

Lesson Forty-One

Thomas Alva Edison

LESSON IDEA

To demonstrate the creative genius of Thomas Edison, and to describe the development and character of this great inventor.

PREPARATION

Read the "During The Week" section and prepare the suggested wall chart.

"THE BOY IS ADDLED," the teacher barked sourly. "He's not worth keeping in school any longer."

When Thomas Alva Edison overheard that brutal pronouncement, he raced for home with his pride crushed and his eyes blinded by tears.

"Then I found out what a good thing a good mother was!" the famous inventor recalled years later. "She took me back to school and angrily told the teacher that he didn't know what he was talking about. She was the most enthusiastic champion a boy ever had, and I determined right then that I would be worthy of her, and show her that her confidence had not been misplaced."

The proud mother, herself a former teacher, enrolled her son in a new school that very day: the Edison "classroom-for-one" in the family home at Port Huron, Michigan. The budding homeschooled scholar, then known as Al, quickly developed a thirst for knowledge.

By the age of ten (he was born on February 11, 1847), Al had read such works as Gibbon's *Decline and Fall Of The Roman Empire*, Hume's *History Of England*, Sear's *History of the World*, Burton's *Anatomy Of Melancholy*, and the *Dictionary of Sciences*. And he had already begun copying simple scientific experiments from his textbooks.

By his 12th birthday he was urging his parents to let him organize a newspaper business on the new railroad line which ran from Port Huron to Detroit. He planned to sell newspapers and snacks to passengers, at his own risk and for his own profit. The family did not need the extra money, but Al did (for books, chemicals, and laboratory equipment). Railroad officials and his parents were hesitant, but they eventually relented and young Edison was soon in business.

"Peanuts, popcorn, chewing gum, candy!" was his familiar cry. "'Honest Abe' Elected President! Southern States Form Confederacy! Get your *Free Press!* Read all about it!"

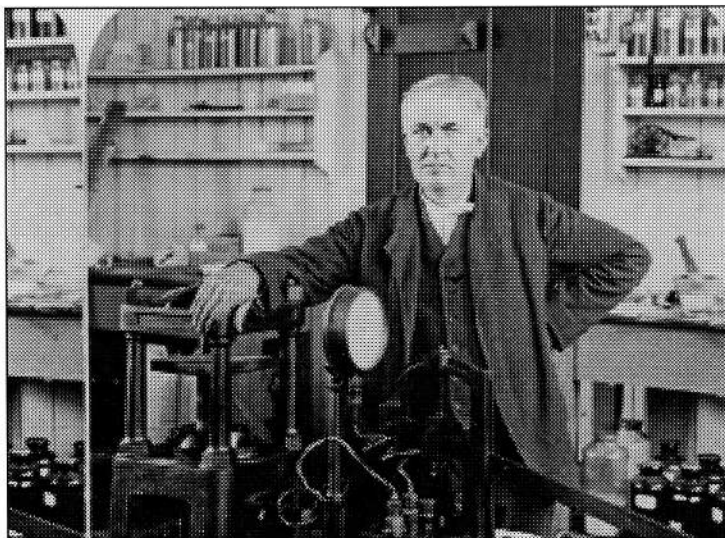
When the railroad added more trains, Al hired some assistants (newsboys and street hawkers) who sold whatever papers remained after the trains arrived. As business increased, so did Al's ideas. He was soon buying fancy vegetables in Detroit to sell in Port Huron, and fresh butter and

fruit from farmers in Port Huron to sell in Detroit. He rented a stall in his home city, and hired an assistant to sell the Detroit produce. In Detroit, he sold to established shopkeepers.

The earnings from his growing enterprise often amounted to several dollars a day, which was good pay at the time for an adult, much less a young boy. One dollar of each day's profit went to his

mother; the rest he spent on equipment and books for his experiments.

How do Edison's study and work habits compare to those of your friends today? How many are willing to work as hard to achieve their goals? How many expect, and receive, handouts from



Thomas Edison in his laboratory

their parents? Would many of the boys or girls you know risk their time and money in a business enterprise similar to Edison's? [Encourage discussion and comparisons.]

