

JOSEPH SHIRK,
 ASTRONOMER, MATHEMATICIAN AND INVENTOR.

By Hon. A. G. Seyfert.

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I am aware of the fact that this is not a biographical "Who is Who" society. At the same time, we must admit that all history radiates around the individual who alone can make history. In other words, the true story of a human life is more interesting and far more fascinating than the most thrilling romance. The one is history, the other fiction. The best in literature is autobiography and biography, because it deals with facts relating to the man and the time in which that man lived, and is part of that time. From a local view-point that is just as true of every community wherein an outstanding character lived and whose life work largely made the history of that community. A man's work is his best history and memorial to be remembered by when he is no more.

I have no apology to offer for this introduction as to what I am about to say in my paper tonight, of one who was born and lived eighty-two years in this county. Joseph Shirk is pre-eminently worthy of being put on the honor roll of this Society for what he did as a self educated astronomer, mathematician and inventor.

A good deal has been written and published in the newspapers from time to time of Mr. Shirk, in which the imagination of the writers sometimes led them astray into fiction.

My authority for what I take the liberty to call the true story of this remarkable, comparative unknown man outside of the east end of this county, I dug out of the memory of his sons and the records he left in the concrete mechanical devices his unique and richly endowed brain contrived.

Had his unassuming modesty and conscience permitted him to legally protect himself to what rightfully belonged to him, his name today would stand out prominently as one of the great American inventors of the nineteenth century. He was a great teacher, for he taught himself what many another was unable to achieve with the best of college or university training at great expense.

In 1732 Ulrich Shirk with six sons and two daughters, migrated from Switzerland to America. They landed at Philadelphia and came west to the locality of Lancaster. The father and three of the sons, Ulrich, Casper and John, located what is now Schoeneck in West Cocalico Township. This was the origin of the many families by that name in that section of the county.

In the old grave yard at Schoeneck you will find the graves of many Shirks, among them that of the oldest, Ulrich Shirk. The other three sons, Joseph, Peter and Michael drifted to the vicinity of New Holland. Peter had a son named Joseph, who married a daughter of Christian Zimmerman. They located on land south of Turkey Hill and but a short distance north of Spring Grove, now Union Grove, in East Earl Township.

Peter Shirk, the father of Joseph the subject of this paper, was married to a daughter of John Sensenig of Earl Township. They located on the original Shirk tract of land, granted by Penn to his father, southeast of Churchtown, between the Conestoga and the Welsh Mountain. This tract

Note: See Illustrations opposite page 90.

has been in the Shirk name to the present day and now contains three farms. Here the boy, Joseph, was born on January 30th, 1820, in a log house that had a large chimney at each end; one to warm the kitchen, the other the sitting or living room. This house was erected about the year 1788 by one Hugh Goheen. Years later a more modern farm house was built and the old log one transformed into a work-shop for the boy, who early in life displayed a genius for making all sorts of labor-saving machinery and devices; chiefly for farm labor.

I have already referred to the fact that Joseph Shirk, his grandfather, had located on a farm at the foot of Turkey Hill in Earl Township now East Earl. This farm was purchased by the grandson, Joseph, who moved to it early in his married life and remained there until his death, on August 19th, 1902.

A small mountain stream of water in which he saw power was one of the inducements why he settled there. Here he erected a work-shop and got power to drive his machinery by harnessing the stream that came down Turkey Hill. Later this was not sufficient for his work and he then built a steam engine to take the place of the water power.

The school facilities in the first half of the nineteenth century in eastern Lancaster County were poor, for a country boy. There was a log cabin school near the Shirk homestead; a pay school when a teacher could be had for a few months of the winter. This school the boy attended, for only a few weeks in winter, a part of which time he himself taught the school. He had procured books, and with but very little outside assistance, mastered them and thus obtained his knowledge of reading, writing and arithmetic. The three R's gave him a greater vision that there was a world of knowledge beyond them. This he entered by the door of such books as he could obtain. Some of his most valuable books he bought in Philadelphia, when hauling grain from his father's farm to market.

Thus he came to study Latin, a little Greek, Botany and higher mathematics, including geometry, trigonometry, surveying and astronomy. He became an expert in astronomical calculations. He could calculate the rising and setting of the sun and moon, as well as the solar and lunar eclipses for years ahead. This he did for the mere satisfaction of doing it. He frequently discovered errors that almanacs in the calculations contained and notified the publishers of such errors. He was extremely fond of the study of botany and could name all the plants, herbs and weeds that grew within miles of his home. In his surveying expeditions in fields and woods he delighted to point out to those who were with him, the rare plants and uses of them. He would discuss plant life like a master of the science of plants, which he was, though self-taught.

