UNIVERSITY OF CAMBRIDGE

Lord Rayleigh: Nobel Prize in Physics 1904

Lord Rayleigh

39.35

Ar

18

Lord Rayleigh was born on November 12, 1842 at Langford Grove, Maldon, Essex. Throughout his infancy and youth he was of frail physique; his education was repeatedly interrupted by ill-health. In 1861 he entered Trinity College, Cambridge, where he studied mathematics. With his exceptional abilities, he graduated in the Mathematical Tripos in 1865 as the top First Class student. In 1866 he obtained a fellowship at Trinity College which he held until 1871, the year of his marriage. In 1873, his father died and he succeeded to the barony. However, in 1876 he left the entire estate management to his younger brother.

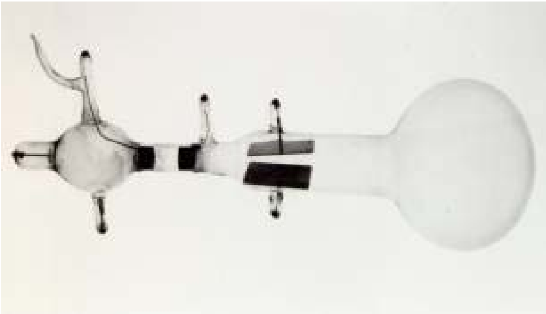
From then on he devoted all his time to science. In 1879 he succeeded James Clark Maxell as Professor of Experimental Physics and Head of the Cavendish Laboratory at Cambridge. At first he researched optics and vibrations, both of which are rather mathematical topics. Later, he considered physics as a field of work in itself and investigated wave theory, light scattering, electrodynamics, hydrodynamics, viscosity and photography. His careful, precise work led to the establishment of standards for resistance, current and electromotive force. This attracted many bright students and the number of research students at the Cavendish Laboratory increased from six to seventy under his leadership. Lord Rayleigh was also famous for his Theory of Sound, which was published in two volumes during 1877-1878.

In 1884 he left Cambridge to continue his experimental work at Terling, Essex. For much of his career he divided his time between his laboratory at Terling and the Royal Institution in London, where he was Professor of Natural Philosophy from 1887 to 1905. During this time he also did investigations of the densities of several gases. The experiments for the isolation of argon, for instance, were first carried out at the Royal Institution, but the final production was made at Terling. Lord Rayleigh was awarded the Nobel Prize in Physics 1904, “for investigations of the densities of the most important gases and for his discovery of argon in connection with these studies".

Lord Rayleigh served for six years as President of a Government Committee on Explosives, and from 1896 to 1919 he was Scientific Advisor of the Government. He was a Lord in Essex from 1892 to 1901. He was recipient of the Order of Merit (1902), and in 1905 he was made a Privy Councillor. He was awarded the Copley, Royal, and Rumford Medals of the Royal Society. Lord Rayleigh died on June 30, 1919, at Witham, Essex.

Sir J.J. Thomson: Nobel Prize in Physics 1906

Sir J.J. Thomson



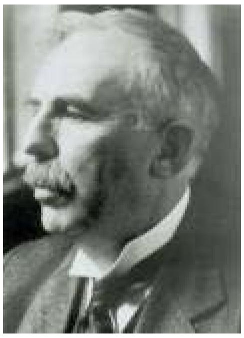
Sir Joseph John (J.J.) Thomson was born in Cheetham Hill, a suburb of Manchester on December 18, 1856. He studied at Owens College, Manchester (now the University of Manchester), from 1870. In 1876 he entered Trinity College, Cambridge, and became a Fellow of Trinity College in 1880. In 1883 he was appointed as a Lecturer, and as College Master in 1918. He was Cavendish Professor of Experimental Physics at Cambridge, where he succeeded Lord Rayleigh, from 1884 to 1918. He was also appointed as Honorary Professor of Physics by the Royal Institution, London.

