

Alfred Nobel was born in Stockholm on October 21, 1833. His father, Immanuel Nobel, was an engineer and inventor who built bridges and buildings in Stockholm. In connection with his construction work Immanuel Nobel also experimented with different techniques for blasting rocks. Alfred's mother, born Andriette Ahlsell, came from a wealthy family. Due to misfortunes in his construction work caused by the loss of some **barges** of building material, Immanuel Nobel was forced into bankruptcy the same year Alfred Nobel was born. In 1837 Immanuel Nobel left Stockholm and his family to start a new career in Finland and in Russia. To support the family, Andriette Nobel started a grocery store which provided a modest income.

Meanwhile, Immanuel Nobel was successful in his new enterprise in St. Petersburg, Russia. He started a mechanical workshop which provided equipment for the Russian army, and he also convinced the Tsar and his generals that naval mines could be used to block enemy naval ships from threatening the city. The naval mines designed by Immanuel Nobel were simple devices consisting of submerged wooden casks filled with gunpowder. Anchored below the surface of the Gulf of Finland, they effectively deterred the British Royal Navy from moving into firing range of St Petersburg during the Crimean War (1853-1856). Immanuel Nobel was also a pioneer in arms manufacture and in designing steam engines.

Successful in his industrial and business ventures, Immanuel Nobel was able, in 1842, to bring his family to St. Petersburg. There, his sons were given a first class education by private teachers. The training included natural sciences, languages and literature. By the age of 17, Alfred Nobel was fluent in Swedish, Russian, French, English and German. His primary interests were in English literature and poetry as well as in chemistry and physics. Alfred's father, who wanted his sons to join his enterprise as engineers, disliked Alfred's interest in poetry and found his son rather **introverted**. In order to **widen Alfred's horizons**, his father sent him abroad for further training in chemical engineering. During a two-year period Alfred Nobel visited Sweden, Germany, France and the United States. In Paris, the city he came to like best, he worked in the private laboratory of Professor T. J. Pelouze, a famous chemist. There he met the young Italian chemist Ascanio Sobrero who, three years earlier, had invented nitroglycerine, a highly explosive liquid. Nitroglycerine was produced by mixing glycerine with sulfuric and nitric acid. It was considered too dangerous to be of any practical use. Although its explosive power greatly exceeded that of gunpowder, the liquid would explode in a very unpredictable manner if

subjected to heat and pressure. Alfred Nobel became very interested in nitroglycerine and how it could be put to practical use in construction work. He also realized that the safety problems had to be solved and a method had to be developed for the controlled detonation of nitroglycerine. In the United States he visited John Ericsson, the Swedish-American engineer who had developed the screw propeller for ships. In 1852 Alfred Nobel was asked to come back and work in the family enterprise which was booming because of its deliveries to the Russian army. Together with his father he performed experiments to develop nitroglycerine as a commercially and technically useful explosive.

The market for dynamite and detonating caps grew very rapidly and Alfred Nobel also proved himself to be a very skillful entrepreneur and businessman. By 1865 his factory in Krümmel - near Hamburg, Germany - was exporting nitroglycerine explosives to other countries in Europe, America, and Australia. Over the years he founded factories and laboratories in some 90 different places in more than 20 countries. Although he lived in Paris much of his life, he was constantly traveling. Victor Hugo at one time described him as "Europe's richest vagabond". When he was not traveling or engaging in business activities, Nobel himself worked intensively in his various laboratories, first in Stockholm and later in Germany, Scotland, France, Karlskoga, Sweden, and Italy. He focused on the development of explosives technology as well as other chemical inventions, including such materials as synthetic rubber, leather, and silk. By the time of his death in 1896, he had 355 patents.

Intensive work and travel did not leave much time for a private life. At the age of 43 he was feeling like an old man. At this time he advertised in a newspaper "Wealthy, highly-educated elderly gentleman seeks lady of mature age, **versed** in languages, as secretary and supervisor of household." The most qualified applicant turned out to be an Austrian woman, Countess Bertha Kinsky. After working a very short time for Nobel, she decided to return to Austria to marry Count Arthur von Suttner. In spite of this Alfred Nobel and Bertha von Suttner remained friends and kept writing letters to each other for decades. Over the years Bertha von Suttner became increasingly critical of the arms race. She wrote a famous book, *Lay Down Your Arms* and became a prominent figure in the peace movement.

