Alfred Bernhard Nobel

The Founder of the Great Global Awards

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Alfred Nobel was born in Sweden, but lived in many countries in Europe at different points of time. He went through many ups and downs during his life. He invented dynamite, a controllable explosive, which greatly enhanced the pace of industrialization by accelerating the process of construction of roads, railways, canals, bridges, tunnels, dams and other structures, and the digging of mines. His business swelled and spread to many parts of the globe. He braved many adverse situations including poor health and frequent factory explosions, one of which took the life of his young brother, hostilities and criticisms. At the same time he earned a huge fortune. He set aside most of his wealth to institute awards, now known as Nobel Prizes. Nobel was not only a prolific inventor (with 355 patents), but also was endowed with literary talent.

Every construction work, be it a bridge, building, dam, tunnel or canal or digging a mine or quarrying stone, needs blasting of rocks at some stage. For all these activities dynamite is being used since a century and a half. Even today it is widely used in mining, quarrying and construction works. The invention of dynamite greatly enhanced the pace of industrialisation by making it easier to lay roads and railroads in difficult terrains and build canals which helped transportation of goods and humans economically by cutting distance, time and cost enormously. The success of dynamite was so great that its inventor-producer Alfred Nobel became the richest man of Europe within a short span of time.

There are few inventors who could be placed in the same class as Alfred Nobel. He combined in him many great qualities. Apart from being a prolific inventor with 355 patents to his credit, he was a very successful entrepreneur, a polyglot with equal fluency in Swedish, English, German, French and Russian and wrote volumes of letters in all these languages, a writer of novels,

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poetry, drama, with love for English literature and poetry, a scientist with interest in Physics and Chemistry, and finally a philanthropist. It is unusual for a man who is proficient in literature to be such a successful inventor and to have such entrepreneurial skill as Alfred Nobel.

Alfred was a sick child and it was only because of his mother's assiduous care that he survived. His health remained fragile all through his life.

Early Life in Sweden and Russia

Alfred Nobel was born on 21st of October 1833 in the Swedish capital city of Stockholm, to Immanuel Nobel (1801–1872) and Karolina Andriette Ahlsell-Nobel. Immanuel Nobel was an architect and engineer having the business of construction of buildings and bridges. Being in this kind of enterprise, he was making gun powder for blasting rocks. He was an inventor who designed rotary lathe used for making plywood.

Alfred was the fourth child among eight siblings of whom only four survived, namely, himself, his two older brothers (Robert and Ludvig) and one younger brother (Emil). Alfred was a sick child and it was only because of his mother's assiduous care that he survived. This perhaps made him have a special bond of love with his mother throughout her life. His health remained fragile all through his life. Immanuel's construction work was running well. But unfortunately, he underwent huge losses and became bankrupt as some barges with his construction materials sank in the same year Alfred was born. As a result he could not revive his business and left Sweden in 1837 to find a better place to re-establish his business, leaving behind his family in Stockholm. He first went to Finland and then to St. Petersburg in Russia.

The difficult task of running the household and taking care of the small children unexpectedly fell on the shoulders of Andriette (who came from a wealthy family of Ahlsell into prosperous Nobel family). She opened a grocery shop and with the modest income it generated she managed to look after the family.

Immanuel Nobel started a mechanical workshop in St. Petersburg and produced equipment for the Russian Army. He designed naval mines and demonstrated to Tsar Nicholas I and his army

Immanuel Nobel started a mechanical workshop in St. Petersburg and produced equipment for the Russian Army. He designed naval mines and demonstrated their explosive power in submerged condition.

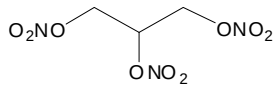
Alfred achieved fluency in several languages that included Swedish (mother tongue), Russian, French, English and German.

generals their explosive power in submerged condition which thus could act as deterrent to enemy ships entering coastal territory. By supplying arms and equipment to the Russian army and making other industrial products, Immanuel Nobel achieved good success in his business. By 1842 he was doing well enough to bring his family to St. Petersburg. (Emil was born in 1843). He was also able to hire private teachers to give his children good education which included science, literature, and languages. Alfred achieved fluency in several languages that included Swedish (mother tongue), Russian, French, English and German. He had an interest in chemistry, but at the same time had a great love for English literature and poetry. His father, however, did not like Alfred's literary pursuits as he wanted his sons to become engineers and join his industry. Despite his love for literature Alfred was not averse to train in chemistry. In 1850 his father sent him to other countries to get training in chemical engineering. He spent the next two years in Sweden, Germany, France and the US. In France, he worked with the well-known chemist Thomas J Pelouze in Paris. There he met Ascanio Sobrero, an Italian chemist who had synthesized nitroglycerine (*Box* 1) in 1846, by treating