Thomson's early interest in atomic structure was reflected in his Treatise on the Motion of Vortex Rings, which won him the Adams Prize in 1884. In 1896, Thomson visited America to give four lectures, which summarised his current research, at Princeton. On his return from America, he achieved the most brilliant work of his life: an original study of cathode rays, which eventually assisted him in the discovery of the electron, using the conduction of electricity by gases. J.J. Thomson was awarded the Nobel Prize in Physics 1906 "in recognition of the great merits of his theoretical and experimental investigations on the conduction of electricity by gases".

Thomson, a recipient of the Order of Merit, was knighted in 1908. He was elected Fellow of the Royal Society in 1884 and was President during the years 1916-1920. J.J. Thomson received many awards, including the Royal and Hughes Medals twice, in 1894 and 1902; the Copley Medal in 1914; the Hodgkins Medal (Smithsonian Institute, Washington) in 1902; the Franklin Medal and Scott Medal (Philadelphia), 1923; the Mascart Medal (Paris), 1927; the Dalton Medal (Manchester), 1931; and the Faraday Medal (Institute of Civil Engineers) in 1938. He was President of the British Association in 1909 and he held honorary doctorate degrees from many world-class universities.

In 1890, he married Rose Elisabeth. They had one son, Sir George Thomson, who was awarded the Nobel Prize for Physics in 1937, and one daughter. He died in 1940.

Lord Rutherford: Nobel Prize in Chemistry 1908



Lord Rutherford

Lord Rutherford was born on August 30, 1871, in Nelson, New Zealand. In 1889, he was awarded a scholarship to study at the University of Wellington where he entered Canterbury College. He graduated in 1893 with a double first in Mathematics and Physical Science. In 1894, he was awarded an 1851 Exhibition Science Scholarship, enabling him to go to Trinity College, Cambridge, and to work as a research student at the Cavendish Laboratory under J.J. Thomson. In 1897 he was awarded the B.A. Research Degree and the Coutts-Trotter Studentship of Trinity College.

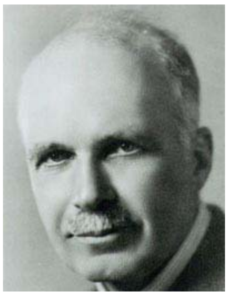
During his first project at the Cavendish Laboratory, he invented a detector for electromagnetic waves. He then worked with J.J. Thomson on the behaviour of the ions observed in gases which had been treated with X-rays. He also worked with Thomson in 1897, on the mobility of ions in relation to the strength of the electric field. In 1898 he reported the existence of alpha and beta rays in uranium. Later, he carried out more experiments to discover the properties of alpha particles. For instance, he measured the specific charge of the alpha particles by deflecting them in electric and magnetic fields, the same method that J.J. Thomson had used to discover the electron. Lord Rutherford eventually won the Nobel Prize in Chemistry 1908, "for his investigations into the disintegration of the elements, and the chemistry of radioactive substances".

In 1907 Rutherford became Langworthy Professor of Physics at the University of Manchester. In 1919 he accepted an invitation to succeed Sir J.J. Thomson as the Cavendish Professor of Physics at Cambridge. He also became Chairman of the Advisory Council, H.M. Government, Department of Scientific and Industrial Research; Professor of Natural Philosophy, Royal Institution, London; and Director of the Royal Society Mond Laboratory, Cambridge.

As an inspiring leader of the Cavendish Laboratory, he steered numerous Nobel Prize winners towards their great achievements, including Chadwick, Blackett, Cockcroft and Walton. Other laureates, such as G.P. Thomson, Appleton, Powell, and Aston, worked with him at the Cavendish. Rutherford was knighted in 1914 and was the recipient of many awards. He married Mary Newton in 1900 and they had one daughter. His favourite hobbies were golf and motoring. Rutherford died in Cambridge on October 19, 1937.