Edison's boyhood experiments were neither dull nor routine. Working with a neighborhood chum, for example, he once set up the wiring for a homemade telegraph and decided to produce an electric current by the friction method. The two young innovators rounded up an assortment of neighborhood cats and tried to generate current by rubbing their fur. The tabbies lacked the proper spirit of scientific inquiry, however, and clawed the lads so unmercifully that the friction method was abandoned in favor of batteries.

Always an energetic lad, young Edison soon converted a corner of the baggage car on one of the daily trains into a traveling laboratory. He also brought aboard a secondhand printing press that he used to publish a weekly newspaper. It became popular for its humor, exclusive local news, and hot-off-the-wire information about the Civil War.

HOW FAR he might have gone in the newspaper and merchandising businesses is hard to guess, since those aspects of Al's career came to an abrupt end one evening as he was busying himself with experiments in the baggage car. The train hit a bump, a stick of phosphorus fell to the floor, ignited, and set the car ablaze. The conductor, whose temper flared nearly as quickly as the phosphorus, dumped Edison and the youth's belongings unceremoniously at the next crossing. His railroad "laboratory" was closed, but he was too absorbed in his experiments with electricity and telegraphy to let it bother him.

Now a rather clumsy, sleepy-eyed adolescent of 17, Tom (as he began calling himself) became a telegraph operator. For a time, he roamed the country, moving leisurely from one job to another. These were his vagabond years, but he was always studying, experimenting, and learning. He soon decided what his career would be: an inventor!

The young genius quickly learned that not everyone appreciated his inventive acumen. Some of his devices were rejected by the Patent Office. His first major success was a design for a vastly improved stock market ticker-tape device. His

FOR SERIOUS STUDENTS

An especially enjoyable book about Thomas Edison is William Adams' simply-titled *Edison*. Colorful stories abound throughout. Discover for yourself the drama surrounding invention of the incandescent lamp, the bitter fight with Westinghouse over direct and indirect current, the showmanship of Edison's salesmen, the exciting story of "The Old Man's" wartime inventions that played havoc with German submarines, and the love story of his marriage to Mina Miller. *Edison* was published in 1934, and is now out-of-print, should be available at most public libraries.

employer was so impressed with the machine that he paid Tom \$40,000 for the rights to it and some of the earlier inventions.

With this unexpected (and well-deserved) fortune, Edison established his own laboratory and workshop in Menlo Park, New Jersey. He hired workmen to fill orders for the ticker-tape printer he had just sold, so that he could devote full time to his inventing. In subsequent years he would build many more laboratories, workshops, and manufacturing complexes. During his remarkable career he would develop not merely hundreds, but thousands of inventions, ranging from paraffin paper and talking dolls to complex electric lighting systems and giant rock-crushing rollers. Presidents would honor him, millionaires would consult him, and foreign governments would present him their highest awards.

But from news hawker to world-renowned inventor, Edison's sturdy character remained essentially the same. Fame did not corrupt his honesty, erode his humility, or blunt his determination. For him, money was never an end, but merely a tool — like a saw or a hammer — with which to build something constructive and beneficial to mankind.

One story that exemplifies his attitude occurred during a dispute with the motion picture companies that had fought him bitterly over rights to the movie equipment he had developed. On one occasion when he and his advisers met with the company officers, he greeted the visitors warmly and then said, "Well, you boys talk this over while I take a nap."

Within seconds he was asleep on a cot in the alcove. The discussion began, and when the time

came for him to sign the contracts he was awakened.

"All right. Where do you want me to sign?" he exclaimed.

When someone asked if he wanted to read the contract first, he turned to his business manager and general counsel and inquired, "Is it all right?" Assured that it was, he reached for a pen, signed his name, and said, "Good-by, boys. I have to get back to work."

Just as wealth could now corrupt him, financial loss could neither demoralize nor destroy him. When a disastrous fire reduced six buildings at his West Orange laboratory to ashes, and gutted seven others, Edison watched the flames without a tremor. The buildings and equipment, none of which were insured, represented a loss of \$5 million. Yet, the stouthearted inventor could say: "I'm 67 years old but not too old to make a fresh start tomorrow morning. No one's ever too old to make a fresh start."

Within thirty-six hours he was issuing orders for a completely new, even larger, plant. He hired 1,500 workmen and personally supervised the reconstruction. Within ten days the debris was removed. Within the month operations had been resumed.

