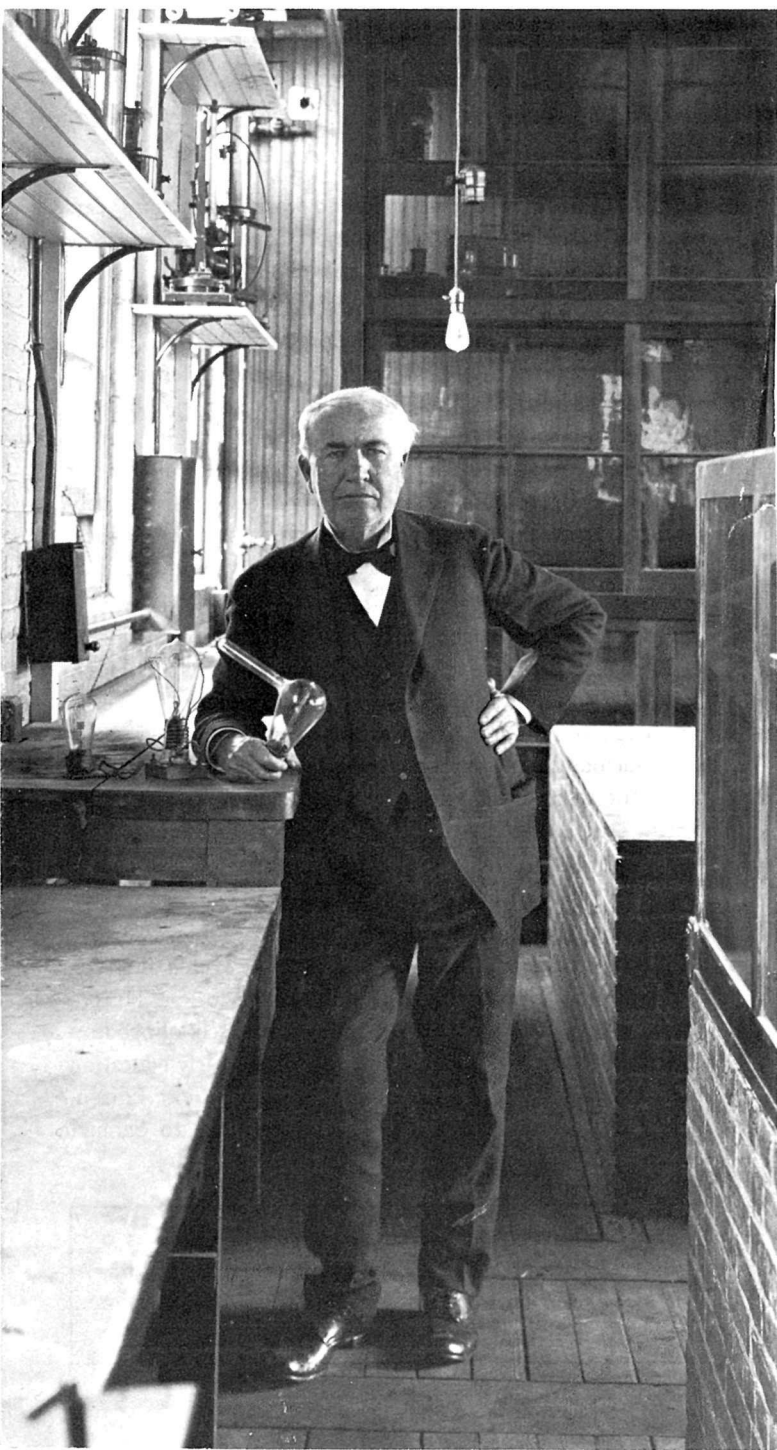


Edison Laboratory

NATIONAL MONUMENT

WEST ORANGE • NEW JERSEY





Edison Laboratory NATIONAL MONUMENT

"If I have spurred men to greater effort, and if our work has widened the horizon of man's understanding even a little and given a measure of happiness in the world, I am content."

ON THIS SITE, where he lived and worked for many years until his death in 1931, are memorialized the remarkable career and achievements of Thomas Alva Edison.

