THE BOYS' LIFE OF EDISON

BY

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OF THE EDISON LABORATORY. AUTHOR OF "ABC OF ELECTRICITY," "ABC OF THE X-RAYS"

WITH AUTOBIOGRAPHICAL NOTES

BY MR EDISON

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INTRODUCTION

THIS is the story of a great inventor, the most conspicuous figure of the age of electricity. The story is largely autobiography, for, through the author's association with Mr. Edison, it has been possible often to obtain his own narrative of his life. For nearly thirty-one years the author has had the privilege of a connection with Mr. Edison and the Edison companies, and at present he is acting as Mr. Edison's assistant. Every page of the book has been read by Mr. Edison himself, and it is published with his approval as the authoritative story of his life to the present time.

It is probably as a worker of wonders, an interpreter of the secrets of Nature, an actual wizard of science, that Edison fascinates the imagination of almost every boy. In this picture of the actual facts of the inventor's life the reader will find that while Edison is just as great as imagined, yet this greatness has not been reached by chance, but honestly earned by the hardest kind of hard work and the most intense and earnest application. The wonderful things that he has accomplished have been the things that he purposely set out to do, and are not the result of some happy thought, or blind luck, or chance.

There has been but little abatement in Mr. Edi-

son's activities. The flight of time has not dimmed his vivid imagination; has brought no change to his clear broad mental vision; nor has his capacity for intensive, forceful work perceptibly lessened. There is no telling what other inventions he may yet make to benefit the world, but if he never added anything to what he has already done, his life and achievements afford the telling of one of the most remarkable stories in the history of the world.

The author has had the honor and pleasure of assisting in the preparation of a large and comprehensive biography entitled, *Edison: His Life and Inventions,* by Frank L. Dyer and T. Commerford Martin, published by the publishers of the present volume. He gratefully acknowledges the fact that certain features of this book have been adapted from the pages of that elaborate biography. For the permission to do this he tenders his thanks to his friends Frank L. Dyer and the late T. Commerford Martin.

WILLIAM H. MEADOWCROFT.

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THE BOYS' LIFE OF EDISON

I

THE EARLY DAYS OF ELECTRICITY

THIS is the life story of the greatest of inventors in the field of electricity. It is true that Thomas A. Edison has helped the progress of the world by many other inventions and discoveries quite outside of electricity, but it is in this field that he is best known. Now, in this age of electricity, it happens very fortunately that a close personal association with Mr. Edison makes it possible at last to tell younger readers the real story of Mr. Edison's life, partly in his own words. It has been a life full of surprises as well as of great achievements, and one of the surprises which we meet at the start is that, unlike Mozart, who showed his musical genius in infancy, and unlike others devoted to one thing from the outset, Edison took up electricity almost by accident.

Yet this is not so strange when we think how little electricity there was to take up in the middle of the nineteenth century. Electricity was not studied in the schools. It was not a separate art or

business. Men of science had occupied themselves with electricity for a long time, but they really did not know as much about it as a bright boy in the upper grammar grades to-day. Speaking in a very general way, we may say that simple frictional electricity[1] was an old story, that Franklin had discovered the identity of electricity and lightning, and that Galvani had discovered in 1790 and Volta had developed in 1801 the generating of electric currents from batteries composed of zinc and copper plates immersed in sulphuric acid.

But it was not until 1835, only twelve years before Edison was born, that Samuel F. B. Morse applied electrical currents to the sending of an alphabet of dots and dashes by wire. Thus it was in the infancy of telegraphy that Edison first saw the light.

Telegraph apparatus in those early days was of a crude and cumbersome kind—quite different from that which young students experiment with at the present time. For instance, the receiving magnets of the earliest telegraphs, which performed the same office as the modern sounders, weighed seventy-five pounds instead of a few ounces.

It was a very difficult undertaking for Morse to establish the telegraph after he had invented it. It was such a new idea that the public could not seem to understand its use and possibilities. People would not believe that it was possible to send messages regularly over a long stretch of wire, and, even if it were possible, that it would be of much

[1] Made by rubbing certain objects together, like amber and silk, the original discovery over two thousand years ago.

use anyway. It took him a long time to raise money to put up a telegraph line between Baltimore and Washington. Before this, he had offered to sell the whole invention outright to the United States Government for one hundred thousand dollars; but the Government did not buy, as the invention was not thought to be worth that much money.

In 1847, the year Edison was born, there were only a few telegraph circuits in existence. The farthest line to the west was in Pittsburgh, Pennsylvania. It was in this early telegraph office that Andrew Carnegie was a messenger boy. We could name a great many more notable men in our country who began their careers in a similar way, or as telegraph operators, in the early days of telegraphy, but space forbids.

Within a few years after Edison was born there came a great boom in telegraphy, and new lines were put up all over the country. Thus, by the time he had grown to boyhood the telegraph was a well-established business, and the first great electrical industry became a pronounced success.