Edison never allowed apparent failure to discourage him. When he was developing a new storage battery, for instance, no less than 10,000 experiments were run without positive results. At 2:00 a.m. one morning a friend found him busily at work and smiling broadly. "Oh," the visitor exclaimed, "you've found the answer?" "No," Edison replied. "I've finished this series, and not a blame thing works. Now I can start over again."

On another occasion, 400 tumblers set up for an experiment were destroyed, and a weary associate moaned, "Well, Mr. Edison, what will we do next?" Edison looked at the wreckage and with typical sagacity replied "Why, I suppose the next thing to do will be to get some more tumblers."

Like John Adams and George Rogers Clark, Edison possessed a basic character trait that virtually assured his success. What was it? [Help family members understand that the persistence with which Edison pursued his experiments was the same character trait that Clark displayed in his conquest of the western frontier, and that Adams exhibited in Europe when coping with the

intrigues of France and England.]

Edison was unquestionably a creative genius. But he was no mad inventor working alone in some attic or garret. He presided over a huge complex of manufacturing plants, workshops, and laboratories. His employees, some 300 skilled technicians, fondly called him "The Old Man" and were fiercely loyal. He, in turn, called them "the boys."

Edison believed in individual initiative and responsibility. Sometimes he would hand one of his crew an unfinished model and simply say, "Finish this." No further instruction was given, and the assistant dared not return until he had worked out the details to perfection. Yet no task was too menial for the inventor himself. He dug ditches, repaired machinery, and waded in the mud with his workmen. When the first American theatre to use electric lights opened in Boston, he personally superintended the installation. The gala opening was attended by the governor and his staff, and "The Old Man" and "the boys" were in formal attire. When Edison noticed the lights gradually dimming during the performance, he rushed to the power plant and found his technician repairing a steam leak — and letting the fires die down. When "the boys" arrived to find out what keeping Edison from the performance, they found "The Old Man" coatless, with his high hat hung on a peg, busily shoveling coal. Once the steam was back to its peak, they all returned to the theater and enjoyed the rest of the show.

Asked for the secret of his success, Edison once reflected that it was "the ability to stick to a thing." He laughed at those who spoke of his genius. There was nothing mysterious about his work or his methods, he said. All it required was imagination, ambition, and a will to work. A wall of his laboratory was adorned with the framed quotation from Sir Joshua Reynolds:

There is no expedient to which man will not resort to avoid the real labor of thinking.

"Reynolds was right," Edison insisted. "Thinking is the hardest thing in the world for those to do who have not formed the habit." He believed that children from their earliest years should be taught the exercise of thinking. And he emphatically believed that the school systems of his day were neglecting this essential training.

Do you think Edison would feel that today's government schools are doing a better job? Since he

was himself homeschooled, what might he have to say about today's growing homeschool movement? [Ask for opinions. Question preteens and teenagers on the content of their courses. Are there classroom discussions of the character of great Americans such as Adams, Washington, Clark, and Edison? Are students urged and inspired to acquire such character traits? How much time is devoted to such character-building topics, compared to subjects such as world citizenship; social studies; sex, drug, and death education; environmentalism; etc.? Can our nation continue to produce great Americans if it has no authentic heroes to inspire its youth?]

At age of 67, Edison had no thought of "retiring," though he admitted that his wife had somewhat reduced his usual workday, which began at 8:30 a.m. and ended at midnight. He still, he said, had "100 years" of projects to do. The next 17 years were some of his most productive. And when death arrived in 1931, at age 84, he met it with his usual buoyant cheerfulness — and a bright, boyish grin.

Concluding Thought

Will Rogers, who knew Thomas Edison, once joked that Edison would have been a grand fellow even if he had never invented anything. Blessed with an extraordinary mind, Edison developed his God-given talent to its fullest. He sought the "why?" of everything. Even occasional disappointment and failure could not dampen his enthusiasm for living — and inventing.

Looking Ahead

Next week we will study General Douglas MacArthur, a 20th Century military genius whose heroic leadership repeatedly turned potential disaster into victory on the battlefield.

DURING THE WEEK

Challenge family members to learn more about Edison's life and inventions. Prepare a chart of his key inventions and, during supertime, see how many each member of the family can add. The potential list is virtually endless (nearly 3,000!), so no fair stopping at a mere dozen or so. Consult encyclopedias, biographies, and reference books for examples.