Alfred Nobel died in San Remo, Italy, on December 10, 1896. When his will was opened it came as a surprise that his fortune was to be used for Prizes in Physics, Chemistry, Physiology or Medicine, Literature and Peace. The executors of his will were two young

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engineers, Ragnar Sohlman and Rudolf Lilljequist. They set about forming the Nobel Foundation as an organization to take care of the financial assets left by Nobel for this purpose and to coordinate the work of the Prize-Awarding Institutions. This was not without its difficulties since the will was contested by relatives and questioned by authorities in various countries.

1. The author's perspective toward Alfred Nobel could best be described as _____.
A. personal B. historical C. critical D. emotional
2. The word "they" in paragraph 2 refer to _____.
A. British Royal Navy
B. steam engines
C. naval mines
D. the Tsar and his generals
3. According to the passage, why did Alfred Nobel become a chemist?
A. His father pushed him in that direction
B. He wanted to follow in his father's footsteps
C. He had no other options
D. He had lost interest in becoming a poet
4. The word "introverted" in the passage is closest in meaning to _____.
A. gregarious B. outgoing C. reserved D. sociable
5. How many patents did Alfred Nobel have by the time of his death?
A. 355 B. 1896 C. 90 D. 1865
6. Which of the following could best replace the phrase "widen Alfred's horizons" in paragraph 3?
A. provide Alfred with more experience
B. show Alfred a beautiful sunset
C. limit Alfred's exposure to the world
D. maintain Alfred's current level of knowledge
7. Which of the following is NOT a Nobel Prize category?
A. Chemistry B. Physics
C. Literature and Peace D. Psychiatry
8. It can be inferred that Alfred Nobel's most famous invention was _____.
A. nitroglycerine
B. synthetic silk
C. the steam engine
D. dynamite

9. Which of the following words or phrases is LEAST accurate in describing Alfred Nobel?
A. visionary B. innovative C. prosaic D. altruistic
10. The word "versed" in the passage is closest in meaning to _____.
A. awkward B. accomplished
C. incompetent D. graceless
11. Where in the passage does the author discuss Alfred Nobel's business life?
A. Paragraph 1 B. Paragraph 2 C. Paragraph 3 D. Paragraph 4

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October 1, 1958, the official start of the National Aeronautics and Space Administration (NASA), was the beginning of a rich history of unique scientific and technological achievements in human space flight, aeronautics, space science, and space applications. NASA's first high-profile program was Project Mercury, an effort to learn if humans could survive in space, followed by Project Gemini, which built upon Mercury's successes and used spacecraft built for two astronauts. NASA's human spaceflight efforts then extended to the Moon with Project Apollo, culminating in 1969 when the Apollo 11 mission first put humans on the lunar surface. Apollo became a NASA priority on May 25, 1961, when President John F. Kennedy announced "I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to Earth."

A direct response to Soviet Union successes in space, Kennedy used Apollo as a high-profile effort for the U.S. to demonstrate to the world its scientific and technological superiority over its cold war adversary. In response to the Kennedy decision, NASA was consumed with carrying out Project Apollo and spent the next 11 years doing so. This effort required significant expenditures, costing \$25.4 billion over the life of the program, to make it a reality. Only the building of the Panama Canal rivalled the size of the Apollo program as the largest non-military technological endeavour ever undertaken by the United States; only the Manhattan Project was comparable in a wartime setting. Although there were major challenges and some failures - notably a January 27, 1967 fire in an Apollo capsule on the ground that took the lives of astronauts Roger B. Chaffee, Virgil "Gus" Grissom, and Edward H. White Jr. - the program moved forward inexorably. Less than two years later, in October 1968, NASA bounced back with the successful Apollo 7 mission, which orbited the Earth and tested the redesigned Apollo command module. The Apollo 8 mission, which orbited the Moon on December 24-25, 1968, was another crucial accomplishment on the way to the Moon.