In Paris, he met Ascanio Sobrero, an Italian chemist who had synthesized nitroglycerine in 1846, by treating glycerine with a mixture of sulphuric and nitric acid.

Box 1. Nitroglycerine

Nitroglycerine is the common name of the main explosive chemical component in dynamite. Its other common name is glyceryl nitrate and the IUPAC name is 1,2,3-trinitroxy-propane. It is prepared by nitrating glycerine with a nitrating mixture of nitric acid and sulphuric acid.



When ignited it decomposes to produce a mixture of several gases.

$$4\ C_3H_5N_3O_9 \xrightarrow[\text{shock}]{\text{heat or}} 6\ N_2 + 12\ CO + 7\ O_2 + 10\ H_2O\ (g)$$

The sudden evolution of huge volume of gases in an extremely brief period creates enormous pressure causing explosion. Nitroglycerine freezes at 11°C and in frozen condition it is much less sensitive.

Nitroglycerine, interestingly, is a medicine used in the form of spray and tablet to treat chest pain, angina (narrowing of arteries). Alfred Nobel was one of the early patients to be prescribed nitroglycerine for his heart condition.

glycerine with a mixture of sulphuric and nitric acid. Working with nitroglycerine, Sobrero had noted the highly dangerous and unpredictable explosive property of this oil and had concluded that it cannot find any practical applications.

After his two-year sojourn abroad with a final visit to the US, where he spent some time with Swedish-American engineer John Ericson, the inventor of screw propeller for ships, Alfred returned to St. Petersburg to join hands with his father in his business. With Alfred's fresh knowledge about the new explosive material and his father's vast experience with gun powder, the father and son duo started experimenting with nitroglycerine, but nothing tangible emerged then.

In 1853 the Crimean War (*Box* 2) started and the Russian army's demand for arms, ammunition and equipment produced by the Nobel Company soared as also its profits. However, when the war ended in 1856, the arms business came crashing down, not only because the war was over, but also because Tsar Nicholas I died in 1855 and the new Tsar Alexander II cut even the normal spending on arms. Under these circumstances, Immanuel Nobel had to face a second bankruptcy, after enjoying two decades of prosperity. Leaving Robert, Ludvig and Alfred to take care of the factory under the technical management of Ludvig, Immanuel Nobel returned to Sweden in 1859 with his wife and son Emil. He resumed his business of gunpowder explosives and engineering work in Stockholm.

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Box 2. Crimean War

A war fought between the Russian Empire and an alliance of British, French and Ottoman Empires and the Scandinavian kingdom during October 1853–February 1856. The Ottoman Empire or the Turkish Empire founded in 1299 that reached its peak just before the 17th century was on the decline by the middle of the 19th century. The Crimean war was the result of several European powers trying to establish their influence over the territories of the now weak Ottoman Empire. The war was fought mainly on the Cremian Peninsula, located in the Black Sea. The war ended after negotiations and the warring sides agreeing to preserve the integrity of the Ottoman Empire. The Crimean War is called the first 'Modern War' because railway, telegraphy and new types of war equipment were used. Florence Nightingale nursed wounded soldiers in this war and became famous.

Alfred came back to Sweden in 1861. He and his father started preparing and experimenting with nitroglycerine.

Back in Stockholm and the Terrible Tragedy

Failing to improve the condition of the factory in St. Petersburg, Alfred came back to Sweden in 1861. He and his father started preparing and experimenting with nitroglycerine in their factory in Helenoborg near Stockholm to make the explosive safer to handle and use as a blasting material. They tried mixing it with several substances which included saw dust, shredded paper, cotton, gun powder, etc. The mixture with gun powder was called 'blasting oil'. Alfred Nobel got his first patent on blasting oil in 1863. Mixing with brick powder made the explosive safe, but it was difficult to detonate, while the other filling materials were inflammable – the mixtures with them were marginally safer than using nitroglycerine alone. Despite these drawbacks, blasting oil did have a market as blasting material, (e.g., it was used in the construction of the Suez Canal during 1859–1869 and during the laying of railway lines in the US in the 1860s).