There were no other electrical industries at this time, except electro-plating to a limited extent. The chief reason of this was probably that the only means of obtaining electrical current was by means of chemical batteries, as mechanical generators had not been developed at that time.

While the principles of the dynamo-electric machine had been discovered, and a few of these machines and small electric motors had been made by scientists, in the middle of the nineteenth century

such machines were little more than scientific toys, and not to be compared with the generators of modern days.

Edison, therefore, was born at the very beginning of "The Age of Electricity," which can be said to have actually begun about 1840, or soon after.

It is not too much to say that the many important and practical inventions that he has since contributed to the electrical arts have had no small weight in causing the present time to be known as "The Age of Electricity."

II

EDISON'S FAMILY

HAD there not been a family difference of opinion about the War of Independence, we might never have had Edison the great inventor.

The first Edisons in this country came over from Holland about the year 1730. They were descendants of a family of millers on the Zuyder Zee, and when they came to America they first settled near Caldwell, New Jersey.

Later on they removed to some land along the Passaic River. It is a curious and interesting coincidence that a hundred and sixty years later Mr. Edison established the home he now occupies in the Orange Mountains, which is in the same general neighborhood.

The family must have gotten along well in the world, for we find the name of Thomas Edison, as a bank official on Manhattan Island, signed to Continental currency in 1778. This was Mr. Edison's great-grandfather, who lived to be one hundred and four years of age.

It will be seen from the date, 1778, that this was during the time of the War of Independence. This Thomas Edison was a stanch patriot, who thoroughly believed in American independence. He had a son named John, who differed with his father in

political principles and favored a continuance of British rule.

After the war was over John left the country, and, with many other Loyalists, emigrated to Nova Scotia and settled there. While he still lived there a son was born to him, at Digby, in 1804. This son was named Samuel, who became the father of Thomas Alva Edison, the inventor.

Seven years later John Edison, as a Loyalist, became entitled under the laws of Canada to a grant of six hundred acres of land, and moved westward with his family to take possession of it. He made his way through the State of New York in wagons drawn by oxen to the township of Bayfield, in upper Canada, on Lake Huron, and there settled down.

Some time afterward John Edison moved from Bayfield to Vienna, Ontario, on the northern bank of Lake Erie. As will be understood from the above, he was the grandfather of Mr. Edison, who gives this recollection of the old man in those early Canadian days:

"When I was five years old I was taken by my father and mother on a visit to Vienna. We were driven by a carriage from Milan, Ohio, to a railroad, then to a port on Lake Erie, thence by a canal-boat in a tow of several miles to Port Burwell, in Canada, across the lake, and from there we drove to Vienna, a short distance away. I remember my grandfather perfectly as he appeared at one hundred and two years of age, when he died. In the middle of the day he sat under a large tree in front of the house, facing a well-traveled road. His head was

covered completely with a large quantity of very white hair, and he chewed tobacco incessantly, nodding to friends as they passed by. He used a very large cane, and walked from the chair to the house, resenting any assistance. I viewed him from a distance, and could never get very close to him. I remember some large pipes, and especially a molasses jug, a trunk, and several other things that came from Holland."

John Edison was long-lived, like his father, and died at the age of one hundred and two. Little is known of the early manhood of his son Samuel (Thomas A. Edison's father), until we find him keeping a hotel at Vienna, and in 1828 marrying Miss Nancy Elliott, who was a school-teacher there.

He was six feet in height, and was possessed of great strength and vigor. He took a lively share in the troublous politics of the period.

In 1837 the Canadian Rebellion broke out. The cause of it was the same as that which led to the War of Independence in America—taxation without representation.

Samuel Edison was so ardently interested and of such strong character that he became a captain in the insurgent forces that rallied under the banners of Papineau and Mackenzie.

The rebellion failed, however, and those who had taken part in it were severely dealt with. Many of the insurgents went in exile to Bermuda, but Samuel Edison preferred the perils of a flight to the United States. He therefore departed from Canada with his wife, hurriedly and secretly.

There was a romantic and thrilling journey of one hundred and eighty-two miles toward safety. The country through which they passed was then very wild and infested with Indians of unfriendly disposition, and the journey was made almost entirely without food or sleep.

They arrived safely in the United States, however, and, after a few years spent in various towns along the shores of Lake Erie, finally came to Milan, Ohio, in 1842. Here they settled down and made their home, for the place gave great promise of abundance of business and prosperity.

In those days railroads were few and far between, and there was none near Milan. The great quantities of grain that were grown in the surrounding country were sent to Eastern ports by sailing vessels over the lake. Milan was connected by a wide canal with the Huron River, which emptied into Lake Erie. Thus the town became a busy port, with grain warehouses and elevators, at which as many as twenty sailing vessels were loaded in a single day.

There also sprang up a brisk ship-building industry, for which the abundant forests of the region supplied the necessary lumber.