Here are preserved the original buildings erected by the great American inventor in the summer of 1887 as a laboratory fully equipped and staffed for speedy, systematic, inventive research. In these structures Edison and his co-workers spent 44 years investigating, discovering, and developing many new things which have made life easier and better for millions of their fellow men. Edison's laboratory became the prototype for the great industrial laboratories that today serve the people, not only of the United States, but of the whole world.

Not far from the laboratory group, in the sylvan setting of Llewellyn Park, is the beautiful country estate, Glenmont, which Edison purchased for his family residence in 1886. The large library and living room over the entranceway of this gracious home was his "thought bench"—the starting point for many ideas which later took shape at his "work bench," the laboratory in the valley below.

THE INVENTOR'S LIFE

Thomas Alva Edison was born at Milan, Ohio, February 11, 1847, of English, Scottish, and possibly Dutch ancestry. When he was 7 years old, his family moved to Port Huron, Mich. There the boy had his only formal schooling, limited to less than 3 months. The rest of his early education was ably supervised by his mother, Nancy Elliott Edison, who had been a teacher before her marriage to Samuel Edison, Jr.

The National Park System, of which this area is a unit, is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and enjoyment of its people.

At the age of 10, young Edison was already interested in chemistry, and had set up a small experimental laboratory in the cellar of his home. Two years later he entered "business" as an enterprising newsboy and candy "butcher" on the Grand Trunk Railway between Port Huron and Detroit. At 14 he published *The Weekly Herald*, the first newspaper ever printed on a moving train.

Learning telegraphy in 1862, Edison spent the next few years as an operator in various midwestern cities, finally coming east in 1868 to work for the Western Union Telegraph Company in Boston. While there he developed his first patented invention, an electrical vote recorder.

The summer of 1869 found Edison in New York. There his abilities eventually attracted the attention of Marshall Lefferts, president of the Gold and Stock Telegraph Company, who in 1870 assigned him to improve and simplify the stock ticker. This resulted in the Edison Universal Printer, which, together with some other inventions in this general field, brought Edison \$40,000, a handsome sum for those days. He used this money to establish several shops in Newark, N.J., where from 1870 to 1876 he manufactured stock tickers and improved telegraph instruments. At the end of this period, strange results from one of his experiments piqued Edison's curiosity and led to discovery of what he called "etheric force"—the electromagnetic waves later used in wireless and radio transmission.

MENLO PARK DAYS

In the spring of 1876, the 29-year-old Edison moved into a 2-story frame building erected with his father's help at

Edison with his tinfoil phonograph in 1878.



Menlo Park, N.J. There, on December 6, 1877, he invented the phonograph, and almost overnight became known as "the Wizard of Menlo Park."

Edison next tackled the job of finding a safe, odorless, and inexpensive electric replacement for the gas light then in general use. He faced a host of problems in this connection. A new lamp was but part of what he must invent. An even greater challenge was producing and subdividing electric current in the same way that gas could be rationed to a jet. Working literally day and night for the next several years, Edison finally succeeded in perfecting the first practical incandescent lamp (October 21, 1879) and in developing a system of current distribution that not only made the lamp commercially useful but also provided electricity for heat and power. This involved designing and constructing the world's first reliable efficient motors and generators, and devising switches, sockets, safety fuses, meters, underground conductors, and new insulating materials—a whole complex of electrical apparatus. It was also necessary for him to obtain strong financial backing and to establish shops for the manufacture of all this new equipment. Yet almost as though he had hours to spare, the restless "Wizard" took time out in the spring of 1880 to build and run the first full-sized electric railway locomotive in America!

At 3 o'clock in the afternoon of September 4, 1882, the Pearl Street Station in New York City began commercial distribution of electricity for light and power over a system completely designed by Edison and installed under his supervision. As darkness fell, hundreds of little incandescent lamps began to glow in the city's financial district. Thus ended in triumph what the inventor himself called "the greatest adventure" of his life. The electrical age had dawned.

