

## Hyatt (John Wesley) (1837-1920)

**J**OHNS WESLEY HYATT, the inventor of celluloid, was born at Starkey, New York, November 28, 1837. His father was a blacksmith. He was educated in the local school and for a year at Eddytown Seminary, where he excelled in mathematics. At the age of sixteen he settled as a printer in Illinois. The strong taste for mechanical affairs, which he acquired in his father's workshop, led him in this early age to invent a new knife-sharpener. Again, when he was following the printing trade at Albany some twelve years later, the same taste was further intensified by the offer of a prize of 10,000 dollars for a substitute for ivory for billiard-balls by a manufacturer and he began experimenting nights and days in the hope of gaining the reward. Though he failed to get the reward, he achieved success in 1869 in making billiard-balls with a combination of paper flock, shellac and collodion. This ball has been widely adopted.

### CELLULOID FROM AN ACCIDENT

About this time, Hyatt was using collodion in the course of his work when he accidentally overturned a bottle. The idea of celluloid came to him from watching the collodion solidify. After repeated experiments in conjunction with his brother, Hyatt took his patent for celluloid manufacture on July 12, 1870. The chief claims of the patent were (i) grinding proxylene into a pulp, (ii) use of finely comminuted camphor-gum and (iii) employment of pressure. A vexatious suit by Daniel Spill claiming priority of invention was found against him by the Federal Court. The Celluloid Company was established in New York in 1872-73 against much public prejudice and discouragement which were intensified by an unfortunate fire which took place shortly after the Company began its operations.

### SUGARCANE MILL

Mr. Hyatt's activities were not limited to celluloid. He invented a superior sugarcane mill which extracted more and purer juice in a shorter time and increased the fuel value of the refuse considerably.

## OTHER INVENTIONS

The establishment of the Hyatt Pure Water Company to popularise the new process of filtration, patented in 1881, is said have marked a new era in water purification. In 1891-92 Hyatt investigated the subject of centrifriction roller bearings with great success. The Hyatt Roller Bearing Company was the result. Other inventions include: Machine for turning out billiard-balls (1870), Machine for making a slate for school use (1875), and a substance called "Bonislate" suitable for billiard-balls, buttons, knife handles, etc. On the whole, Hyatt had taken out 238 patents.

### HIS HONOURS

In 1914, the Society for Chemical Industry (London) awarded Hyatt its Perkin Medal. In accepting the Medal, Hyatt said that though he lacked early training in the sciences, it was his persistent, and many times mistaken, experiments that got him the results. One of his old colleagues said on the occasion "There was one element in Mr. Hyatt's make-up concerning which I cannot speak too highly, for the reason that you don't find it everywhere... It was his willingness to give every one credit for his own idea and not attempt to appropriate it himself. Sometimes, he went further than this: he would take the thought that you gave him, enlarge upon it or improve it, and then hand it back to you as your own. How many do that to-day? I think that if you counted them on your fingers, you would have some fingers left over when you have finished counting."

Hyatt died at Short Hills, N. J., May 10, 1920.

## Douglas (James) (1837-1918)

**J**AMES DOUGLAS, who was born at Quebec on November 4, 1837, had an extraordinary career. He was called "the dean of the mining and metallurgical professions". Yet he began his career with a theological and medical education and had nearly reached the age of 40 without finding himself. Douglas first

followed the footsteps of his father, who introduced the modern treatment of insanity into Canada when he founded the Quebec Lunatic Asylum. But after studying medicine in Canada, Scotland and Germany, he decided that the profession did not interest him and went to Edinburgh to study theology.

#### FATHER'S FOLLY, AN OPPORTUNITY

What directed Douglas into his proper field of work was a misguided investment that his father had made in Harvay Hill copper mines, which proved a failure. To retrieve as much as possible, Douglas took to metallurgy and in collaboration with a brilliant scientist, he worked the beautiful Hunt and Douglas process of copper extraction. He also invented an ingenious revolving muffle furnace for ore roasting.

#### HIS PROSPECTING VISION

In 1880 he joined the Copper Queen mine at Arizona and when the mine was exhausted in 1884 and a business crash was apprehended, his knowledge of prospecting geology, his persistence and his persuasiveness led to the striking of fresh rich ore bodies and later history made Copper Queen one of the greatest mines of the world.

#### OTHER INTERESTS

The need for carrying the products led to the construction of a railway. This opportunity made Douglas an equally great authority on railway transportation. He had great business acumen. He consolidated all the companies in which he had interests into a single body under his presidency.