"That's one small step for [a] man, one giant leap for mankind." Neil A. Armstrong uttered these famous words on July 20, 1969, when the Apollo 11 mission fulfilled Kennedy's challenge by successfully landing Armstrong and Edwin E. "Buzz" Aldrin, Jr. on the Moon. Armstrong dramatically piloted the lunar module to the lunar surface with less than thirty seconds worth of fuel remaining. After taking soil samples, photographs, and doing other tasks on the Moon, Armstrong and Aldrin rendezvoused with their colleague Michael Michael Collins in

lunar orbit for a safe voyage back to Earth. Five more successful lunar landing missions followed. The Apollo 13 mission of April 1970 attracted the public's attention when astronauts and ground crews had to improvise to end the mission safely after an oxygen tank burst midway through the journey to the Moon. Although this mission never landed on the Moon, it reinforced the notion that NASA had a remarkable ability to adapt to the unforeseen technical difficulties inherent in human space flight. With the Apollo 17 mission of December 1972, NASA completed a successful engineering and scientific program. Fittingly, Harrison H. "Jack" Schmitt, a geologist who participated on this mission, was the first scientist to be selected as an astronaut. NASA learned a good deal about the origins of the Moon, as well as how to support humans in outer space. In total, twelve astronauts walked on the Moon during six Apollo lunar landing missions

In 1975, NASA cooperated with the Soviet Union to achieve the first international human space flight, the Apollo-Soyuz Test Project (ASTP). This project successfully tested joint rendezvous and docking procedures for spacecraft from the U.S. and the U.S.S.R. After being launched separately from their respective countries, the Apollo and Soyuz crews met in space and conducted various experiments for two days. After a gap of six years, NASA returned to human space flight in 1981, with the advent of the Space Shuttle. The Shuttle's first mission, STS-1, took off on April 12, 1981, demonstrating that it could take off vertically and glide to an unpowered airplane-like landing. Sally K. Ride became the first American woman to fly in space when STS-7 lifted off on June 18, 1983, another early milestone of the Shuttle program.

On January 28, 1986 a leak in the joints of one of two solid rocket boosters attached to the Challenger orbiter caused the main liquid fuel tank to explode 73 seconds after launch, killing all seven crew members. The Shuttle program was grounded for over two years, while NASA and its contractors worked to redesign the solid rocket boosters and implement management reforms to increase safety. On September 29, 1988, the Shuttle successfully returned to flight. Dozens of successful flights followed, but the Space Shuttle Columbia disaster changed all that. The entire seven-member crew was killed on February 1, 2003, when the Shuttle disintegrated over Texas during re-entry into the Earth's atmosphere. Although the Shuttle program is currently suspended, the organization has indicated that it is committed to returning the three remaining Space Shuttles to safe flight by mid-2005.

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1. With which of the following is the passage primarily concerned?
 - A. The challenge of interplanetary travel
 - B. A brief overview of NASA history and human space flight
 - C. A critical look at the Space Shuttle program
 - D. The US-Soviet Union "space race" during the 1950s and 60s
2. Which NASA space program was the first to put men on the moon?
 - A. Project Gemini
 - B. Project Mercury
 - C. The Manhattan Project
 - D. Project Apollo
3. The word "adversary" in the passage is closest in meaning to _____.
 - A. opponent
 - B. ally
 - C. associate
 - D. supporter
4. The word "its" in paragraph 2 refers to _____.
 - A. the Soviet Union
 - B. the U.S.
 - C. Apollo
 - D. a high-profile effort
5. According to paragraph 2, the building of the Panama Canal was a project that _____.
 - A. was much smaller in size than the Apollo program
 - B. was similar in size to the Apollo program
 - C. exceeded the size of the Manhattan Project
 - D. resulted in a fire that killed several astronauts
6. The two astronauts ever to walk on the Moon were _____.
 - A. Roger B. Chaffee and Edwin E. Aldrin, Jr.
 - B. Michael Collins and Neil A. Armstrong
 - C. Edwin E. Aldrin, Jr. and Neil A. Armstrong
 - D. Neil A. Armstrong and Roger B. Chaffee
7. The word "notion" in the passage is closest meaning to _____.
 - A. assumption
 - B. misunderstanding
 - C. plan
 - D. connotation
8. Information in paragraph 5 supports which of the following conclusions?
 - A. NASA has enjoyed a great deal of success with the Space Shuttle missions since 1986
 - B. The Space Shuttle program has suffered some serious setbacks
 - C. The Space Shuttle program has been suspended indefinitely
 - D. NASA needs additional government funding in order to ensure the safety of future Space Shuttle flights
9. The author's tone in this passage could best be described as _____.
 - A. neutral and objective
 - B. humorous
 - C. tentative
 - D. highly critical

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