UNIVERSITY OF CAMBRIDGE

Sir Lawrence Bragg: Nobel Prize in Physics 1915



Sir Lawrence Bragg

Sir Lawrence Bragg was born in Adelaide, Australia, on 31st March 1890. He was an impressionable boy and showed an early interest in science. His father, William Henry Bragg, was Professor of Mathematics and Physics at the University of Adelaide. Shortly after starting school aged 5, Sir Lawrence Bragg fell from his tricycle and broke his arm. His father had recently read about Röntgen's experiments in Europe and used the newly discovered X-rays to examine the broken arm. This is the first recorded surgical use of X-rays in Australia.

Sir Lawrence Bragg was a very able student. In 1904, aged 15, he went to the University of Adelaide to study mathematics, chemistry and physics. He graduated in 1908, aged 18. In the same year his father accepted a job at Leeds University, and brought the family back to England. He entered Trinity College, Cambridge in the autumn of 1909. He received a major scholarship in mathematics, despite taking the exam while in bed with pneumonia. After initially excelling in mathematics, he transferred to the physics course in the later years of his studies, and graduated in 1911.

Sir Lawrence Bragg is most famous for his law on the diffraction of X-rays by crystals. Bragg's law makes it possible to calculate the positions of the atoms within a crystal from the way in which an X-ray beam is diffracted by the crystal lattice. He made this discovery in 1912, during his first year as a research student in Cambridge. He discussed his ideas with his father, who developed the X-ray spectrometer in Leeds. This tool allowed many different types of crystals to be analysed. The collaboration between father and son led many people to believe that the father had initiated the research, a fact that upset the son.

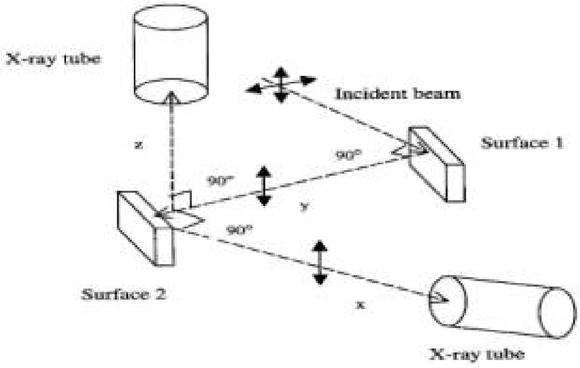
Sir Lawrence Bragg's research work was interrupted by both World War I and World War II. During both wars he worked on sound ranging methods for locating enemy guns. In autumn 1915, his brother Robert was killed. At about the same time Sir Lawrence Bragg received the news that he had become the youngest person ever to receive the Nobel Prize in Physics, aged 25. He was knighted in 1941. After World War II, he returned to Cambridge, splitting the Cavendish Laboratory into research groups. He believed that 'the ideal research unit is one of six to twelve scientists and a few assistants'. In 1948 Sir Lawrence Bragg became interested in the structure of proteins. Although he played no direct part in the 1953 discovery of the structure of DNA, James Watson admits that the X-ray method that Bragg developed forty years before was at the heart of this profound insight into the nature of life itself.

In April 1953 Sir Lawrence Bragg accepted the job of Resident Professor at the Royal Institution in London. He proposed that the Royal Institution should perform some form of public service, and suggested series of lectures to show experiments to schoolchildren. This idea was met with an enthusiastic response, and by 1965 20,000 schoolchildren were attending these lectures each year. He worked at the Royal Institution until his retirement in September 1966.

Sir Lawrence Bragg's hobbies included painting, literature and a life-long interest in gardening. He received both the Copley Medal and the Royal Medal of the Royal Society, and in 1967 was made a Companion of Honour by the Queen. He died at a hospital near his home at Waldringfield on 1st July 1971.

Charles Barkla : Nobel Prize in Physics 1917

Charles Barkla



Charles Barkla was born on June 7, 1877 at Widnes, Lancashire, England. He was educated at the Liverpool Institute and entered University College, Liverpool in 1894. He graduated with First Class Honours in Physics in 1898 and he obtained his master's degree in the following year. In 1899, he received a scholarship and proceeded to Trinity College, Cambridge, to work in the Cavendish Laboratory with J. J. Thomson.