You will see, therefore, that Mr. Edison's father gave evidence of shrewd judgment when he decided to make his permanent home at Milan, for there was plenty of occupation, with every prospect of prosperity. He was always ready to look on the brightest side of everything, and could and did turn his hand to many occupations.

He decided to make his chief business the manufacture of shingles, for which there was a large demand, both in the neighborhood and along the shores of the lake. The shingles were made mostly of Canadian wood, which was imported for the purpose. They were made entirely by hand and of first-class wood, and so well did they last that a house in Milan on which these shingles were put in 1844 was still in excellent condition forty-two years later. Samuel Edison did well in this business and employed a number of men.

In a few years after the family had made their home at Milan, Thomas Alva Edison was born there, on February 11, 1847.

His mother was an attractive and highly educated woman, and her influence upon his disposition has been profound and lasting. She was born in Chenango County, New York, in 1810, and was the daughter of the Rev. John Elliott, a Baptist minister, and descendant of an old Revolutionary soldier, Capt. Ebenezer Elliott, of Scotch descent.

The Elliott family was evidently one of considerable culture and deep religious feeling, for two of Mrs. Elliott's uncles and two brothers were also in the Baptist ministry. As a young woman she became a teacher in the public high school at Vienna, Ontario, and thus met her husband, who was residing there.

The Edison family consisted of three children, two boys and a girl. Besides Thomas Alva, there was an elder brother, William Pitt, and a sister named Tannie. Both brother and sister had con-

siderable ability, although in different lines. William Pitt Edison was clever with his pencil, and there was at one time an idea of having him become an art student; but evidently the notion was not carried out, for later in life he was manager of the local street-railway lines at Port Huron, Michigan, in which he was heavily interested.

This talent for sketching seems to run in the family, for Thomas A. Edison's first impulse in discussing any mechanical question is to take up the nearest piece of paper and make drawings. Scarcely a day passes that this does not happen. His immense number of note-books contain thousands of such sketches.

His sister, who in later life became Mrs. Tannie Edison Bailey, had, on the other hand, a great deal of literary ability, and spent much of her time in writing.

As a child the great inventor was not at all strong, and was of frăgile appearance. His head was well shaped but very large, and it is said that local doctors feared he might have brain trouble.

On account of his supposed delicacy, he was not allowed to go to school at as early an age as is usual. And when he did gō, it was not for a long time. He was usually at the foot of his class, and the teacher had spoken of the boy to a school inspector as being "addled."

Perhaps the reader can imagine the indignation of his mother on hearing of this teacher's report. She had watched and studied her boy closely, and knew that he had a mind unusually receptive and mental

powers far beyond those of other children. So she resolved to take him out of school and educate him herself.

It was fortunate that Mr. Edison had a mother who was not only loving, observing, and wise, but at the same time well informed and ambitious. From her experience as a teacher, she was able to give him an education better than could be had in the local schools of that day.

Under her care the boy formed studious habits and a taste for good literature that have lasted to this day. He is a great reader, and what has once been read by him is never forgotten if it is in any way useful.

When Edison was a child he was deeply interested in the busy scenes of the canal and grain warehouses, and particularly in the ship-building yards.

He asked so many questions that he fairly tired out his father, although the older man had no small ability. It has been reported that other members of the family regarded the boy as being mentally unbalanced and likely to be a lifelong care to his parents.

Even while he was quite a young child his mechanical tendencies showed themselves in his fondness for building little plank roads from the pieces of wood thrown out by the ship-building yards and the sawmills. One day he was found in the village square laboriously copying the signs of the stores.

To this day Mr. Edison is not inclined to accept a statement unless he can prove it for himself by experiment. Once, when he was about six years old,

he watched a goose sitting on her eggs and saw them hatch. Soon after he was missing. By and by, after an anxious search, his father found him sitting in a nest he had made in the barn filled with goose and hen eggs he had collected, trying to hatch them out.

His remarkable memory was noticeable even when he was a child, for before he was five years old he had learned all the songs of the lumber gangs and of the canal men. Even now his recollection goes back to 1850, when, as a child three or four years old, he saw camped in front of his home six covered wagons, "prairie schooners," and witnessed their departure for California, where gold had just been discovered.

Another of his recollections of childhood is of a sadder nature. He went off one day with another boy to bathe in the creek. Soon after they entered the water the other boy disappeared. Young Edison waited around for about half an hour, and then, as it was growing dark, went home, puzzled and lonely, but said nothing about the matter. About two hours afterward, when the missing boy was being searched for, a man came to the Edison home to make anxious inquiry of the companion with whom he had last been seen. Edison told all the circumstances with a painful sense of being in some way guilty. The creek was at once dragged, and then the body was recovered.

Edison himself had more than one narrow escape. Of course, he fell into the canal and was nearly drowned—few boys in Milan worth their salt