Two years later after the death of his first wife, Mary Stilwell, Edison decided against ever returning to his old laboratory at Menlo Park. They had married in 1871, and she had borne him a daughter and two sons: Marion (now Mrs. Marion Edison Oser, who lives in retirement at Norwalk, Conn.), Thomas Alva, Jr., and William Leslie (who died in 1935 and 1937, respectively).

Edison's restless mind, coupled with the pace of his activities, would not allow him to brood overlong. In 1886 he married Miss Mina Miller, and shortly thereafter the family moved to Glenmont, a large house in Llewellyn Park, West Orange, N.J. Almost in the shadow of this pleasant residence, on November 24, 1887, Edison resumed his insatiable bent for scientific investigation in a newly built laboratory of his own plan and design.



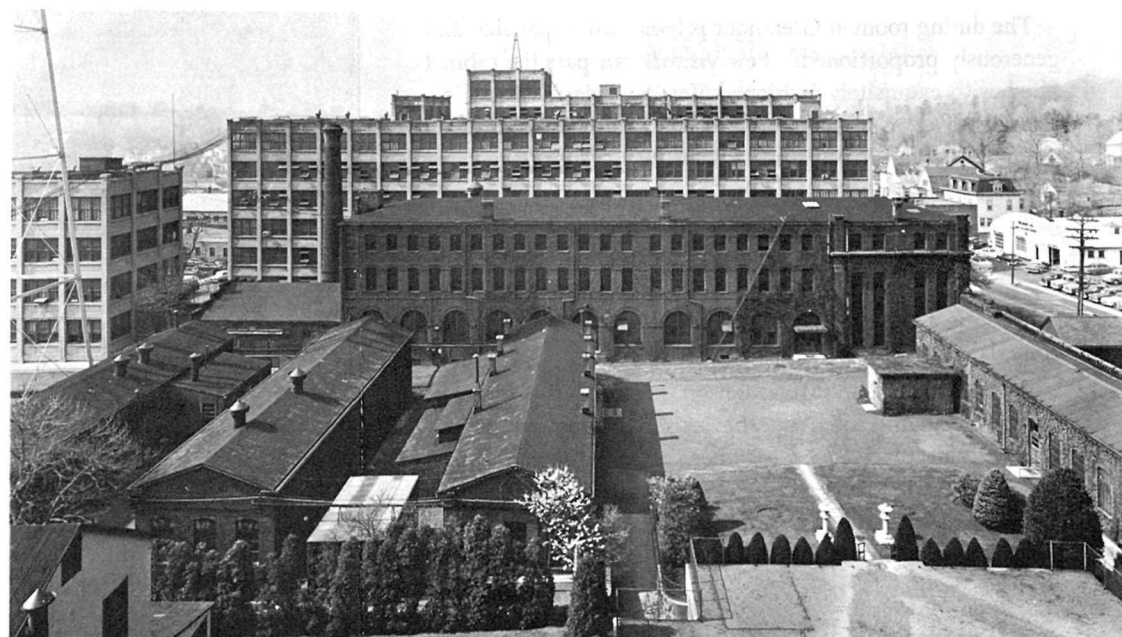
Main Laboratory and Gate House, 1939.

THE WEST ORANGE PERIOD

The laboratory at West Orange was destined to be the inventor's headquarters for the remaining 44 years of his life. During this period he was granted 520 patents covering, among other things, electric motors and generators, incandescent and fluorescent lamps, continuous nickel and copper plating, the depositing of metals in a vacuum, magnetic concentration and briquetting of iron ore, the motion picture camera, and scores of improvements in the recording and reproduction of sound. Eighty-eight of these patents applied to development of the Edison alkaline storage battery, which alone required 50,000 experiments.

Most important of all these developments were the motion-picture camera (the "movies" were really born at West Orange) and improvements to the phonograph. Always highly imaginative, Edison began work soon after coming

The laboratory buildings as seen from the northeast.



to West Orange on machines that would do for the eye what his phonograph had already done for the ear. The first camera to take continuous pictures on a moving strip of film was produced in 1889. This was made more useful within a few months by Edison's adoption of 35 mm. film, the size still used for commercial motion pictures. Edison added sound to silent films in 1913 by inventing the Kinetophone. Many other achievements in acoustical sound reproduction culminated 12 years later in his development of that "modern" phenomenon, a long-playing record. Used with a diamond needle or stylus, this record had tonal qualities still considered exceptional, even in these days of electrical high fidelity and stereophonic sound.

