A Boy Genius, Idaho Potatoes and Television

NORMALLY I wouldn't bother a law enforcement officer for help in tracking down an address. But when the folks at the local museum, the library and the public school in Rigby, Idaho, couldn't tell me where Philo Farnsworth—the teenage farmboy who invented television—lived 90 years ago, they all said the same thing: Call Sergeant Miller. He'll know.

Mike Miller is a Rigby native and sergeant in the sheriff's department. "I had to go through a lot of old records to verify the location," he says as we drive from downtown Rigby to our main destination—472 North 3700 East—"but here's where Farnsworth and his family moved to in early 1921. This is the farm where he had his revelation." There's no house there now, just an old feedlot.

Farnsworth's father had brought the family to Idaho in 1919 from Provo, Utah, where Philo was born on August 19, 1906. Young Farnsworth was ecstatic to discover that their new house had electricity, a rarity in rural America, and when he stumbled on a pile of technology magazines, he was practically beside himself. He entered a Science and Invention contest to improve the Model T and won first prize for his simple, cost-effective method of magnetizing each ignition key to make it unique. Before that all Ford keys were identical, so whoever possessed one could start—and steal—any car.

But Farnsworth's primary obsession was solving the technological riddle that would make television a reality. In the 1880s, German technician Paul Nipkow proposed using a mechanically spun disc with holes in it to convert images into electrical impulses that could be sent through a wire to a second disc, which would then project them onto a screen. Inventors throughout Europe and the United States (including Alexander Graham Bell) tried to build on this "mechanical" model, but Farnsworth recognized its inherent limitations and knew a radically different approach was needed.

Farnsworth knew that electrons could be beamed across a vacuum (or cathode) tube, undisturbed by air molecules that might otherwise cause distortion, and he wondered whether these rays, if properly manipulated, could project clear images onto a photoelectric screen at the other end of the tube. But transmitting and capturing the pictures in their entirety seemed technically impossible.

Farnsworth eventually confided in Rigby science teacher Justin Tolman, describing his idea for an integrated electronic television system, which included an "image dissector" (the camera) and the cathode-ray tube (or receiving set). Farnsworth detailed how the components interacted and drew the schematics on a sheet of notebook paper. He asked if his teacher had any reason to believe the principles involved were scientifically sound. Awestruck, Tolman shook his head and encouraged Farnsworth to just "study like the devil and keep mum."

Farnsworth's next major obstacle was more practical than theoretical: He was broke. The Farnsworth family had moved back to Provo. Philo dropped out of school and eventually joined the Navy in 1924. That same year his father passed away, and Farnsworth was granted an honorable discharge to care for his grieving mother.

Farnsworth's luck changed in spring 1926 when two wealthy businessmen, George Everson and Leslie Gorrell, hired him as a temporary office boy. Impressed by his work ethic and intelligence, they asked Farnsworth about his future plans. He entrusted them with his television idea, and, after consulting with various engineers to confirm that the lad wasn't an absolute loon, they ponied up a $6,000 investment.

With a bankroll and a new bride, Elma "Pem" Gardner, Philo left Utah for Los Angeles, where he could access the California Institute of Technology's superb research library and be close to Hollywood. (From the get-go he recognized television's entertainment potential.) By September, Philo's idea had attracted a $25,000 investment from San Francisco banker J.J. Fagan and his colleagues for 60 percent ownership of the enterprise. The Farnsworths moved to the City by the Bay and rented a home and loft at 202 Green Street where Philo and his two assistants—Pem and her brother, Cliff—would work.
On January 7, 1927, Farnsworth filed a patent for his electronic “television system” to protect the idea, but it wasn’t until September that he had a functioning model. To test it, Cliff placed a drawing of a triangle in front of the image dissector in one room while the rest of the team—which now included Philo’s geologist cousin Arthur Crawford, his sister Agnes and Pemi’s sister Ruth—watched the receiving tube in another. A line appeared. Not the whole figure, but one clearly defined side. “That’s it, folks!” Farnsworth cried. “There you have electronic television.”

He repeated the show for investor Everson, and the two wired Gorrell in Los Angeles: THE DAMNED THING WORKS.

By October 1928, 22-year-old Philo Farnsworth was being praised as a genius, and his name was poised to become as famous as Ford, Edison or Wright. Then came the unthinkable: A fire destroyed his laboratory. Fully insured, Farnsworth got the lab running again, but he lost months of time. And his backers, tired of waiting for a return on their investment, wanted a major corporation to step in.

Meanwhile, buzz was growing around Farnsworth’s lab, and a steady stream of celebrities and scientists journeyed to 202 Green Street to see the wunderkind’s miracle machine. Few guests expressed more interest than Vladimir Zworykin, who worked in RCA’s research laboratory. Farnsworth knew a licensing deal with an entertainment company could be the answer to all his financial problems; he could receive a percentage on every television camera and receiver set sold, netting him millions of dollars. Farnsworth hosted Zworykin for three days in mid-April 1930, answering every question. Before Zworykin left San Francisco, he picked up an image dissector in Farnsworth’s lab and said, “This is a beautiful instrument. I wish I had thought of it myself”—the highest compliment one inventor could extend to another.

No offer, however, was forthcoming. RCA had promised Zworykin a million-dollar budget to bring television to the masses, just as the company had done with radio. So RCA had sent Zworykin to snoop on Farnsworth—and Zworykin was soon claiming that he had invented electric television.

A long and complex legal battle ensued. RCA lawyers argued that Zworykin had patented a television-like device in 1923, making him the true inventor. They also insisted it was preposterous to believe that some 14-year-old kid with “only a grade school education” thought up an innovation that had eluded “great men of science and skill” for years.

But Farnsworth had proof that his teenage brainstorm in the potato field wasn’t just fantasy. Although as far as anyone can determine, Farnsworth never returned to Rigby, Idaho, Justin Tolman well remembered his “brightest student” and had kept the aged but still legible piece of notebook paper containing Farnsworth’s original sketches from early 1922.

The Patent Office’s 1935 ruling came in at almost 50 pages, but the nine-word conclusion was all Farnsworth needed: Priority of invention is awarded to Philo T. Farnsworth.

Despite securing a licensing arrangement with RCA in the aftermath of his lawsuit, Farnsworth knew that within a few years the deal would be irrelevant once his major patents expired. The millions he could have earned went instead to RCA. He continued his research, but crippling depression and ailments plagued Farnsworth for the rest of his life, and he died of pneumonia on March 11, 1971. By the time of his death at age 64, he’d been awarded 300 U.S. and foreign patents that led to advances in electron microscopes, radar, air traffic control and peaceful uses of atomic energy.

Only once did Farnsworth himself appear on national television. In July 1957 he was the mystery guest—introduced as “Dr. X”—on the hit game show I’ve Got a Secret. Celebrity panelists asked him a series of questions to try to guess his identity as the inventor of electronic television. Farnsworth was victorious and earned the top prize of $80 and a carton of cigarettes. But he won only because none of the show’s famous panelists had a clue who he was.

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