He published not only numerous technical papers but also historical and biographical books such as *Canadian Independence* (1894), *Old France in the New World* (1905), *New England and New France* (1913), *The Journal and Reminiscences of James Douglas* (1910) and *A Memoire of Thomas Sterry Hunt* (1898). His numerous philanthropies included bequests to educational, medical and engineering institutions. He spent very little on himself. He spent millions on bequests and a million for research in cancer.

#### HIS HONOURS

Douglas was elected President of the American Institute of Mining Engineers (1899-1900). He was awarded a Gold Medal by the Institution of Mining and Metallurgy of Great Britain (1906). The McGill University made him a Doctor of Laws (1907). He was given the John Fritz Medal for humanitarian work (1916). He was elected Chancellor of Queen's University (1917).

Douglas died, June 25, 1918.

#### McCLean (Frank) (1837-1904)

FRANK McCLEAN, British engineer and amateur astronomer, was born at Glasgow, November 13, 1837. Having received his education at Westminster, Glasgow and Cambridge and having been articled to Sir John Hawkshaw, the Engineer, in 1862 he became a partner in his father's engineering firm. In 1870 he withdrew from his profession in the enjoyment of a large income and devoted the remaining years of his life to spectroscopic researches.

#### SPECTROSCOPIC WORK

He commenced his spectroscopic work with the photography of metallic spectra by means of an induction spark and then made an elaborate series of comparative photographs of the spectra of the sun at high and low altitudes. This work put on a firm footing the variations in the solar spectra due to atmospheric influences. All this work was done at his own observatory built in 1875 at his country house at Ferncliffe and at his own laboratory built in 1881 at another country house of his at Ruxhall. The chief instrument in use was one of his own invention.

#### STELLAR WORK

A star spectroscope designed by him and named after him is still in demand. In 1895 he began the greatest work of his life—a spectroscopic survey of every star brighter than magnitude 3½. This he did with a 13-inch telescope with a prism of refracting angle 20° placed in front of the object-glass. Having completed the survey of the northern hemisphere in 1896, he went to the Cape of Good Hope's Observatory and completed the southern one in 1897.

In this work he struck new ground by referring the stars to their galactic latitude and longitude. This far-reaching research was done by him single-handed. "It was his eye that measured the lines and his was the pen, that worked out the calculations."

### HIS BENEFACTIONS

McCleean generously employed his fortune in the advancement of astronomy. At a cost of £12,500 he founded the Isaac Newton Scholarships in the University of Cambridge for the encouragement of research in astronomy and spectroscopy. In 1894 he presented the Cape of Good Hope Observatory with the large Victoria telescope, fittings and dome, with all the latest improvements. He later gave the same Observatory a prismatic camera. He

made a large collection of illuminated manuscripts, early printed books and several other art-treasures, all of which he bequeathed to the Fitzwilliam Museum at Cambridge. He also made large money bequests to that University, to the University of Birmingham and to the Royal Astronomical Society for furthering research in astronomy and physics.

### HIS HONOURS

McCleean received the honorary LL.D. of Glasgow in 1894. Next year he was elected Fellow of the Royal Society. In 1899 he was the recipient of the Gold Medal of the Royal Astronomical Society, the highest honour in the gift of that Society.

McCleean died at Brussels from pneumonia, November 8, 1904.

## ASTRONOMICAL NOTES.

**Eclipse of the Sun.**—An annular eclipse of the sun will occur on December 2-3, but will be invisible in India. The path of the annular eclipse lies entirely in the Pacific Ocean, commencing in the sea to the south of Japan and ending near California in the western coast of the United States of America.

**Planets during December 1937.**—Venus continues to be a bright object visible early in the morning before sunrise. It is moving east-wards and at the end of the month, will rise about three quarters of an hour before the sun. On December 1, there will be a close conjunction with the moon, the planet being about  $2^{\circ}$  north of the moon. Mercury can be seen for the greater part of the month near the western horizon immediately after sunset.

Three major planets, can be conveniently observed during the early part of the night. Mars and Jupiter are situated in the western sky while Saturn will cross the meridian at about sunset. The minor axis of the ring ellipse will be only  $1^{\circ} 2'$

at the beginning of the month and is gradually increasing. On December 2, Saturn will be at one of the stationary points and will attain quadrature with the sun on December 20.

**Comets.**—Encke's comet (which was detected on September 2, by Jeffers at the Lick Observatory) is approaching the earth and getting brighter; on November 6, it was of the twelfth magnitude. The comet is situated in the constellation Cygnus and rapidly moving towards southwest. According to Matkiewicz ephemeris (Pulkowa circular 20) the comet will be in Aquila in the early part of December and will be bright enough to be seen with a binocular. It will reach maximum brightness on December 25, but owing to the proximity of the sun and the low altitude at sunset this will not be a suitable time for observing the object.

The period of the comet is a little over three years. It has been observed at every return since its discovery in 1808.