

A Century of Ideas

Fundamental Theories of Physics

*An International Book Series on The Fundamental Theories of Physics:
Their Clarification, Development and Application*

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A Century of Ideas

Perspectives from Leading Scientists
of the 20th Century

edited by

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Dedicated to the memory of
Mr. Braj Mohan and Mrs. Rukmani Birla

Preface

The B.M. Birla Science Centre, inspired by the memory of Mr. and Mrs. B.M. Birla, has blossomed into India's premiere institution for the dissemination of science. Shortly after its inception, it started a series of lectures, most of them aimed at a general audience or an audience of non-specialist scientists. Some of the greatest minds in science have delivered these lectures over the years, most of them under the B.M. Birla Memorial Lecture series and some under the Distinguished Lecture series.

In fact twenty Nobel Laureates and a number of other scientists of equal caliber have delivered these lectures. The distinguished list includes: Nobel Laureates Professors William Fowler, S. Van Der Meer, Lord George Porter, Antony Hewish, Norman Ramsey, Aaron Klug, Ilya Prigogine, De Gennes, Werner Arber, Klaus Von Klitzing, Roald Hoffmann, Charles Townes, Gerard't Hooft, S. Chu, Norman Borlaug, James Watson, The Dalai Lama, John Kendrew, Prof. Herald Kroto and the eminent scientists include Fred Hoyle, Sir Hermann Bondi, Prof. Jeffrey Sachs, Prof. Philip Morrison, Prof. Yuval Ne'eman, Prof. Jogesh Pati, Prof. David Finkelstein, Prof. Walter Greiner and so on.

Most of the lectures were on Physics and Astronomy, but some lectures have been on Life Sciences and Chemical Sciences. For example those of Prof. James Watson, Prof. Werner Arber, Prof. Norman Borlaug, Prof. Aaron Klug, Sir Harry Kroto and others.

The present collection consists of most but not all lectures delivered in the fields of Physics and Astronomy. The contributions of Prof. Abdus Salam, Prof. Ramsey, Prof. Klitzing, and Prof. Steven Chu were unfortunately not available to be included in this collection. Most of these lectures are accessible to a wide range of non-specialist readers.

The lectures in this volume cover a very wide range of frontier topics, starting with ideas of the Steady State cosmological model in Fred Hoyle's article through the early formation of elements in nucleosynthesis in Prof. William Fowler's article, through the long term picture of particle accelerators in Prof. Van der Meer's article, the excitements of the discovery of Pulsars in

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Prof. Antony Hewish's article, a critical discussion of irreversibility in Prof. Prigogine's article, a peep beyond the standard model in Prof. Ne'eman's article, a discussion of the standard model methods in Prof. 't Hooft's article, to topics like the apparently innocent soap bubbles in the article of Prof. De Gennes.

Wherever possible I have made an attempt to retain the original flavour of the lectures, which was a great part of the charm.

B.M. BIRLA SCIENCE CENTRE,
HYDERABAD, INDIA
JUNE 2005

B.G. SIDHARTH

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