Principal, Chairman, Ladies and Gentlemen; I present Professor Michael Boris Green.

Michael Green is a theoretical physicist whose work has made feasible the unification of all the fundamental forces of nature. For he pioneered a path leading to a framework that incorporates both gravity and the theory which describes the interactions of the fundamental particles. And in so doing it achieves a goal that frustrated Albert Einstein - and many other great theorists. It unites quantum mechanics and general relativity. Professor Green is celebrated for his breakthrough achievement in establishing a consistent theory of superstrings. This theory and its subsequent ramifications have remained at the focus of fundamental theoretical physics for quarter of a century.

For the last ten years, Michael Green has been the John Humphrey Plummer Professor of Theoretical Physics at the University of Cambridge. He was called to that chair from his position here as Professor of Theoretical Physics, but continues his association with the College as a Visiting Professor. He graduated with a BA in Physics and a PhD in Elementary Particle Theory from Cambridge University, followed in 1970 by two years as a postdoc at the Institute for Advanced Study in Princeton. He spent the next six years as a postdoc first back in Cambridge and then in Oxford, before coming to Queen Mary in 1978 as a lecturer.

I remember that it was Professor Roxburgh who persuaded a promotions committee meeting in 1989 that he be should be promoted, not as is the custom, first to a readership, but directly to a chair.

Principal, I have no doubt that you, and indeed many others here this afternoon, will have seen the way that iron filings sprinkled around a magnet trace out what Michael Faraday had called lines of force. Faraday had also likened these lines of force to elastic strings that drew magnetic poles to one another. And a similar analogy lay behind a description of the strong interactions of subnuclear particles that Michael Green and others had developed in the 1970s. There are however, serious difficulties with this string theory of strong interactions, but a daring suggestion that the ideas might instead be applied at the scale of quantum gravity was to bear remarkable fruit.

At about the time that he arrived here, Michael had started collaborating with John Schwarz of the California Institute of Technology, drawing on their previous frustrated attempts to realize a string theory of strong interactions. At issue were problems of mathematical consistency, the so-called anomalies that are a consequence of quantum mechanics and the need to include in the theory tachyons (--- particles that violate Einstein's theory in that they travel at speeds greater than the speed of light). In any case, attempts to use the theory to calculate anything beyond the simplest approximation seemed inevitably to run up against barriers present in all but a very restricted class of relativistic quantum field theories.

The breakthrough that has been described as the first string revolution was made in 1984, with a paper with the alluring title: ANOMALY CANCELLATION IN SUPERSYMMETRIC D=10 GAUGE THEORY AND SUPERSTRING THEORY. It has been cited more than 16 hundred times. String theory was the wrong theory for strong interactions, --- but is the right theory for a unification of gravity with the other fundamental forces.

Principal, you may wish me to give a simple explanation of this paper. I would if I could, but I can't, so I shan't. I can however refer you to some of Michael's popular writings, which are characteristically elegant and clear.

From the time of Isaac Newton, the fundamental particles had been regarded as essentially structureless points. No longer so. Instead of points, we now have tiny strings that move and vibrate as they move. Different modes of vibration are manifest as different properties for the particles they replace. And the strings move not in the three space and one time dimension to which we have become accustomed, but in ten dimensions.

Now in ten dimensions there is plenty of room to accommodate other kinds of extended objects than just strings. So we can now have two-dimensional membranes, and other branes of even higher dimensionality. I can recall discussions in the late 1980s in the Senior Common Room in which Michael chivied away at such ideas that are now central to the elaboration of string theory in what is called M-theory. Some strings are no longer free to wander through space, but have their ends anchored to branes, Dirichlet- or simply d-branes.

M-theory, the fruit of the second string revolution that also had its genesis here at Queen Mary, is the arena in which most of current string theory research is conducted. Michael gives as his own areas of research within this as String Theory, Elementary Particles, Quantum Gravity and related areas of quantum field theory and statistical physics. His contributions are numerous and far-reaching. They have been recognized in his election in 1989 to the Fellowship of the Royal Society, and the award of prizes such as the Dirac Medal of the International Center for Theoretical Physics and in 2002 of the Dannie Heineman Prize of the American Physical Society. This year he was awarded the Dirac Medal and Prize of the Institute of Physics.

Principal, for his contributions to theoretical physics, I present Professor Michael Boris Green for conferment of the Degree of Doctor of Science of the University of London, *honoris causa*.

John Charap 6th July 2004