It was a period of rapid industrialization and construction activities were expanding enormously. Alfred Nobel was aware that his explosives were essential propellers of this growth. An occasional accident was not a serious deterrent to either their manufacturer or users, as there was no other alternative material. The entrepreneur in the 30-years young and forward-looking Alfred Nobel took steps to advance the business. In the early part of 1864 he founded the company Nitroglycerine AB at Helenoborg. In the later part of the same year there was a serious accident in the factory which took the life of his brother Emil and five others. The tragedy had a devastating effect on the health of the senior Nobel who suffered a stroke and was incapacitated for the rest of his life, (he died in 1872). Suddenly Alfred Nobel was all alone to shoulder the responsibility of running the business and home. As though this was not enough, the people of Stockholm angered by the accident asked him to dismantle his factory and move away from the city, and the Swedish government imposed heavy taxes. But the gritty Nobel took these incidents in his stride and moved on.

Alfred Nobel got his first patent on blasting oil in 1863. It was used in the construction of the Suez Canal during 1859–1869 and during the laying of railway lines in the US in the 1860s.

Moves to Germany; Invents Dynamite

He shifted the production of nitroglycerine onto a barge anchored on a lake (Mälaren) near Stockholm. The demand for the explosive was only growing and Nobel started expanding his enterprise. Next year (1865), he started a second factory in Krümmel, very close to the maritime city of Hamburg on the river Elbe in Germany. The Krümmel factory became the production hub for nitroglycerine and from here he exported it to other European countries, United States and Australia. Since there were incidents of explosion en route to the US, Nobel started the United States Blasting Oil company in 1866 which met the local demand and avoided the accident risk during transportation from Krümmel. Soon he also built a factory in an uninhabited place not far from Stockholm. Along with the production, the safety concerns were also growing. Nobel continued his experiments to find a suitable absorbent material for making the explosive safer.

The demand for the explosive was only growing and Nobel started expanding his enterprise.

Accidents were happening frequently. It was imperative that nitrglycerine had to be stabilized urgently. Not far from Hamburg in Lüneburg a white floury siliceous powder of fossilized diatoms called Kieselguhr (*Box* 3) was being mined. There are different stories about how Nobel discovered ultimately that this powder had all the right properties he was looking for to stabilize nitroglycerine. The factory in Krümmel, while transporting the explosive, was using kieselguhr as padding between nitroglycerine jars as it provided a cushion effect and prevented their damage. Nobel who had tested many absorbent substances till then with limited success experimented with this powder as well. Finally luck smiled upon him. When he kneaded the right blend of these substances he obtained a pasty stuff which like clay could be moulded into sticks of any size to place in holes drilled in rocks to be blasted. It was safe to handle and was essentially free from the kind of capricious behaviour exhibited by nitroglycerine or its other earlier products. Nobel called it dynamite (Greek, dynamis: power; 'dynamo' is also derived from the same root), and patented it in 1867. To put dynamite to practical applications an additional substance, a more sensitive explosive called primary

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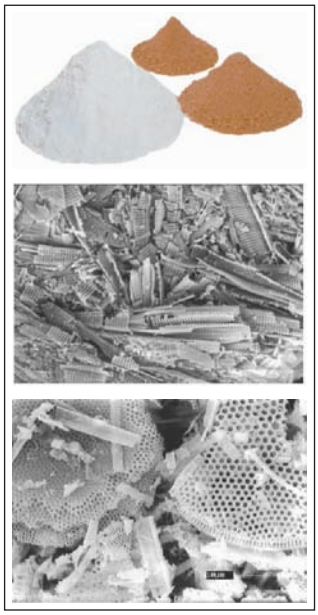
Box 3. Kieselguhr



Kieselguhr, also called diatomaceous earth, is formed by the fossilization of the unicellular microorganisms (algae) known as diatoms. The outer shell of these tiny organisms is made of silica as bioshield and can withstand very high pressures (approx 100 tons/meter). Its structure is very complex. It is a white floury material looking like flint glass powder and finds use as construction material particularly for cold storage rooms (or ice cellars) and for anti-tapping (security) telephone cells. Occasionally it was used to adulterate cosmetics. It was used to kill meal beetles on agricultural fields, and to remove fungus in damp areas. It is used for covering fireworks materials in order to keep them dry. Antiseptic kieselguhr is used to smear pussy wounds. Drinks like beer, cola, fruit juice and edible oil are clarified by filtering them through kieselguhr.

