

Classic Poetry Series

James Joseph Sylvester

- poems -

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James Joseph Sylvester (3 September 1814 – 15 March 1897)

James Joseph Sylvester was an English mathematician. He made fundamental contributions to matrix theory, invariant theory, number theory, partition theory and combinatorics. He played a leadership role in American mathematics in the later half of the 19th century as a professor at the Johns Hopkins University and as founder of the American Journal of Mathematics. At his death, he was professor at Oxford.

Biography

Sylvester was born James Joseph in London, England. His father, Abraham Joseph, was a merchant. James adopted the surname Sylvester when his older brother did so upon emigration to the United States—a country which at that time required all immigrants to have a given name, a middle name, and a surname. At the age of 14, Sylvester started attending the University of London, where he was a student of Augustus De Morgan. His family withdrew him from the University after he was accused of stabbing a fellow student with a knife. Following this, he attended the Liverpool Royal Institution.

Sylvester began his study of mathematics at St John's College, Cambridge in 1831, where his tutor was John Hymers. Although his studies were interrupted for almost two years due to a prolonged illness, he nevertheless ranked second in Cambridge's famous mathematical examination, the tripos, for which he sat in 1837. However, Sylvester was not issued a degree, because graduates at that time were required to state their acceptance of the Thirty-Nine Articles of the Church of England, and Sylvester - who was of Jewish origin - refused to do so. For the same reason, he was unable to compete for a Fellowship or obtain a Smith's prize. In 1838 Sylvester became professor of natural philosophy at University College London. In 1841, he was awarded a BA and an MA by Trinity College, Dublin. In the same year he moved to the United States to become a professor at the University of Virginia for about six months, and returned to England in November 1843.

On his return to England he studied law, alongside fellow British lawyer/mathematician Arthur Cayley, with whom he made significant contributions to matrix theory while working as an actuary. One of his private pupils was Florence Nightingale. He did not obtain a position teaching university mathematics until 1855, when he was appointed professor of mathematics at the Royal Military Academy, Woolwich, from which he retired in 1869, because the compulsory retirement age was 55. The Woolwich academy initially refused to pay Sylvester his full pension, and only relented after a prolonged public controversy, during which Sylvester took his case to the letters page of The Times.

One of Sylvester's lifelong passions was for poetry; he read and translated

works from the original French, German, Italian, Latin and Greek, and many of his mathematical papers contain illustrative quotes from classical poetry. Following his early retirement, Sylvester (1870) published a book entitled *The Laws of Verse* in which he attempted to codify a set of laws for prosody in poetry.

In 1877 Sylvester again crossed the Atlantic Ocean to become the inaugural professor of mathematics at the new Johns Hopkins University in Baltimore, Maryland. His salary was \$5,000 (quite generous for the time), which he demanded be paid in gold. In 1878 he founded the *American Journal of Mathematics*. The only other mathematical journal in the U.S. at that time was the *Analyst*, which eventually became the *Annals of Mathematics*.

In 1883, he returned to England to take up the Savilian Professor of Geometry at Oxford University. He held this chair until his death, although in 1892 the University appointed a deputy professor to the same chair.

Sylvester invented a great number of mathematical terms such as discriminant. He has given a name to Euler's totient function $\phi(n)$. His collected scientific work fills four volumes. In 1880, the Royal Society of London awarded Sylvester the Copley Medal, its highest award for scientific achievement; in 1901, it instituted the Sylvester Medal in his memory, to encourage mathematical research after his death in Oxford, Oxfordshire, England.

Sylvester House, a portion of an undergraduate dormitory at Mason Cleveland, is named in his honour

Works:

Sylvester, James Joseph (1870), *The Laws of Verse Or Principles of Versification Exemplified in Metrical Translations: together with an annotated reprint of the inaugural presidential address to the mathematical and physical section of the British Association at Exeter*, London: Longmans, Green and Co, ISBN 978-1-177-91141-2

Sylvester, James Joseph (1973) [1904], Baker, Henry Frederick, ed., *The collected mathematical papers of James Joseph Sylvester, I*, New York: AMS Chelsea Publishing, ISBN 978-0-8218-3654-5

Sylvester, James Joseph (1973) [1908], Baker, Henry Frederick, ed., *The collected mathematical papers of James Joseph Sylvester, II*, New York: AMS Chelsea Publishing, ISBN 978-0-8218-4719-0

Sylvester, James Joseph (1973) [1904], Baker, Henry Frederick, ed., *The collected mathematical papers of James Joseph Sylvester, III*, New York: AMS Chelsea Publishing, ISBN 978-0-8218-4720-6

Sylvester, James Joseph (1973) [1904], Baker, Henry Frederick, ed., *The collected mathematical papers of James Joseph Sylvester, IV*, New York: AMS Chelsea Publishing, ISBN 978-0-8218-4238-6

Kepler's Apostrophe

Yes! on the annals of my race,
In characters of flame,
Which time shall dim not nor deface,
I'll stamp, my deathless name.

The fire which on my vitals preys,
And inly smouldering lies,
Shall flash out to a meteor's blaze
And stream along the skies.

Clafed as the angry ocean's swell
My soul within me boils,
Like a chained monarch in his cell,
Or lion in the toils.

To wealth, to pride, to lofty state,
No more I'll bend the knee,
But Fortune's minions, meanly great,
Shall stoop their necks to me.

The God which formed me for command,
And gave me strength to rise,
Shall plant His sceptre in my hand,
His lightning in my eyes;

Shall with the thorny crown of fame
My aching temples bind,
And hail me by a mighty name
A monarch of the mind.

Me, heaven's bright galaxy shall greet
Theirs by primordial choice,
And earth the eternal tones repeat
Of my prophetic voice.

Stung in her turn, the heartless fair
Who proudly eyes me now,
Shall weep to see some other share
The godhead of my brow;

Shall weep to see some lovelier star
Snatched to my soul's embrace,
Ascend with me Fame's fiery car
And claim celestial place.

Tune oh! my soul thy loftiest strain,
Exult in song and glee,
For worn has snapped each earthlier chain
And set the immortal free.

Minds destined to a glorious shape
Must first affliction feel;

Wine oozes from the trodden grape,
Iron's blistered into steel;

So gushes from affection bruised
Ambition's purple tide,
And steadfast faith unkindly used
Hardens to stubborn pride.

James Joseph Sylvester

Remonstrance

Oh! why those narrow rules extol?
These but restrain from ill,
True virtue lies in strength of soul
And energy of will.

To all that's great and high aspires,
Prompts to the path of fame
From Heaven draws down Promethean fires
And wraps the soul in flame.

With brow erect, eye undismayed
Confronts the midday sun,
Nor sleeps inglorious in the shade
Of praises cheaply won;

Scans not too curiously the chance
Of good or evil fate,
But with a free and fearless glance
Knocks at Hope's, golden gate;

The truthful course pursues and knows
By Heaven-imparted light,
And scorns to shape to outward shows
Its conscious sense of right.

Still, while it renders Reason's name
The meed of honour due
Forgets not sacred instincts claim
Their share of reverence too.

The frown of unjust censure braves,
Retreats not with the tide,
But nobly stems and stills the waves
Of prejudice and pride.

James Joseph Sylvester