When quite young he served a short apprenticeship at the tanning trade with his uncle, Christian Shirk, who was a Mennonite minister and also a surveyor. During this time he had access to his uncle's books on surveying and instruments, and became master of both books and compass; as his uncle soon discovered, when the boy told him his surveying instruments were not properly adjusted. He corrected the errors and from that time on for sixty years he was the most accurate surveyor in all eastern Lancaster County.

His field notes and drafts cover nearly every acre of land from Terre Hill to Morgantown. When other surveyors agreed to disagree on lines and corners, "Old man Shirk," as he was lovingly called, adjusted the trouble so that no one ever questioned the corrections thereof.

He made his own compass in every detail, graduated in half degrees, with double verniers, reading to single minutes, having tangent screws and springs and also a vertical circle with degrees marked thereon. This compass is now in the possession of his son, Peter E. Shirk, of Blue Ball. It is a highly valued instrument, as good as ever, and so far as I am aware of, the only complete compass ever made in this county.

He surveyed his first tract of land on April 15, 1841, and his last on January 21, 1901. Sixty years behind the compass and the chain with a keen observing eye of a botanist, alone would make a story as fascinating as a romance of the hills and valleys of Lancaster, Berks and Chester counties, where he tramped the fields and woods as part of his vocation.

One day he saw a farmer mow grass with a scythe to which he had attached a wooden finger to aid in pushing the mown grass aside into a row. This gave him an idea for the making of a grain cradle, which he did, with four fingers. When harvest time arrived, he appeared in his father's wheat field with this strange device. When his father saw it for the first time, he ordered him to take it back to his shop, as he did not desire to have any wheat tangled up with such a thing. He obeyed his father's injunction and took the cradle away, but when the father, and the men who assisted him in cutting wheat with the sickel, had gone into the house to eat their dinner, young Joseph went out to the wheat field with his new cradle, to show them what he could do, and cut a few swaths across the field, in a way so much cleaner and better than when done with the sickel. When his father and his workmen appeared they were astonished at what they saw. It created a sensation in the community among the farmers and he received orders for more cradles than he could make.

This is the history of the grain cradle, successor of the sickel, and to me more interesting than the story of the reaper that succeeded the cradle.

Mr. Shirk devoted much of his time in making thousands of grain cradles, wooden rakes and wooden forks. All of them obtained such a reputation for durability and workmanship in finish, that he could not supply the demand for them. In addition to making cradles, rakes and forks, his home was a general utility shop to repair anything the community for miles around his place, needed. He made many sewing machines with improved devices to sew and hem, that no other machine had at that time.

Right here I want to say that he never had anything patented, and when these mechanical devices were noticed by others and infringed upon and patents obtained, they who had no moral right to the invention reaped the benefit of the patent law.

Mr. Shirk was a skilled marksman with the rifle and many a chicken lost it's head when a bullet was aimed at it. In 1845 when he was twenty-five years of age, a cousin of his who had moved to Ohio years before, invited him to pay them a visit. Knowing that he was an expert rifle shot, as an inducement to accept his invitation, wrote that the woods of Ohio were full of deer, wild turkey and squirrels.

In the preparation for the trip, which at that time was much more of a journey than one across the continent now, he paid particular attention to his gun which he took with him. In looking it over one day, he concluded that if a gun could be made to fire more than one shot withing reloading, it would be convenient for deer hunting. He concentrated his inventive mind upon this subject and worked at it until he had completed a gun that would shoot seven times before he had to stop to reload it. He took his rifle barrel and attached a revolving cylinder to it with seven chambers that could be discharged one after the other with a lever trigger that turned the cylinder. The device was the identical mechanical principle that Col. Colt employed a few years later when he had the famous Colt's revolver patented; and with few modern improvements has been the standard fire-arms of that type ever since.

In 1845 the journey across the mountains to Ohio could not be made by rail all the way. Passengers had to travel part of the distance by canal boat. On one of these slow moving boats, to pass the time more rapidly, Mr. Shirk exhibited his gun to the other travellers, one of whom was a New England Yankee who asked Mr. Shirk to take it apart and explain the mechanical device in detail. This he did for it pleased him to know that this smart

looking stranger was intensely interested in the rifle. The alert eye and keen mind of the young Yankee saw untold possibilities in this new device of a deadly weapon. The revolver made and patented by Samuel Colt, of Hartford, Connecticut, a few years later, was similar in design and principle to the gun Mr. Shirk had made and used for shooting squirrels in Ohio. His friends who were with him called this new device attached to a rifle "the squirrel thrasher," from the fact that he shot three and four squirrels without reloading the weapon.

On account of the illness of his father, who died before he arrived home, he sold his gun and returned. When asked why he sold so valuable a device for a mere song, he said, "I can make another when I get home."

