Editorial

N Mukunda, Chief Editor

The belief that there are ultimate indivisible building blocks of all matter is very old. In the 6th century B.C., Kaṇāda in India proposed this idea, naming the smallest bits of matter 'paramāṇu'. In the Greek tradition, Democritus of Abdera came up with this hypothesis in the 4th century B.C., and proclaimed: "*Only atoms and empty space have a real existence* ".

Over the centuries, especially after the birth of modern science, evidence for the reality of atoms built up steadily. One thinks here, for instance, of Gassendi, Dalton and Maxwell. Faraday's laws of electrolysis suggested to Maxwell that there could be a 'molecule of electricity', an elementary unit of electric charge. By 1891 G J Stoney had already coined the name 'electron'.

It was in 1897 that Joseph John (JJ) Thomson, working at the Cavendish Laboratory in Cambridge, finally discovered the electron. We celebrate the centenary of this event with a specially invited set of articles in this issue. So much in science has been influenced by the electron – and much of it is captured in the articles covering physics, chemistry, biology and devices. So much more could have been recounted – Lorentz' and Poincare's work on the classical electron, Goudsmit and Uhlenbeck's discovery of electron spin, Dirac's relativistic electron wave equation, Pauli's exclusion principle, even the birth of quantum mechanics.

"Only atoms and empty space have a real existence " Democritus

Rohini Godbole sketches JJ's life and work, and in the new Classics Section we give you the text of JJ's lecture announcing his discovery. Here is JJ's son George Paget Thomson's characterization of his father's style of working:

> "*In all his theories J J liked to visualize, and for him the mathematics was always merely the language which described the physical and spatial concepts in his mind. He had no idea of mathematics dictating the theory.*"

Long live the electron!