THE OSKAR KLEIN MEMORIAL LECTURES

Volume 3

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THE OSKAR KLEIN --- MEMORIAL LECTURES

Volume 3

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Preface

The Oskar Klein Memorial Lecture series has been running for thirteen consecutive years since the start in 1988. In 1994, to commemorate the 100th anniversary of Klein's birth, the lectures were extended to a symposium.

The first four lectures, delivered by C.N. Yang, S. Weinberg, A. Bethe and A. Guth have been published in Volumes I and II of "The Oskar Klein Memorial Lectures", (ed. G. Ekspong) and the symposium is published as "The Oskar Klein Centenary" (ed. U. Lindström).

The present volume is thus the fourth in a series and has some expectations to live up to. Hopefully they are well met by the contributions by T.D. Lee, N. Seiberg, A. Polyakov, P.J.E. Peebles, E. Witten and G. 't Hooft.

The typical format of the Klein Lectures is that the speaker gives one general colloquium type lecture and one specialized seminar. We have included most of the colloquia and also some of the seminars. In the first two volumes it was still possible to also include some material from Klein's own research that had not been generally available. Here we have instead included more lectures. For this reason we have had to wait a while until there was enough material to fill a volume. However, the character of the lectures is such that they remain topical, and the outstanding quality of the contributors help to make these written versions timeless. In fact, one of the instructions we usually give to the speakers is to cover general aspects of their fields as well as the latest results. An example of this more timeless aspect is provided by the contribution by A. Polyakov where he has collected ideas on the parallels between different subjects that he has clearly pondered over some years.

The lecture series has contained some very exciting moments during the time covered in the present volume. We recall, e.g., the interesting discussion of symmetry by T.D. Lee, the presentation by N. Seiberg of wonderful new types of duality in supersymmetric theories, and by E. Witten of the then new ADS/CFT correspondence and its application to the long-standing problem of quark confinement, or the lecture in 1999 by G. 't Hooft, who went on to receive the Nobel Prize later on the same year.

Theoretical high-energy physics dominates the subjects of the lectures, mirroring one of Klein's own main interest. He had other interests as well, cosmology being one of them (particularly in his later work). It is therefore very befitting that the contribution by Peebles in a nice way summarizes the phenomenal improvement in the understanding of the Universe which has taken place since Klein's days. However, we also get sobering reminders that much still remains to be understood, and that it may be dangerous to overinterpret current results - a well-placed remark by one of the founders of physical cosmology.

All in all the yearly Klein Lecture has become a very successful tradition in Swedish physics and it has inspired several similar series. We are very grateful to the Swedish Royal Academy of Sciences whose support through its Nobel Institute for Physics has made these lectures possible over the years. We also take this opportunity to express our gratitude to FYSIKUM, Stockholm University, where the lectures and the traditional dinner are held.

Stockholm, April 2001

Lars Bergström and Ulf Lindström, editors.

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