Until World War I most of the world demand for kieselguhr was met by the mines in Hannover in Germany. It was first discovered in 1836 around Lüneburg about 45 km from Hamburg. Nobel used this material to invent dynamite and subsequently to manufacture it.

Kieselguhr is not used anymore for making dynamite (a collective term used for over 100 explosives). The Nobel's company, Dynamite Nobel AG with headquarters in Troisdorf, Germany, employs more than 3000 workers which include geologists, biologists and engineers who strive to improve dynamite properties.

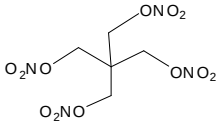
explosive was needed to trigger its blast. After conducting scores of experiments Nobel was able to design a 'blasting cap' device containing mercury fulminate (*Box* 4), a more sensitive explosive

Box 4. Mercury Fulminate

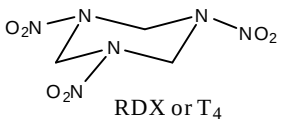
Mercury fulminate, made first in 1800 by Edward C Howard, is a highly sensitive explosive, setting off easily by shock or friction. It was used to ignite black powder (gun powder) in firearms. Alfred Nobel used it in making blasting cap, his first major invention. It is an organomercurial with a molecular formula $Hg(CNO)_2$ and is an isomer of mercury(II) cyanate, $Hg(NCO)_2$. It is prepared by treating mercury with excess nitric acid and the mixture is then added to ethanol.

$$Hg + 2\ HNO_3 \longrightarrow HgNO_3 + H_2O + NO_2$$

$$HgNO_3 + 2\ HNO_3 + C_2H_5OH \longrightarrow Hg(CNO)_2 + NO_2 + 4\ H_2O + O_2$$



Pentaerythritol tetranitrate (PETN)



RDX or T_4
Cyclotrimethylene trinitramine

Mercury fulminate is not used anymore as detonator. It has been replaced by organic compounds PETN and RDX which are cheaper and more effective than mercury fulminate.

than nitroglycerine, as detonator, which he patented in the same year.

Business Expands Rapidly; Globalizes Manufacturimg

Because dynamite was safe enough to store and handle, and could be set off when required, the demand for it grew very quickly. Industrialisation was taking place at a phenomenal pace particularly in Europe, the US, Australia and Canada. Dynamite was an indispensable component of construction of bridges, dams, canals, roads, railroads, tunnels and in mining and stone quarrying. With the existing manufacturing facility in Krümmel and Helenoborg, Nobel was unable to supply all the needed dynamite. He started expanding the manufacturing activity to other countries by establishing factories in Ardeer in Scotland, Paris and Sevran in France, Karlskoga in Sweden, and San Remo in Italy and in a few years he established all together about 90 factories and laboratories in more than 20 countries.

Dynamite was an indispensable component of construction of bridges, dams, canals, roads, railroads, tunnels and in mining and stone quarrying.

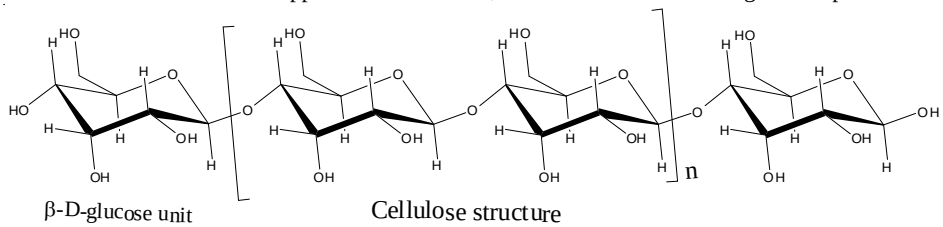
Nobel lived mostly in Paris, as he had developed a liking for that city when he went there in 1852 to Pelouze's laboratory. However, he used to visit his factories frequently to supervise the work. (Note that there were no cars then, and so he had to use steam engine railways, waterways or horse carts for travelling. Even then he toured extensively and was nicknamed "Europe's richest vagabond" by the famous French writer Victor Hugo). During these visits he used to spend time conducting experiments in his local laboratories on making explosives, improving dynamite, artificial leather, silk, rubber and other useful materials. From such experiments he invented blasting gelatine (*Box* 5) in 1875 and blasting powder 'ballistite' (*Box* 6) in 1887, both in his Paris laboratory. The two explosives were used both for civilian and military applications.