Barkla's first research concerned the velocity of waves, but in 1902 he began the investigations on Röntgen radiation that occupied almost his entire life. His discovery of homogeneous radiations characteristic of the elements showed that most elements had their characteristic line spectra in the X-ray region of the electromagnetic spectrum. Barkla made valuable contributions to present knowledge on the absorption and photographic action of X-rays. He also showed both the applicability and the limitation of the quantum theory in relation to Röntgen radiation. The results of his findings were recorded in various papers, which had appeared mainly in the Transactions and Proceedings of the Royal Society. Barkla was awarded the Nobel Prize in Physics 1917, "for his discovery of the characteristic Röntgen radiation of the elements".

Barkla was a Fellow of the Royal Society, and had several honorary degrees. He was appointed Bakerian Lecturer (Royal Society) in 1916 and he was awarded the Hughes Medal in the following year.

Barkla married Mary Esther in 1907 and they had two sons and one daughter. His favourite hobby was singing: he had a powerful baritone voice and he was a member of the King's College Chapel Choir, 1901-1902. He was also fond of golf. He moved to King's College, London during 1900 and in 1902 returned to Liverpool. From 1905 to 1909 he was a demonstrator, an assistant physics lecturer and a special lecturer in advanced electricity at the University. In 1909 he succeeded H. A. Wilson as Wheatstone Professor of Physics in the University of London. In 1913, Barkla accepted the Chair in Natural Philosophy in the University of Edinburgh and he held this position until his death. Barkla died at his home, Braidwood, Edinburgh, on October 23, 1944.

Francis Aston : Nobel Prize in Chemistry 1922

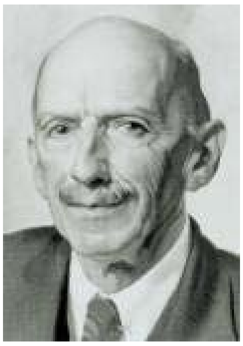
Francis Aston

Francis Aston was born in September 1877 at Harborne, Birmingham, England. He was educated at Harborne Vicarage School and Malvern College. In 1894 he entered the University of Birmingham to study Chemistry and Physics. After graduation, he worked as a chemist in the laboratory of a brewery. However, his interest in physics began to dominate at this time. He liked to observe the gas discharge phenomena in evacuated tubes. In 1903 he received a scholarship to the University of Birmingham. In 1910 he began working as an assistant at the Cavendish Laboratory, Cambridge, on studies of positive rays. During this period, he obtained definite evidence for the existence of two isotopes of the inert gas neon. This research was interrupted by World War I.

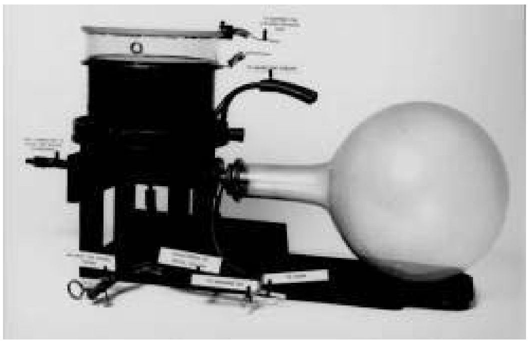
Returning to the Cavendish Laboratory in 1919, he worked on the problem of the separation of the isotopes of neon. He quickly achieved success through his invention of the mass spectrograph, which could utilize slight differences in the mass of the two isotopes. Extending this principle to other chemical elements, he discovered 212 of the naturally occurring isotopes. From his results, he could formulate the so-called Whole Number Rule which states that "the mass of the oxygen isotope being defined, all the other isotopes have masses that are very nearly whole numbers". Thus, Aston received the Nobel Prize in Chemistry 1922, "for his discovery, by means of his mass spectrograph, of isotopes, in a large number of non-radioactive elements, and for his enunciation of the whole-number rule".