In 1915, after the outbreak of World War I, Edison became chairman of the Naval Consulting Board. In that capacity he labored hard to establish the Naval Research Laboratory for development of new weapons, conducted special experiments on more than 40 major war problems, and did a tremendous amount of other work connected with national defense. Mention should be made, too, of his "Proposed Amendment to the Federal Reserve Banking System," embodying a plan for helping farmers to finance their crops. Edison's contributions to the Nation's welfare in these and other respects were recognized in 1928 by award of a special Congressional Gold Medal. He was also the first civilian to receive the Navy's Distinguished Service Medal.

Perhaps nothing better demonstrates the continuing energy, mental alertness, and sense of public duty of this remarkable man than his intensive research, undertaken at the advanced age of 80 years, to find a practicable domestic source of natural rubber for use in time of war or other

national emergency. Between 1927 and 1931 Edison and his associates tested some 17,000 plants, finding varying amounts of rubber in 1,200 specimens. The most promising of these was goldenrod, which not only gave a considerable quantity, but would grow almost anywhere in the United States during a single season. Many different strains of this plant were grown, and the yield was increased from 4 to 12 percent by the Burbank selective breeding method. These breeding tests were conducted in Edison's own experimental gardens at Fort Myers, Fla., where he maintained a winter home for about 44 years.

Those who knew Edison best remember not only the inventive genius, but a man with warm human qualities and a keen sense of humor. Caring little about formal social affairs, he spent many happy hours around the family fire-side at Glenmont, enriched by the birth of three more children: Madeleine, Charles, and Theodore. There were enjoyable times, too, with fellow workers at the laboratory, and on camping trips with such close friends as John Burroughs, Henry Ford, and Harvey Firestone. The inventor's only diary, covering a few brief weeks in 1885, reveals a zest for life which continued unabated to the end of his days.

On October 18, 1931, while the rubber investigation project remained unfinished, and almost 52 years to the day from his perfection of the incandescent lamp, Thomas Alva Edison died quietly at Glenmont, aged 84 years. His death was mourned by the great and near great of all lands, and by millions everywhere whose lives were touched and inspired by the magnitude of his work.

THE LABORATORY AT WEST ORANGE

The research laboratory which Edison designed and built at West Orange, and which he and his assistants first occupied in 1887, was unquestionably unique. It is described as follows, with obvious enthusiasm and anticipation, in a notebook kept by the inventor while construction was still in progress.

My laboratory will soon be completed—The dimensions are one building 250 ft long 50 wide & 3 stories 4 other bldgs 25 x 100 one story high all of brick—I will have the best equipped & largest Laboratory extant, and the facilities incomparably superior to any other for rapid & cheap development of an invention, & working it up into Commercial shape with models patterns & special machinery—In fact there is no similar institution in Existence We do our own castings forgings Can build anything from a ladys watch to a Locomotive.

The Machine shop is sufficiently large to employ 50 men & 30 men can be worked in other parts of the works—Inventions that formerly took months & cost a large sum can now be done 2 or 3 days with very small expense, as I shall carry a stock of almost every conceivable material of every size and with the latest machinery a man will produce 10 times as much as in a laboratory which has but



Chemical Laboratory, with Edison's work table and lab coat.

little material not of a size, delays of days waiting for castings and machinery not universal or modern.

The "invention factory" thus envisioned by Edison materialized at West Orange exactly as he had planned. Some of the developments which came out of it have already been mentioned. Among others were much improved primary batteries for the first electric semaphore railroad signals; long rotary kilns for cement production; electric safety lanterns which greatly reduced mine fatalities; dictating machines for office work; a process for making carbolic acid which helped overcome an acute shortage in World War I; the establishment of plants for manufacture of coal-tar derivatives, vital to many industries previously dependent on foreign sources; and the fluoroscope, which he never patented but made available for free use of the medical profession.