From such experiments Nobel invented blasting gelatine in 1875 and blasting powder 'ballistite' in 1887, both in his Paris laboratory. The two explosives were used both for civilian and military applications.

Ballistite replaced the smoky black powder. Both gelatine and ballistite found a good market and Alfred Nobel had two more sources to make huge profit and grow richer. He became one of the world's richest men. (It seems his brother Ludvig in St

Box 5. Blasting Gelatine

It is called gelignite, simply jelly or gelatinous dynamite. Blasting gelatine is a mixture of collodion and nitroglycerine. Collodion and guncotton are both products of nitration of cellulose (cotton). Cellulose is a polymer of β-D-glucose linked through 1–4 positions. Each cellulose molecule contains hundreds to thousands of glucose units each of which has three free OH groups. The OH groups can be nitrated to a lower or higher degree. Collodion is the product of lesser degree of nitration. Collodion is actually a solution of nitrocellulose in ether and alcohol. When it is applied onto a surface, a film is formed following the evaporation of solvents.



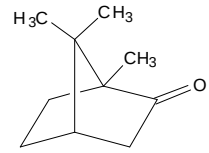
β-D-glucose unit Cellulose structure

Nobel invented blasting gelatine accidentally (pun intended). He had tried mixing guncotton with nitroglycerine earlier many times, but unsuccessfully, to get a more powerful explosive than dynamite.

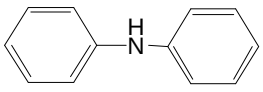
One day when he was working in his Paris lab in 1875, he had a small cut on his finger. He applied collodion on the cut so that the collodion would help in healing process (when collodion solution dries up, it leaves behind a film covering the cut location and protecting it from dust, infection or rubbing). During that night the pain was bothering him so much that he could not sleep. So he started thinking about collodion and suddenly the idea flashed to him of mixing collodion with nitroglycerine. Immediately he went to the lab (he had a lab attached or closeby to each one of his residences) and started experiments with collodion and nitroglycerine mixture. Before dawn he had found the right proportion of the two nitrates and the mixture was indeed more powerful than dynamite. After conducting more experiments he perfected it to his satisfaction and patented it in 1876.

Box 6. Ballistite

A ballistite is a smokeless propellant used in guns for shooting shells, mortars, etc. Alfred Nobel invented ballistite in 1887. In 1884, for the first time in history, a smokeless propellant powder was made by the French chemist Paul Vieille. Till then, for almost a millennium, the only propellant used was gun powder. Alfred Nobel's ballistite was superior to Vieille's 'white powder'. Ballistite is made up of a mixture of camphor (10%), nitroglycerine and collodion (45% each). A similar propellant called cordite was developed in Britain by Frederick Abel and James Dewar (of Dewar flask and Dewar benzene fame, and who made liquid oxygen and liquid hydrogen) in 1889. Cordite consists of 58% nitroglycerine, 37% guncotton and 5% petroleum jelly. Cordite is more popular than the other two, though all three are still used.



Camphor



Diphenylamine

Modified ballistite, with diphenylamine in place of camphor is used as a solid propellant for rockets.

Petersburg had become richer by establishing machine tools and gun carriage industry and by investing in the nascent petroleum oil industry in Russia. At some point of time the oil company owned by him and his brother Robert Nobel was producing 50% of the world's oil).

Nobel offered ballistite to the French army, but was rejected because the parochial instinct proved stronger and they wanted to continue to use the smokeless powder invented four years earlier by a French scientist, although ballistite was superior. Nobel sold the ballistite rights to Italy in 1889. Because France had conflicts with Italy, this transaction infuriated the French government. They branded Nobel as a traitor and considered to punish him. Due to this bitter development Nobel left Paris in 1891 and settled in San Remo, Italy.

