

Radio Finds Its Eyes

The story of Charles Francis Jenkins,
the forgotten pioneer of mechanical television.

By Donald G. Godfrey

In the world of creative dreamers the work of Charles Francis Jenkins (1867-1934) has been too long forgotten. He was an American original. He was an inventor – without apology. In 1922, he was the only American working on a new innovation called radio-vision – television. He produced the first American television pictures in December 1923 and had the only fully operating system of the time. According to the *Washington Sunday Star*, it was on a warm Washington D.C., Saturday afternoon, June 13, 1925, when television as a “long fantastic dream of science became an accomplished fact.” It was a private demonstration focused on television as a defense tool and demonstrated for a few dignitaries including Secretary of the Navy Curtis D. Wilbur. Just a few years later Jenkins filed with the Federal Radio Commission for an experimental television station license. W3XK went on the air. It was the pinnacle of Jenkins’ career. Hugo Gernsback declared “television has actually arrived,” and defined it as “instantaneous sight at a distance.” Jenkins himself described it as “radio finds its eyes.” Descriptions

of his early programming found in the National Archives sound a little like what we have on the air today, “jugglers, magicians, a one-man band... and a series of talks on reception and reproduction [of television pictures].”

Jenkins was more than just a television pioneer: he held hundreds of patents for a variety of inventions. Inventing was his natural talent. According to his autobiography, *The Boyhood of an Inventor*, even from his youth he was constantly fixing and inventing new tools around his family’s Indiana farm. In 1894, he built a Phantascope, which was a modified kinoscope or peep-show apparatus. A year later he had produced a motion picture projector. His interest in the new motion picture industry led him to form the Society of Motion Picture Engineers, 1916. He was the founder and first president of the organization we know today as the Society of Motion Picture and Television Engineers. He had more than three hundred patents to his name and only a few of these were related to television and the movies. Others included airplane brakes; Jenkins loved to fly, and he made most of his income from

a cylindrical milk container something akin to our ice-cream containers of today. If you've ever attended a movie, watched television, flown in an airplane, used waxed paper or purchased a carton of milk, you've used something from an invention of C. Francis Jenkins.

"They said it couldn't be done, but some darn fool went and did it."

A good deal of controversy surrounds Jenkins and his work. He was involved in legal battles for patents, but so was every other inventor of the day. His genius involved mechanical television and mechanics were at the foundation of all his efforts. In the 1930s, Zworykin and Farnsworth's electronic television ideas passed Jenkins by, and his name faded from our history. The story might have been different if those electronic ideas had proven unworkable. Nevertheless his work in mechanical television helped to establish those foundations for today. In a world permeated by television, Jenkins was a pioneer of vision, determined and energetic. The motto on the desk of his working laboratory read, "They said it couldn't be done, but some darn fool went and did it." But we are getting ahead of the story.

Little is known of Jenkins' youth. He was a Quaker farm boy, born near Dayton, Ohio, August 1867, but he did not live long in Ohio. Two years after his birth his parents moved to Richmond, Indiana, where Francis grew up. The farm was 141 acres, just a few miles north of Richmond near Fountain City, Indiana. The house where he spent his youth still stands. It was a twelve-room, two story brick structure, picturesque even today. Tall pines,

maple, fir and linden trees line a long lane from the main road down to the home. In one corner of the yard there is a circle of cedar trees the children used as an imaginative playhouse during the warm summer months. The nursery was on the first floor in the northeast corner of the house. Green lawns, shrubbery, and flowing fields of beans surrounded the

home. The foundations of a childhood farm life and Jenkins' Quaker origins undoubtedly influenced his life. On the farm, mechanics was a part of life. If something was broken, it was fixed – you didn't run to the store. Add to this natural work ethic, the Quaker belief in Christianity, and that God was a personal being, who encouraged works over financial gain, and you begin to understand Jenkins' roots.

Jenkins' ingenious aptitude was exhibited at an early age. One day his mother dressed him to play in the yard. He must not have liked the outfit, it was a short dress and a sunbonnet. The sunbonnet was to keep him from getting burned. The yard was surrounded by a large board fence, so the children couldn't go far and mother could keep an eye on them from her work around the house. On this particular day, when she checked the grounds, little Francis was nowhere to be found. The evidence of his ingenuity lay beside the fence – the sunbonnet and a saw. He had apparently taken a wood saw from the tool shed and cut a hole in the fence. He was found shortly, down by the barnyard playing with the new baby piglets.

C. Francis Jenkins came from a long line of inventors. His uncle Robert Jenkins invented the rolling cookie

cutter, and family members say that inventiveness is in Jenkins' blood. His cousin Russell L. Jenkins was a technical advisor to the President of Monsanto Research and several family members have filed patents over the years.