Edison erected additional structures as needed to accommodate his widening operations at West Orange. Some of these were destroyed, and others badly gutted, by a great fire on December 9, 1914. The inventor's energy and spirits remained undamaged, however, and repairs and rebuilding were started on the same location while the ruins of his old plant were not yet cold. Fortunately for history, a last-minute shift of wind saved the original laboratory group from this conflagration.

MUSEUM EXHIBITS AND DISPLAYS

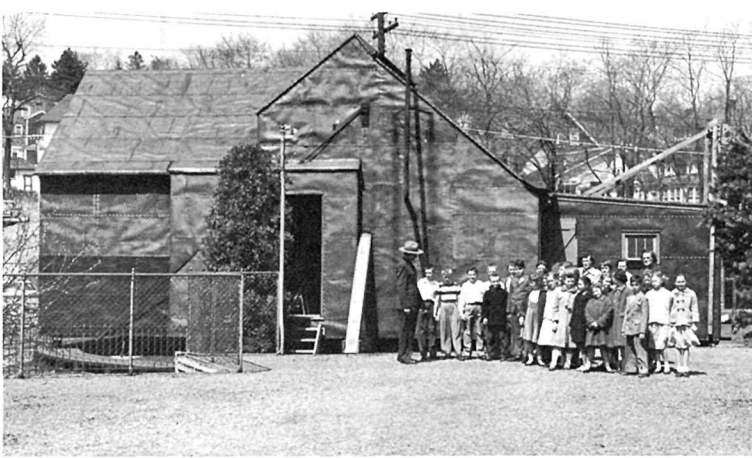
Among countless interesting objects now on display at the Laboratory-Headquarters area of the monument are the first phonograph ever made; early motion picture equipment; various types of incandescent and "Edison Effect" lamps, the latter illustrating discovery of a scientific phenomenon basic to modern electronics; the cot in the library where Edison took "catnaps" while working around-the-clock; his desk, the contents of which have remained undisturbed since his death in 1931; and a comprehensive exhibit, originally prepared for the 1933 Chicago World's Fair, telling the story of his outstanding career and many notable contributions to the fields of science, technology, and industry. Edison's chemical laboratory looks today as it was during the period of his tireless work on the rubber research project of 1927-31. These exhibits, far more eloquently than any spoken or written word, testify to the man's constant, careful, and unending quest in the realms of inquiry and experiment.

Of special interest is an accurate reproduction of the "Black Maria," a tar-paper-covered structure used by Edison as the first motion picture studio. This was designed so that one large section of the roof, hinged on its lower edge, could be raised like the lid of a box, while the building itself, pivoted in the center, could be turned completely around on a circular track to face in any direction. By these means the stage at one end might be illuminated with sunlight when films were made. The reconstructed Black Maria now serves as a theater where visitors may see both old and present-day motion pictures dealing with the inventor's life and achievements.