The reproduction of Mr. Shirk's gun to the same pattern as the famous Colt revolver a few years later, is an undoubted fact. One of two things is so self evident to me, that you may believe the one and I the other. The fellow passenger was Mr. Colt who, by the way, was a great traveller and got his inspiration from Mr. Shirk's new weapon, or, was it one of those singular coincidents that in life two persons should have invented the same device only a few years apart.

Col. Colt achieved fame and great wealth by the patent. Mr. Shirk never contested any claim to any patent of which he was the real inventor, inasmuch that he never made any application to protect himself by a patent. It was rumored that Mr. Colt, at his death in 1863, left a large sum of money to Mr. Shirk, who even refused to investigate the rumor, absolutely refusing to have any responsibility as the inventor of a deadly weapon.

He had at one time, an old-fashioned hand printing press in his shop which gave him great pleasure, for he was a great admirer of Franklin and said he belonged to the same craft.

His greatest delight in his last years was not in the fact that he made a transit compass, invented and manufactured a sewing machine, a new device as a weapon or many other mechanical wonders which he alone understood and used, but that all the devices were made with absolute accuracy. His reputation along this line was recognized by many scientific instrument makers in Philadelphia and New York.

Mont Cenis is an Alpine Peak and pass between Savoy and Piedmont, eleven thousand, seven hundred and ninety-two feet high. Over the pass a road was constructed by orders of Napoleon at a cost of millions. Thirteen miles west of the pass a railroad tunnel, seven and one-half miles, was begun in 1857, on the Italian side and in 1863 on the French side of the Alps. It was finished in 1870 at a cost of fifteen million dollars. The instruments for the engineers in this great work were made by a Philadelphia firm of scientific instrument makers. When completed they were put in the hands of Mr. Shirk for absolute accurate adjustment. This he did, and so perfect was it done, that when the two sets of workmen met under the Alps there was only a variation of two inches.

A cattle dealer and butcher came to him one day stating that he was not able to compute the price or cost of his sales, and asked him if he could make him a set of scales that would do their own computing. Mr. Shirk made the scales that did the work accurately.

This was the pioneer invention in that field of industry, from which alone he should have had a rich financial reward if he had protected himself with patents.

Thus his many inventions and devices he made merely for the love of making something new, could be indefinitely extended to a long list that would put his name among the great inventors of America.

Mr. Shirk was married in 1850 when he was thirty years of age to Esther Horning, of Berks County. She was the daughter of Joseph Horning, who lived a short distance south-east of Allegheny Church. The Hornings were of Dutch or Holland extraction. During the first eighteen years of their

married life they had thirteen children; six sons and seven daughters. The oldest son, Peter E., who lives at Blue Ball, inherited much of his father's genius as an inventor and holds many patent rights that are financially profitable. His youngest son, Christian H., started life as a teacher in East Earl Township. He became a student at the Millersville Normal School, Schuylkill Seminary, now Albright College, entered Yale University and graduated from Yale Divinity School. He became a member of the Philadelphia Methodist Episcopal conference and had charge of some of the leading churches of that denomination in Philadelphia. He is the author of several books on theology and many magazine articles. I refer to this to show that other good things came out of Turkey Hill beside inventions.

Joseph Shirk was an ardent abolitionist prior to the Civil War. When drafted during that conflict, his non-resistant religious principles made it impossible for him to do military duty. He was excused by paying the required amount exacted by the Government, as a conscientious objector. He was a man of sterling piety and deep religious convictions. He studiously read his Bible and other deeply religious books and spent much time in prayer. I knew him intimately in my younger years and looked upon him with reverence and high esteem for his learning as a self taught man of wisdom and great intellectual attainments.

He died in August, 1902, ripe in years, full of unknown honors and esteemed by all who knew him. His remains were buried in the old Mennonite burial ground, but a short distance south of the Shirk homestead near Union Grove. A modest tomb-stone stands at the head of his grave. The epitaph:

“Joseph Shirk, born January 30th, 1820.

Died August 19, 1902.

Aged 82 years, 6 months, 20 days.

Is as unassuming as his life was.”

I beg leave to acknowledge my gratitude to his two sons, Peter E., of Blue Ball, and Rev. Christian H. Shirk, D. D., Philadelphia, and my good friend M. G. Weaver, of New Holland, for having furnished me with facts to write what I have written.

I have for many years felt as if some one should perpetuate the name of Joseph Shirk as a self educated Astronomer, Mathematician and Inventor for the benefit of posterity. My research for material has convinced me more than ever that one with greater literary attainments should have undertaken it, and I trust some day, someone will write a biography of many pages that will be as interesting as Mr. Shirk's life was, as a man of great talents that made him a benefactor to mankind.

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