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Short Biography

John Lighton Synge, F.R.S. was born in Dublin on 23rd March, 1897. He was educated in St. Andrew's College and entered Trinity College, Dublin University in 1915. He graduated B.A. (1919), M.A. (1922) and Sc.D. (1926).

He was Assistant Professor of Mathematics in the University of Toronto (1920–25) and returned to Trinity College as Professor of Natural Philosophy (1925–30). It was at this time that he published a paper "On the Geometry of Dynamics" [*Phil. Trans. R. Soc.* **A226** (1926), 31–106] in which he obtained the equation of geodesic deviation on a Riemannian manifold and simultaneously this important equation was derived by Levi-Civita on a pseudo-Riemannian manifold. He also edited, with A. W. Conway, F.R.S. of University College Dublin, the first volume of the collected works of Hamilton on geometrical optics. This was an enterprise which had a strong influence subsequently on his own research in mechanics and optics.

He returned to the University of Toronto as Professor of Applied Mathematics (1930–43). He subsequently became chairman of the Mathematics Department in Ohio State University (1943–46) and Head, Mathematics Department at Carnegie Institute of Technology, Pittsburgh (1946–48) before coming back to Dublin to establish his "school of relativity" in the Dublin Institute for Advanced Studies (1948–72).

This was a golden age for relativity generally and in particular in Dublin. Many notable figures in the subject came to study with or consult Synge, influenced by his emphasis on the geometry of space-time and his impressive insight and mastery of this most fundamental point of view. He created around him a wonderful spirit of enquiry accompanied by intellectual discipline ("as far as I am concerned, you cannot beat a good equation"). Out of this emerged, some profound results most notably perhaps, Felix Pirani's study of the physical significance of the Riemann tensor and Werner Israel's proof of the uniqueness of the static black hole. These researches carry the imprint of Synge's point of view par excellence.

He himself was prolific, publishing over 250 papers and 11 books covering Differential Geometry, Applied Mathematics and Relativity Theory. After officially retiring at 75 he continued his research with amazing vigour for another

twenty years. He died on 30th March, 1995 in Dublin having bequeathed his body to the Medical School in Trinity College.

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The most outstanding characteristic of J. L. Synge's approach to mathematical physics was his extraordinary geometrical insight. "I asked myself why some things bored me while others excited me intellectually, and I came to the conclusion that the exciting problems must contain two ingredients – geometry *and* physics," Synge said in his Boyle Medal Lecture. His taste is clearly visible in his four books (one non-technical) on relativity and over 70 papers on that subject, about one third of his impressive and widely varied output which covers, besides relativity, classical mechanics, elasticity, geometrical optics, gas dynamics, differential geometry and several other subjects including a few papers on the stresses in the periodontal membranes in human teeth.

The community of relativists owes to Synge the use of spacetime diagrams, the clarification of many concepts in relativity, in generality and in terms of illustrative, often amusing examples. In particular, he showed how to use, in differential geometry and in relativity, the equation of geodesic deviation. An outstanding achievement of Synge's was the first complete analytic extension of the Schwarzschild field. Remembering my own study of relativity and the change of style brought about in the fifties and sixties under the influence of Synge, I can testify that he succeeded "to make spacetime a real workshop for physicists, not a museum visited occasionally with a feeling of awe."

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