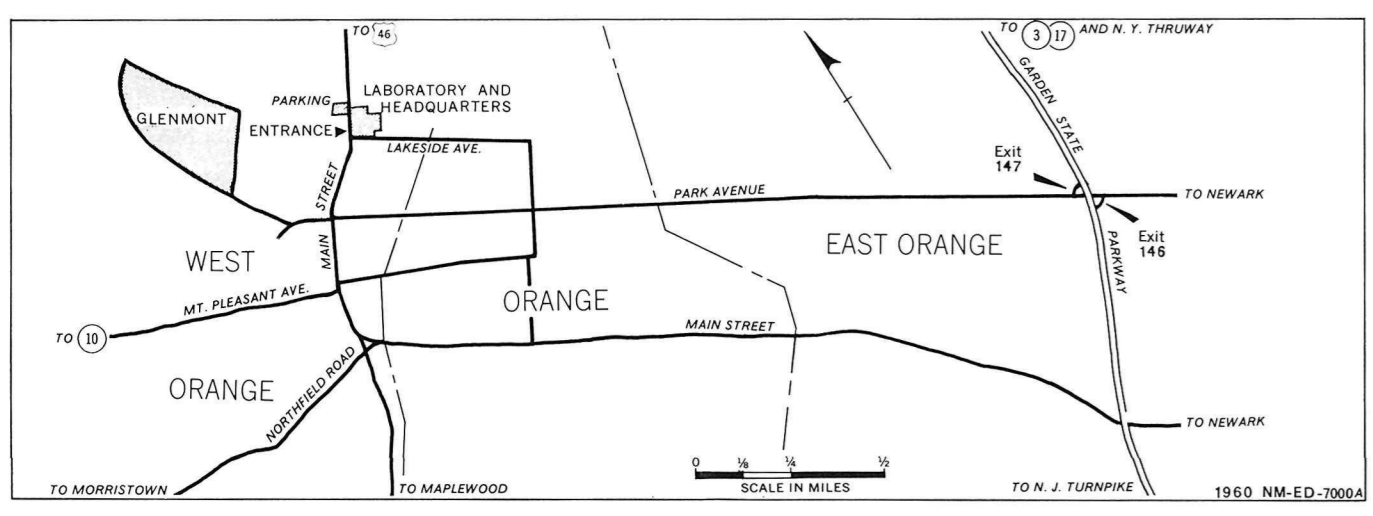
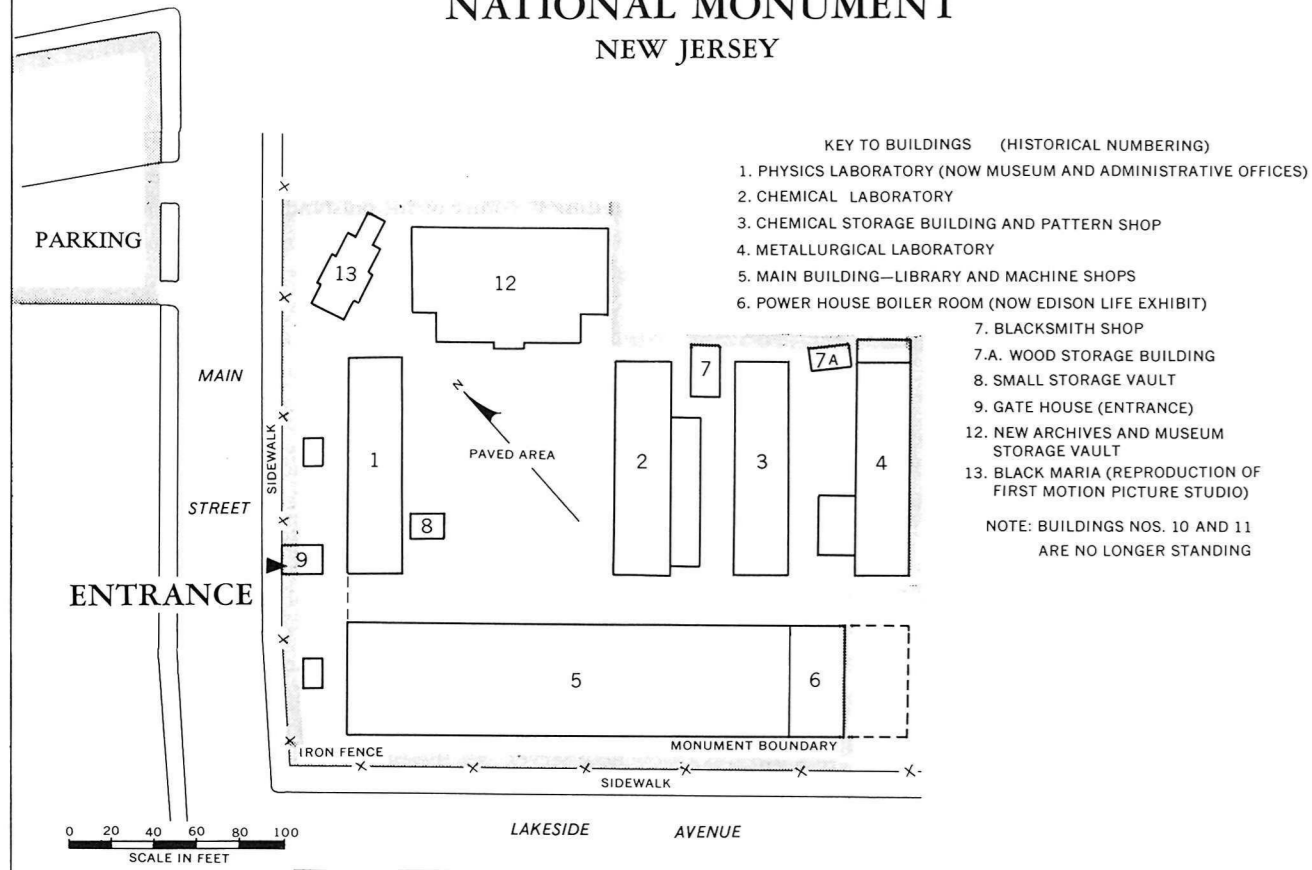
LIBRARY AND ARCHIVES