In 1920 Aston received a Fellowship at Trinity College, Cambridge, and also the Mackenzie Davidson Medal. In 1921 he was made a Fellow of the Royal Society, and he was awarded the Society's Hughes Medal in 1922. He also obtained the Royal medal in 1938 and the Duddell medal of the Physical Society in 1941. Aston was a bachelor and also an enthusiastic sportsman. He liked skiing, rock climbing, tennis and swimming. He was also a musician, playing piano, violin and cello. He died in Cambridge on November 20, 1945.

Charles Wilson: Nobel Prize in Physics 1927



Charles Wilson



Charles Wilson was born on the 14th of February, 1869, in the parish of Glencorse, near Edinburgh. When Wilson was four years old, his father died and his mother moved with the family to Manchester, where he was educated at Owen's College (now the University of Manchester). Having been granted an entrance scholarship in 1888 he went on to Cambridge (Sidney Sussex College), where he took his degree in 1892. It was here that he became interested in the physical sciences, especially physics and chemistry.

During the summer of 1896, it was firmly established by J.J. Thomson and Lord Rutherford that the conductivity of air was indeed due to ionization of the gas. There was no longer any doubt that ions in gases could be detected. Wilson's appointment as Clerk Maxwell Student, at the end of that year, enabled him to research further. Most of his work on the behaviour of ions as condensation nuclei was carried out in the years 1895-1900. Early in 1911, he was the first person to see and photograph the tracks of individual alpha- and beta-particles and electrons. However it was not until 1923 that the cloud chamber was brought to perfection, leading to his two, beautifully illustrated, classic papers on the tracks of electrons. He was awarded the Nobel Prize in Physics 1927, "for his method of making the paths of electrically charged particles visible by condensation of vapour".

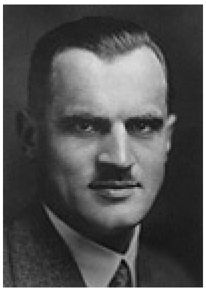
Some of the most important achievements using the Wilson chamber were:

- the demonstration of the existence of Compton recoil electrons, (Compton shared the Nobel Prize with Wilson in 1927);
- the discovery of the positron by Anderson (who was awarded the Nobel Prize for 1936 for this feat);
- the visual demonstration of the processes of "pair creation" and "annihilation" of electrons and positrons by Blackett and Occhialini, and;
- the demonstration of the transmutation of atomic nuclei carried out by Cockcroft and Walton.

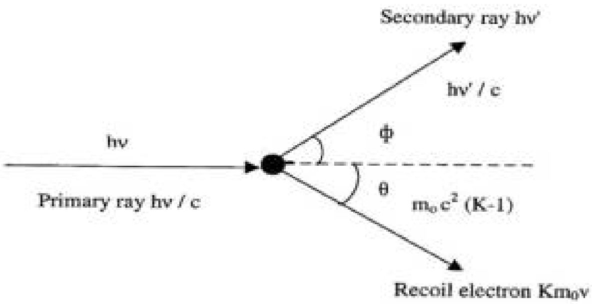
Thus, Rutherford's remark that the cloud chamber was "the most original and wonderful instrument in scientific history" has been fully justified.

In 1908, Wilson married Jessie Fraser, daughter of Rev. G. H. Dick of Glasgow. They had two sons and two daughters. He died on the 15th of November, 1959, in the midst of his family.

Arthur Compton : Nobel Prize in Physics 1927



Arthur Compton



Arthur Compton was born in Wooster, Ohio, on September 10th, 1892. In 1913, he graduated with Bachelor of Science from Wooster College. He spent three years in postgraduate study at Princeton University, receiving his M.A. degree in 1914 and his Ph.D. in 1916. After spending a year as a physics instructor at the University of Minnesota, he took a position as a research engineer with the Westinghouse Lamp Company in Pittsburgh. In 1919 he moved to work at University of Cambridge as a National Research Council Fellow.

