff

"Cat on a Hot Tin Roof" was drawing crowds to cool theaters. Teens were sock-hopping to Chuck Berry's "Johnny B. Goode."

But 34-year-old electrical engineer Jack St. Clair Kilby didn't have time for movies and music. He was in a Texas Instruments laboratory in North Dallas, changing the world, inventing the future.

In July 1958, the whole of TI was shutting down for the company's traditional two-week summer break. But new employee Kilby didn't have any vacation time accrued, so he stayed behind and worked.

Worried he'd be sentenced to work on a project he didn't care for, the engineer was determined to come up with something better.

He first identified the problem: current electronics technology was too unwieldy, too cumbersome and too expensive. How to make it smaller and more cost-efficient?

Each morning, Kilby folded his 6-foot-6-inch self into his '53 Ford and drove 3/4 miles north to TI headquarters.

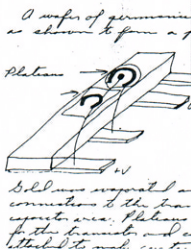
In TI's quiet, brown-walled semiconductor lab, the methodical Kilby set to work. He spent a lot of time thinking, reading, sketching, thinking some more — what he describes as "a normal engineering approach. You think about a problem very broadly at the beginning and then as you get a specific idea, it narrows down." He eventually thought of cutting into a single slice of semiconductor material all the components of an electronic circuit: transistors, resistors and a slew of other "or."

He wrote ideas in his lab book. He drew sketches. When his boss returned from vacation, Kilby brought out his notebook sketches. His boss was less than thrilled, but ultimately agreed to let Kilby build a test unit.

Kilby worked hours and hours, even weekends, to produce a working model.

In September 1958, before a

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group of executives and engineers, Kilby unveiled his work: an integrated circuit, a microchip.

It was the bit that's made its way into, well, everything electronic: personal computers, phones, microwaves, cell phones, satellites, modern cars.

The future was born.

A few months later, a Californian was pursuing a similar end. Robert Noyce worked on a silicon chip using a process that became the standard. But Kilby was first. The two were content to share the honor of being the Men Who Changed the World. They left the picky details to the sniggings of corporate law.

Both men are revered in the engineering world. They are to pocket-protector devotees what Babe Ruth is to baseball.

And Kilby, the man who rocked the world with a nip of a chip small as your fingernail is a modest man living in a modest home in a modest subdivision in Dallas — the same house he lived in when he built the first chip in 1958. "Moving was too much trouble," he says.

UT School of Engineering Dean Ben Streetman says no other invention changed the world as much as this one did.

On Friday mornings, Kilby still drives into his office at the 580,000-square-foot brick research center that bears his name.

Ever modest, he refuses to take credit for the huge changes his in-

vention has brought. He says it never occurred to him that he was changing the world, launching the second Industrial Revolution: "Today's product is the work of tens of thousands of the world's best engineers."

So why isn't Jack Kilby a household name? Says Streetman, "We have come to the point now of glorifying sports people and politicians, and unfortunately engineers and inventors who make the world run don't get much publicity. They don't seek publicity..."

Kilby's favorite use — on a personal level — of the technology he helped produce is his car. "My car does some smart things that I wouldn't have thought I needed. Remote entry locks, for instance. Very handy." He estimates 30 chips help run his Lexus.

His least favorite application of integrated circuit technology? Musical neckties and singing Christmas cards.

About the Y2K problem, he says, "I'm pretty sure the world isn't going to end."

But he can take credit for an important beginning — the start of modern communications, all made possible by the chip he invented 40 years ago.

Among her many thankless tasks, Gretchen Heber makes sure the Statesman's computers put pages together the right way.