Students and scholars have here a veritable treasure trove of material with which to work. The original Edison library in the main building of the old laboratory group con-

School children at the Black Maria.



EDISON LABORATORY NATIONAL MONUMENT NEW JERSEY



Glenmont from the southeast.

tains some 10,000 volumes bearing on many fields of scientific and industrial research. In an underground archival vault built in 1940 are carefully preserved Edison's laboratory records dating from 1870 to 1931. These include 3,400 notebooks; 1,093 United States patents on his inventions; and correspondence, notes, and sketches from all periods of his life—roughly 500,000 letters, memorandums, and other documents. The collections also contain thousands of additional objects, such as laboratory stock and equipment, ranging in size from a dynamo to a lamp filament.

GLENMONT

Before Thomas Alva Edison married Miss Mina Miller, the charming daughter of Lewis Miller of Akron, Ohio, he offered her a choice of three homes. Two were in New York City, and the third was in Llewellyn Park, West Orange, N.J. Mina may well have preferred the greater convenience or elegance of a town house, but she knew that her future husband would be happier in the country. So it was that when the inventor took his bride-to-be to see the Llewellyn Park estate in January 1886, she unhesitatingly named it as her choice. Soon after their marriage on February 24, 1886, they came here to live. It would be home for Edison until his death in 1931, and for Mina until she died 16 years later.

Known as Glenmont, this property consists of 13½ acres of attractively landscaped grounds, the 23-room house itself, a greenhouse, and some lesser out-buildings. The residence, a many-gabled structure, had been built to the plans of H. Hudson Holly, architect, for a New York executive in 1880. Both in construction and household furnishings, only the

finest materials were used. From quarries at Greenwich, Conn., came the bluestone blocks for the basement. The first story was built of pressed brick from Baltimore, trimmed with Wyoming freestone. The second and third floors are of half-timber construction, and the roofing is slate.

When the original owner found himself in financial difficulty, title to Glenmont was taken over by his business firm, Arnold Constable and Company. It was from them that Edison bought the property as a present for his bride.

Even before visitors enter the old home, they are aware of the elegance of detail to be found throughout. Cut stone steps lead to the porch, with its ornamental tile flooring and walls of molded brick. Beyond the massive front door of solid oak lies the foyer, paneled with quartered oak, from which rises the red mahogany grand staircase.

On the right of this entrance-foyer is a small library containing scores of great literary works, some in first editions. This room also has portieres or doorway curtains of luxurious cut brown velvet on gold satin, typical of many extraordinary fabrics used in the original decorative scheme. In the reception room to the left may be seen a small pipe organ, often played by Thomas Edison himself. The inventor enjoyed the relaxing effect of organ music—he even had such an instrument in his old Menlo Park laboratory.

Formal entertaining was done in the downstairs drawing room, which still glories in the richness of yellow damask-covered walls that even today remain fresh, despite their years. The conservatory adjoining another side of the reception room—enhanced with potted palms and other greenery every autumn—affords a touch of summer atmosphere on otherwise dreary winter days. Here Mrs. Edison was accustomed to preside over afternoon tea.