At Princeton, Compton developed the theory that the intensity of X-ray reflections from crystals can be used as a means of studying the arrangement of electrons and atoms within the crystals, and in 1918 he started a study of X-ray scattering. This led to his discovery, in 1922, of the increase of wavelength of X-rays due to scattering of the incident radiation by free electrons. This implies that the scattered quanta (free electrons) have less energy than the quanta of the original beam. This effect, known as the Compton effect, clearly illustrates the particle concept of electromagnetic radiation. This work was supported C. T. R. Wilson's research in his cloud chamber, in which he showed the presence of the tracks of the recoil electrons. Compton was awarded the Nobel Prize in Physics 1927, "for his discovery of the effect named after him".

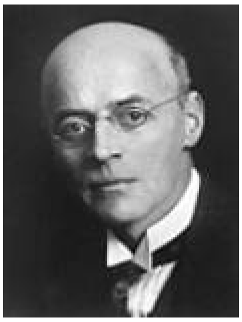
In addition, Compton discovered (with C. F. Hagenow) the phenomenon of total reflection of X-rays and their complete polarization, which led to a more accurate determination of the number of electrons in an atom. He was also the first (with R. L. Doan) to obtain X-ray spectra from ruled gratings, which offers a direct method of measuring the wavelength of X-rays.

In 1916, he married Betty Charity McCloskey. They had two sons, Arthur and J.J. In 1920, he was appointed as the Head of the Department of Physics at Washington University, St. Louis. In 1923 he moved to the University of Chicago as Professor of Physics. Until his retirement in 1961 he was Distinguished Service Professor of Natural Philosophy at Washington University.

Compton's favourite hobbies were tennis, astronomy, photography and music. He died on March 15th, 1962, in Berkeley, California.

UNIVERSITY OF CAMBRIDGE

Sir Owen Richardson : Nobel Prize in Physics 1928


Sir Owen Richardson

$$i = AT^{\frac{1}{2}} e^{-w/kT}$$

Sir Owen Richardson was born on the 26th of April, 1879, in Yorkshire, England. Educated at Batley Grammar School, he proceeded to Cambridge in 1897, having obtained a scholarship at Trinity College. He graduated with dual First Class Honours in Natural Science from University of Cambridge and University of London respectively. In 1900, he began to investigate the emission of electricity from hot bodies at the Cavendish Laboratory. In 1902 he was elected a Fellow of Trinity College, Cambridge.

Richardson's Law was first announced by him in a paper on the 25th November, 1901, in the following words: "If then the negative radiation is due to the corpuscles coming out of the metal, the saturation current, *s*, should obey the law $s = AT^{½} e^{-b/T}$. This law is fully confirmed by the experiments to be described." Richardson continued working on this subject at Cambridge until 1906, when he was appointed Professor of Physics at Princeton University in America. He remained at Princeton until the end of 1913, working on thermionic emission, photoelectric action, and the gyromagnetic effect. In 1914, he returned to England as Wheatstone Professor of Physics at King's College, continuing his thermionic research. He was awarded the Nobel Prize in Physics 1928, "for his work on the thermionic phenomenon and especially for the discovery of the law named after him".

He was awarded the Hughes Medal by the Royal Society (1920), especially for work on thermionics; elected President, Section A, of the British Association (1921) and President of the Physical Society, London (1926-1928); appointed Yarrow Research Professor of the Royal Society, London (1926-1944); and knighted in 1939. In 1906 he married Lilian Maud Wilson. They had two sons and one daughter. After the death of his wife in 1945, Richardson married the physicist Henriette Rupp in 1948. He died in 1959.

UNIVERSITY OF CAMBRIDGE

Sir James Chadwick: Nobel Prize in Physics 1935


Sir James Chadwick


Sir James Chadwick was born in Cheshire, England, on 20th October, 1891. He attended Manchester High School before entering Manchester University in 1908. He graduated from the Honours School of Physics in 1911, and then spent two years in the Physical Laboratory in Manchester, where he worked on various radioactivity problems for Professor (later Lord) Rutherford. In 1913 he graduated with a M.Sc. degree and received a scholarship to work for Professor Geiger in the Physikalisch Technische Reichsanstalt at Charlottenburg, Berlin.