Nobel offered ballistite to the French army, but was rejected because the parochial instinct proved stronger.

Mistaken Identity; Dubbed 'Merchant of Death'

During the early part of 1888 Paris newspapers carried the headline, "The merchant of death is dead" referring to Alfred Nobel. There was an element of truth in that statement, as Nobel's explosives had no doubt given a great impetus to the whole range of construction industries, but at the same time they were the cause of death and destruction by their unintended explosions and also use in military operations. Yet, he was aghast to see himself dead, but felt more horrified to find the way people perceived him. It was a terrible blow to his ego. Perhaps he had never imagined that society would treat him with such contempt and disregard after he passed away. However, the newspaper report was due to mistaken identity. In fact it was his brother Ludvig Nobel who had died in Cannes, France, but the Paris press had confused him for Alfred Nobel, maybe because he was a well-known resident of the city. Even then, Alfred Nobel got the message. He wanted to be remembered for his good work for a long time to come but not to leave behind a negative image. That was the starting point for him to establish the endowment for the award of what we now know as the Nobel Prize.

Alfred wanted to be remembered for his good work for a long time to come.

Alfred Nobel had become very wealthy and famous. Yet, he was a lonely man with no close friends, but many acquaintances.

A Loner in the Company of People

By the age of forty, within about ten years of establishing his nitroglycerine company, Alfred Nobel had become very wealthy and famous. Yet, he was a lonely man with no close friends, but many acquaintances. He seems to have had unhappy experiences with his business contacts, bureaucrats armed with archaic rules, unscrupulous lawyers slapping law suits against him and others. Nobel's cynical remarks about lawyers and politicians is revealing (and he may not change that opinion today), "Lawyers have to make a living and can do so only by inducing people to believe that straight is crooked. This accounts for their penchant for politics, where they can usually find everything crooked enough to delight their hearts...."

Alfred Nobel remained unmarried all through his life. He was unlucky in this context, as three women came into his life at different points of time, but each one disappointed him in one way or the other. The first one was a girl he met during his first visit to Paris in 1852. He was in love with her and wrote poems referring to her without revealing her name. However, the relationship ended on a sad note with her sudden death. After that he got too busy with inventing explosives, establishing and expanding his business empire, and travelling, and he had no time left to get involved with a woman. However, when he was 43, he felt the need for a "lady of mature age, versed in languages, as secretary and supervisor of household." The advertisement brought to him a discerning and attractive lady belonging to a rather poor Austrian aristocratic family. Nobel appointed Countess Bertha Kinsky von Wchinitz and Tettau for the position he had specified. His attempt to develop a relationship with her failed even before it started, because she was in love with Count Arthur von Suttner. Soon she left Nobel to marry the Count. However, the two understood each other well, continued their friendship and kept corresponding.

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Bertha von Suttner was a peace activist. She was critical of Nobel's involvement in explosives, which encouraged and

supported wars that brought great misery. Nobel concurred with her noble ideals and supported her peace movement by monetary contribution but did not agree with the method she adopted to achieve them. He wrote to her, "Perhaps my factories will put an end to war sooner than your congresses: on the day that two army corps can mutually annihilate each other in a second, all civilized nations will surely recoil with horror and disband their troops." He was too optimistic or simplistic to believe that humans are richly endowed with fellow feeling. He would have changed his opinion had he lived for twenty years more to witness the devastating consequences of WW1. Despite his differences with Bertha von Suttner, her influence did play a role in strengthening his concern for international peace and instituting a Peace Prize. For her peace initiatives Bertha von Suttner got the Nobel Prize for Peace in 1905.

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After the exit of Bertha, another woman entered Nobel's life. He met her in an Austrian flower shop. Sofie Hess was less than half his age and charming. She came from a working- class Jewish family. She was uneducated, untalented, but interested in unrestrained enjoyment of life. It is amazing how this mature, worldly wise, wealthy man could fall for her. Whether he married her is not known, but he addressed her as Madam Sofie Nobel in his letters to her. He provided her with all the luxuries. Though they had some happy times, the relationship was not stable. She became exploitative and flirtatious. His attempt to convert her into a cultured lady did not succeed. She even blackmailed him. The eighteen years of association ended. Sofie was Nobel's most bitter disappointment. It could only make Nobel more cynical and recluse.