The dining room at Glenmont is handsomely paneled and generously proportioned. Few visitors can pass the cabinet filled with exquisitely fashioned Venetian glass without exclaiming over its beauty. A passage between the drawing room and dining room seems to have been designed to serve as a small conservatory, and the dining room itself is a wide gallery leading to the larger, souvenir-filled den at the rear of the house. Service rooms flank the right side of the dining room and den, as the guest walks toward the rear. One of these is a huge pantry that Edison sometimes used as a home laboratory.

Both Thomas and Mina Edison regarded the large library and living room on the second floor as a private retreat, their place to be together, often with the family. With its broad expanse of picture window looking out over sweeping lawns and the valley below, and its walls lined with personal memorabilia and books on a thousand and one

subjects, this room seems most perfectly to embody the spirit of Glenmont.

Prominent throughout the house, besides gifts from important personages all over the world, are portraits of the Edisons and their children.

Born at Glenmont were the Edison children, Madeleine (now Mrs. John Eyre Sloane) and two sons. Charles, the elder son, a former Secretary of the Navy and past Governor of New Jersey, is today Chairman of the Board of McGraw-Edison Company. Theodore Miller Edison, the younger son, is a scientist who now has a nearby laboratory where he follows in his father's field. All still reside in Llewellyn Park, their homes not far from the old estate.

In addition to the library and living room, five large chambers open onto the broad, second-floor hall. Adjoining the Edison's favorite room is the bedroom they once occupied. Here their children were born, and in the large canopied bed at the right of the entrance Thomas Alva Edison died on October 18, 1931. The inventor's last words, murmured to his doctor, Hubert S. Howe, were: "It is very beautiful over there."

Glenmont today, for all its elegance and splendid furnishings, is far more than just another period house. First and foremost it represents a home, filled through the years with cherished memories of this famous American inventor, his loving wife and helpmate, and their active children and grandchildren. Much of the lived-in warmth and charm which permeates its every corner stems from Mina Miller Edison's tender care and wise management. Most impor-



Family library and living room at Glenmont. At left is Edison's desk, his "thought bench."



Thomas Alva and Mina Miller Edison in 1908.

tant of all, as former Governor Charles Edison has so aptly said: "In its truest sense Glenmont is like Emerson's definition of an institution—it is the lengthened shadow of a man."

THE NATIONAL MONUMENT

This area of the National Park System comprises 16 acres of land; the six original laboratory structures, dating from 1887, and a number of related buildings erected after that time; together with Glenmont, the Edison Home estate in nearby Llewellyn Park. The laboratory was established as

a National Monument on July 14, 1956. Glenmont was named a non-federally owned National Historic Site on December 6, 1955, and it was added to the National Monument on August 3, 1959. Both house and laboratory became property of the Federal Government by gift: the laboratory area was donated by Thomas A. Edison, Inc., now part of the McGraw-Edison Co.; and Glenmont by the McGraw-Edison Co. and the Edison family.

LOCATION

The monument headquarters is at Main Street and Lakeside Avenue in West Orange, N.J., 2 miles west of Garden State Parkway (Exit 146 northbound, Exit 147 southbound). West Orange is a New Jersey suburb of the New York metropolitan area, easily reached by many fine roads and public transportation lines. It is clearly shown on all good maps.

ABOUT YOUR VISIT

You may visit Edison Laboratory on Tuesday through Sunday, 9:30 a.m. to 4:30 p.m. Tours of Glenmont begin on the hour, 10 a.m. to 4 p.m., Tuesday through Saturday only, by arrangement at the Laboratory Headquarters. All reservations for group visits should be made in advance. Further information about this and other areas of the National Park System may be obtained from the superintendent.

ADMINISTRATION

Edison National Monument is administered by the National Park Service, U. S. Department of the Interior. A superintendent, whose address is Box 126, Orange, N.J., is in immediate charge.

MISSION 66

Mission 66 is a program designed to be completed by 1966 which will assure the maximum protection of the scenic, scientific, wilderness, and historic resources of the National Park System in such ways and by such means as will make them available for the use and enjoyment of present and future generations.

COVER: *Thomas A. Edison in his West Orange Laboratory, holding an "Edison Effect" lamp.*



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