In 1919, he returned to England and resumed working for Rutherford, who had moved to the Cavendish Laboratory, Cambridge. Rutherford had succeeded in disintegrating atoms (spontaneous emission by a nucleus of photons or particles) and Chadwick joined Rutherford in his studies of the properties and structure of atomic nuclei. In 1932, Chadwick made a fundamental discovery in the domain of nuclear science: he proved the existence of neutrons - elementary particles devoid of any electrical charge. He was awarded the Nobel Prize in Physics 1935, “for the discovery of the neutron”. This discovery provided a new tool for inducing atomic disintegration, since neutrons, being electrically uncharged, could penetrate into the atomic nucleus without deflections whereas protons cannot do so.

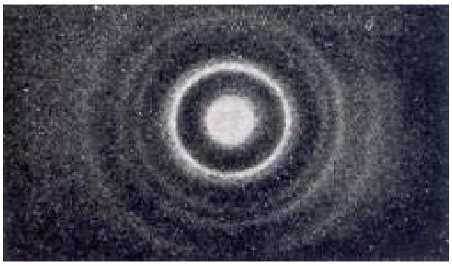
Chadwick remained at Cambridge until 1935 when he was elected to the Lyon Jones Chair of Physics at the University of Liverpool. From 1943 to 1946 he worked in the United States as Head of the British Mission for the development of the atomic bomb. He was knighted in 1945. He returned to England and, in 1948, became the Master of Gonville and Caius College, Cambridge. He retired in 1959. From 1957 to 1962 he was a part-time member of the United Kingdom Atomic Energy Authority.

In 1925, he married Aileen Stewart-Brown of Liverpool. They had twin daughters, and the family lived at Denbigh, North Wales. His favourite hobbies were gardening and fishing. He died in 1974.

UNIVERSITY OF CAMBRIDGE

Sir George Thomson: Nobel Prize in Physics 1937

Sir George Thomson



Sir George Thomson was born in 1892 in Cambridge, the son of the physicist Sir J.J. Thomson. George studied in Cambridge from his primary school to university, including University of Cambridge, where he attended Trinity College and majored in mathematics and physics. Under his father's supervision in atomic structure, he also worked for a year at the Cavendish Laboratory until World War I. After the war he spent three years as Fellow and Lecturer at Corpus Christi College, Cambridge, and continued his physics research. He was then appointed Professor of Natural Philosophy (Physics) at the University of Aberdeen, a post he held for eight years.

At Aberdeen he carried out experiments on the behaviour of electrons as they passed through very thin films of metals, which showed that electrons could behave as waves in spite of being particles. For this work he later shared the Nobel Prize, with C.J. Davisson of the Bell Telephone Laboratories, who had arrived at the same conclusions by a different kind of experiment. They shared the Nobel Prize in Physics in 1937, "for their experimental discovery of the diffraction of electrons by crystals". The process of electron diffraction, which these experiments established, has been widely used in the investigation of the surfaces of solids.

In 1930 he was appointed as a Professor at Imperial College, University of London. Soon, he became interested in nuclear physics. When the fission of uranium was discovered at the beginning of 1939, he predicted its military and other functions, and persuaded the British Air Ministry to procure a ton of uranium oxide for experiments. Later he became the Chairman of the British Committee, investigating possibilities of making atomic bombs. This committee reported in 1941 that it was possible to make a bomb, and Thomson was authorized to give this report to two American scientists: Vannevar Bush and James Conant. After the war he returned to work at Imperial College. He continued his nuclear research and published many papers.

He left atomic bomb research in 1952 and became the Master of Corpus Christi College, Cambridge, retiring from the latter in 1962. In 1924 he married Kathleen Buchanan. They had two sons and two daughters. His favourite hobby was making model ships. He died in 1975.