Jenkins' earliest inventions were for the farm. His first was a bean husker. This device removed the seed of the bean from the outer shell. His father was not too appreciative of the machine and Francis's attention was diverted to the challenges of greasing the axles of the wagons. He designed a jack that raised the wagons so that the grease might be easily applied. This invention caught the attention of his neighbors, so Francis and his brother made several jacks and sold them in town. Here he learned his first lesson in marketing – the painted jacks sold quickly, while those unpainted, yet just as workable, were not as marketable. The farm was a haven for invention for a growing young mind, but it could not hold him. As he grew he was constantly on the move. He longed to see the country.

It was after he graduated from high school that Jenkins made his first trip to the Pacific Coast. He worked in the saw mills of Washington State, riding the logs in the mill pond, where they were cut and loaded aboard the trains. Here again his mechanical genius was exhibited one day when the trains collided. It was a proposal from Francis that untangled the cars and had them back running within a few hours. He didn't stay long in any place. He worked the Washington timber industry, the Sierra Nevada mines of Arizona and New Mexico, and each year he would return to his family in Indiana for a brief visit. On one of these visits back home he was encouraged to take the



Charles Francis Jenkins, 1924

civil service exam.

In 1890, he gave up his western ventures for a job with the U.S. Life Saving Service – today the U.S. Coast Guard. This was a turning point in his career as it relocated him from the West Coast to Washington, D.C. He was appointed as a secretary to the founder of the Coast Guard, Sumner I. Kimball. From Kimball, Jenkins gained a broad humanitarian vision. He learned and wrote the stories of those in the service as he compiled, by hand, the annual reports of the Life Saving Service. It was at this time that Jenkins took up the hobby of photography.

Early Motion Picture Contributions

In 1895, Jenkins gave up full-time employment, declaring to everyone he wanted to be an inventor. This was a decision that didn't receive much support from family or friends. "Inventor" wasn't in any of the Washington, D.C.,

job descriptions and motion pictures were so new that, according to even the *Scientific American*, they were not attracting any attention.

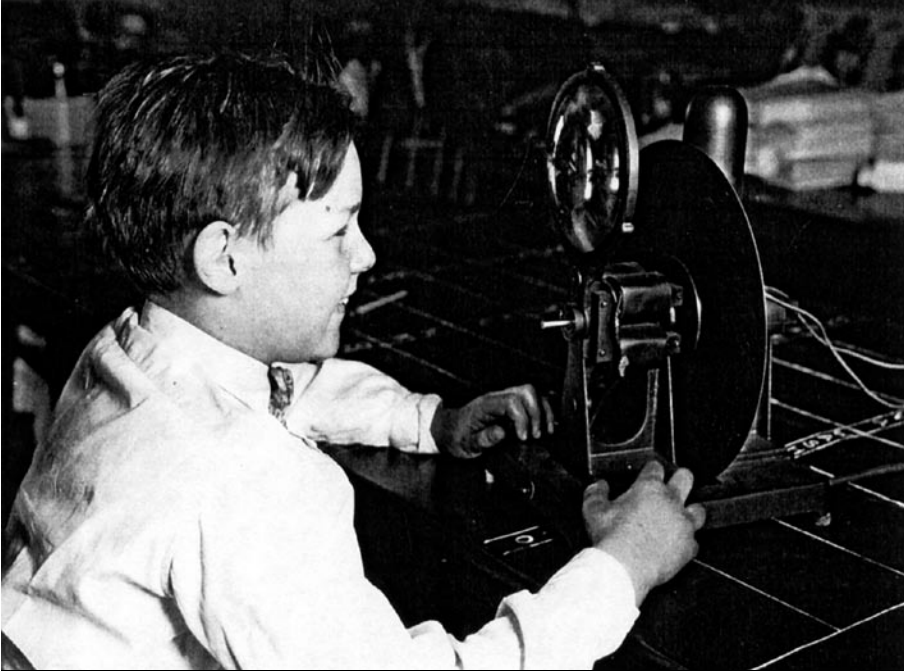
In the pioneering of motion pictures, it was Thomas A. Edison and his assistant W. K. L. Dickson who were working primarily on the film systems of the time. Edison's work revolved around the "Edison Vitascope." Dickson was working on a camera called the kinetograph and a viewing display apparatus called the kinoscope. These allowed the viewer to crank an endless film loop through the peep-show device. The problem with the kinoscope, according to historian Albert Abramson, was that it did not allow for screen projection. The two people working on projection systems were Jenkins and Thomas J. Armat. In 1894, Jenkins modified the Kinoscope substantially and called it the Phantascope. By 1895, Jenkins and Armat had formed a partnership producing the first practical motion-picture projector. The fundamental principles they originated, according to Gene G. Kelkres, "are still in use today." This partnership might have produced today's motion picture foundations, but it was a partnership filled with litigation, accusation and innuendo. Kelkres comments that when the despondent Jenkins sold his interests to Armat for just a few thousand dollars he "made a historic mistake... thereby virtually eliminating his [the Jenkins] name from its rightful identification with the eccentric cam projector." Armat's rights were soon sold to Edison, "thus history books... practically never [mention] a reference to the name which expresses the true origin of the apparatus: The Armat-Jenkins' Phantascope."