Several companies established by Nobel have transformed into important industries, some examples being Central Dynamite Society in France, Dyno Industries in Norway, Imperial Chemical Industries in UK.

More Discovery and Business Expansion

However, none of such episodes adversely affected his inventive power or business acumen. He invented his 'crowning glory', the smokeless blasting powder ballistite in1887. By establishing the ballistite manufacturing industry Nobel had entered into arms production. (His earlier explosives were used mainly for mining

"Isn't it an irony of fate that I have been prescribed nitroglycerine, to be taken internally! They call it Trinitrin, so as not to scare the chemist and the public."
– Nobel

and construction works and not in wars). In 1894, he bought a small machine works, Bofors-Gullspang at Karlskoga in Sweden. Today the AB Bofors firm is one of the world's largest arms manufacturers. (It is familiar to most Indians). Several other companies established by Nobel have transformed into important industries, some examples being Central Dynamite Society in France, Dyno Industries in Norway, Imperial Chemical Industries in UK.

The Last Years and the Endowment

A few years before his death, Nobel had become free from depression, but his heart condition had worsened. It is amusing that he was prescribed nitroglycerine for the ailment, which made him comment, "... isn't it an irony of fate that I have been prescribed nitroglycerine, to be taken internally! They call it Trinitrin, so as not to scare the chemist and the public."

By now his thought of erasing the black mark of "the merchant of death" had crystallised and he had decided to create an endowment, the proceeds of which would be distributed every year to persons who have made the greatest contribution to the good of humanity in five areas of creativity, namely Physics, Chemistry, Physiology or Medicine, Literature and Peace. He prepared a will in his own hand without legal help. The third and final version of the will was prepared and signed at the Swedish-Norwegian Club in Paris, where he was on two month visit in 1895. He appointed two young engineers, Ragnar Sohlman and Rudolf Lilljequist, to execute the will after his death. Sohlman became Nobel's close and trusted person. Near the end of his life, Nobel had a stroke which snatched his ability to speak any language other than Swedish. He was unable to communicate with his Italian servants in his San Remo villa. He wrote, "How sad it is to be without a friend who could whisper a consoling word, and would one day gently close one's eyes".

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Alfred Nobel died in San Remo on the 10th of December 1896. Ragnar Sohlman arranged a simple service and cremation. The ashes were taken to Stockholm and after a grandiose funeral ceremony they were buried there.

The will, opened after Nobel's death, created some controversies. The press and some governments criticized some of its provisions. Dissatisfied relatives (nephews and their families; at the time of Alfred Nobel's death his mother and brothers had died; one sister survived) contested it. The matter was discussed and understanding reached. This caused years of delay in instituting the awards. Eventually the first awards were given away in 1901.

The will, opened after Nobel's death, created some controversies. The press and some governments criticized some of its provisions.

Nobel's Will: the Endowment Part

"The whole of my remaining realizable estate shall be dealt with in the following way: the capital, invested in safe securities by my executors, shall constitute a fund, the interest on which shall be annually distributed in the form of prizes to those who, during the preceding year, shall have conferred the greatest benefit to mankind. The said interest shall be divided into five equal parts, which shall be apportioned as follows: one part to the person who shall have made the most important discovery or invention within the field of physics; one part to the person who shall have made the most important chemical discovery or improvement; one part to the person who shall have made the most important discovery within the domain of physiology or medicine; one part to the person who shall have produced in the field of literature the most outstanding work in an ideal direction; and one part to the person who shall have done the most or the best work for fraternity between nations, for the abolition or reduction of standing armies and for the holding and promotion of peace congresses. The prizes for physics and chemistry shall be awarded by the Swedish Academy of Sciences; that for physiological or medical work by the Caroline Institute in Stockholm; that for literature by the Academy in Stockholm, and that for champions of peace by a committee of five persons to be elected by the Norwegian Storting. It is my express wish that in awarding the prizes no consideration whatever shall be given to the nationality of the candidates, but that the most worthy shall receive the prize, whether he be a Scandinavian or not."

Suggested Reading

[1] **Erik Bergengren, *Alfred Nobel*: *The Man and His Work*, Thomas Nelson, 1962.**

[2] **Royston M Roberts, *Serendipity*, John Wiley & Sons, pp.83–91, 1989.**

[3] **http://www.nobelprize.org and several other websites.**

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