UNIVERSITY OF CAMBRIDGE

Sir Edward Appleton: Nobel Prize in Physics 1947

Sir Edward Appleton

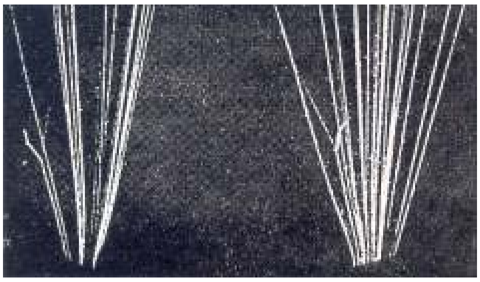
Sir Edward Appleton was born in Bradford, England, on 6th September 1892. He was educated at Hanson Grammar School, and then took his B.A. degree in Natural Science at St. John's College, Cambridge, in 1913. In 1914, he specialised in physics and also won a scholarship, working for both Sir J.J. Thomson and Lord Rutherford. His research was interrupted by World War I. After the war, he returned to Cambridge and took up research on radio waves. Appleton devoted himself to scientific problems in atmospheric physics, using mainly radio techniques. In 1920 he became an assistant demonstrator in experimental physics at the Cavendish Laboratory. Two years later he became sub-rector at Trinity College.

In late 1924 Appleton began a series of experiments which proved the existence of an ionised layer in the upper atmosphere, now called the ionosphere. With the co-operation of the British Broadcasting Corporation, he used their Bournemouth transmitter to shoot radio waves up to the layer to see if they were reflected by it and came back. The experiment was very successful as the radio waves were reflected by the ionised layer. By a slight change of wavelength, it was possible to measure the time taken by the waves to travel to and from the layer. Thus, the position of the reflecting layer could be identified and its height (60 miles above ground) determined. This method is called "frequency-modulation radar". The ionosphere was the first "object" detected by radiolocation, and this led to a great development of radio research. Appleton received the Nobel Prize in Physics 1947, “for his investigations of the physics of the upper atmosphere especially for the discovery of the so-called Appleton layer".

In 1924 Appleton was appointed Professor of Physics at London University and served there for twelve years, returning to Cambridge in 1936 to become Professor of Natural Philosophy. He was knighted in 1941, acknowledging his contributions to British military research. In 1956 he gave the Reith Lectures for the B.B.C. on "Science and the Nation". His awards included the Gunning Victoria Jubilee Prize of the Royal Society, Edinburgh, in 1960, and the Medal of Honour of the Institute of Radio Engineers of America in 1962. In 1915 Appleton married Jessie and they had two daughters. He died in 1965.

Lord Blackett: Nobel Prize in Physics 1948

Lord Blackett



Lord Blackett was born on 18th November, 1897. He was originally trained as a regular officer for the Navy at Osborne Naval College, having started his career as a naval cadet in 1914. He took part in the battles of Falkland Islands and Jutland during World War I. At the end of the war he resigned with the rank of Lieutenant, and took up studies of physics with Lord Rutherford at Cambridge.

In 1921, he started research with cloud chambers, which resulted in the first photographs of the transmutation of nitrogen into an oxygen isotope in 1924. In 1932, together with a young Italian scientist, G.P.S. Occhialini, he designed the counter-controlled cloud chamber, which could take photographs during experiments, including images of cosmic rays. In the spring of 1933 Occhialini and Blackett not only confirmed Anderson's discovery of the protons, but also demonstrated that both protons and electrons in an element had approximately equal numbers. In 1945, after World War II, he resumed his work on cosmic ray investigations at the University of Manchester, focusing on the further study of cosmic ray particles by the counter-controlled cloud chamber in a strong magnetic field, built and used before the War. Lord Blackett received the Nobel Prize in Physics 1948, "for his development of the Wilson cloud chamber method, and his discoveries therewith in the fields of nuclear physics and cosmic radiation".

In 1948 Blackett followed up discussions about the isotropy of cosmic rays and began working on the origin of the interstellar magnetic fields, and in so doing revived interest in 30-year old speculations of Schuster and H. A. Wilson, and others, on the origin of the magnetic field of the earth and sun. He was awarded the Royal Medal by the Royal Society in 1940 and the American Medal for Merit in 1946. He was appointed Head of the Physics Department of the Imperial College, London, in 1953 and retired in July 1963. In 1924 he married Constanza Bayon and they had one son and one daughter. He died in 1974.