It was June 6, 1894, when Jenkins premiered his invention on the walls of the Jenkins & Company Jewelry (a store owned by his cousin Charles Milton Jenkins), in Richmond, Indiana.

The women left but the men stayed on to see the show.

The picture showed a vaudeville dancer moving across the screen in jerky movements. The group at first watched Francis working with the equipment, but their attention was quickly diverted to the performance as the young dancer imitated a butterfly. As the performer slowly lifted her skirt to reveal her ankle, several of the ladies in the audience, including Francis's mother, got up and stormed out. The *New York Herald Tribune*, reported that "[the] women left, but the men stayed on to see the show."

The challenges of motion-picture projection soon led Jenkins to his next most significant contribution to our industry – the establishment of the Society of Motion Picture and Television Engineers. The issue was standardization. Basically, the equipment of the time was all different as designed by the individual manufacturers and thus a focal standard was nonexistent. The first attempts to provide common standards had failed, so on July 14, 1916, Jenkins invited a few engineers to the first meeting to discuss motion picture engineering. The group elected Jenkins as Chair and at a later meeting he was acknowledged as founder of the Society of Motion Picture Engineers, where he served as President for the first two years and remained an active participant throughout his life. Although the original purpose of the



The Radio Visor, a commercial receiver, was sold to members of the viewing audience who assembled the receiver and then could view programming on the Jenkins stations in Washington, D.C. , or in New Jersey.

SMPE organization was engineering standards, it rapidly grew into an important forum where engineers presented their futuristic ideas. Among those early presenters are historical names of significance, Lee deForest, Herbert E. Ives, and Terry Ramsaye.

Jenkins Television

Jenkins' work in television was mechanical. He utilized his film experience and what Albert Abramson described as a "unique class prism." Jenkins called it the Prismatic Ring. In 1922, Jenkins was the only American inventor working on television; his first television patent was filed March 13, 1922. It was described as a process for transmitting pictures by wireless. That first transmission took place in Washington, D.C., May 19, 1922. At

this point in television history Philo T. Farnsworth was just 16 years old. Vladimir K. Zworykin had just immigrated to the United States and it would be a year before he began his important work at Westinghouse. The first of use Jenkins' system was in the transmission of still photographs, what we'd see today as facsimiles. There were demonstrations of ship-to-shore images, weather reports, and newspaper application of the visual technology. However, as "radio found its eyes," Jenkins founded the Jenkins Laboratories, and there was tremendous publicity. The idea for the new corporation, according to Jenkins, was "to develop radio movies to be broadcast for entertainment in the home," as those stationary pictures now began to move.

In March 1925, a British competitor,

John Logie Baird, demonstrated the first successful transmission of a crude television image. Four months later Jenkins produced the first American transmissions. G.L. Bidwell, reporting for the American Radio Relay League, wrote, “motion pictures by radio are here, I saw them with my own eyes.” These first images were filmed silhouettes; audiences largely radio amateurs and those experimenting with the new technology. It would have been these experiments and their resulting publicity that inspired the youthful Farnsworth. The challenge in Jenkins’ and Baird’s mechanical scanning devices was picture resolution. Yes, a crude image could clearly be seen, but film was producing much better pictures.

Jenkins continued working on improving the picture quality and in June 1926, just before the establishment of the Federal Radio Commission (later the Federal Communications Commission), the Department of Commerce granted Jenkins a six-month television station license for W3XK (it started as 3XK). It was on the air with a regular program schedule by July 1928 and Jenkins was selling receivers for \$2.50 (\$26.90 in 2003 dollars), which the audience participants could assemble themselves and thus see his programming. These receivers he called “Radiovisor Kits” were aggressively marketed in the Eastern States.

The years 1926 through 1929 were pinnacle years for Jenkins Television. He had all of the essentials for success. He had a station on the air in Washington D.C., and a proposal for Jersey City; programming to attract an audience; a commodity for sale in the kits, voluminous publicity for

his technological and programming experiments, and aggressive plans for future growth. Unfortunately, competition too was on the rise. A new technology called electronic television was being tested successfully by Farnsworth in San Francisco, lawsuits were hovering, and the stock market was about to crash. By the end of the DeForest Radio Company controlled the interests in Jenkins corporations and shortly thereafter the Jenkins television corporations were completely absorbed. Both Jenkins and DeForest companies went bankrupt during the Depression, and when the DeForest Company sold to RCA, all of Jenkins patent rights went with the sale. Jenkins was in ill health throughout the early 1930s. Although he continued to work in the lab until the end, he clearly saw electronic television as the future. On June 6, 1934, he suffered a heart attack and died.

At the 2003 Prime Time Emmy Engineering Awards the Academy of Television Arts and Sciences bestowed the Charles F. Jenkins Lifetime Achievement Award on Frank Dolby. Otherwise this television pioneer — described by one of his contemporaries as “a man of great vision [with] the courage of his convictions, an indomitable will and boundless energy” — is virtually unknown.

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