



## **The Boltzmann Award**

**Michael E. Fisher**

*Presentation by C. Domb, Chairman, IUPAP Commission on Thermodynamics and Statistical Mechanics.*

### **Michael Fisher—Boltzmann Medallist 1983**

Michael Fisher first entered the field of statistical mechanics in the late 1950s. Within a few years he had established a reputation as the leading authority in the field of critical phenomena, a position which he has maintained ever since. During the past two decades he has been a major driving force behind the very great progress which has taken place.

It is not possible in the short time available to do justice to the flood of papers with which Michael Fisher has been associated. Some of these have initiated new areas of research; for example the exact susceptibility of the two-dimensional Ising model, correlations in the three-dimensional Ising model and critical scattering, renormalization of critical exponents resulting from hidden variables, finite size scaling, the droplet model, partial differential approximants, the Anni model. Others, review articles, have become classics to which successive generations of graduate students and other researchers in the field have turned for guidance; for example the Boulder lectures on critical phenomena, the 1964 *Journal of Mathematical Physics* review of correlation in fluids and magnets, the oft-quoted 1967 review in *Reports on Progress in Physics*, and the 1973 *Reviews of Modern Physics* review of the renormalization group. Each and every one of his papers contains new information of significance, and his collaborators will all verify that nothing is allowed to appear in print without Michael Fisher personally assuring himself that it measures up to his very high standards. It would need quite an effort to list the research papers that have been sparked by footnotes in Michael Fisher's publications.

Of no less importance than his publications has been the personal influence which he has exercised as a teacher on his many graduate

students and collaborators; the invited lectures which he has delivered so faultlessly and impeccably at countless national and international gatherings; the comments and criticisms which he has made during conference discussions (the atmosphere at a conference is always more tense and exciting when Michael Fisher is present); and his many discussions with and directives to experimental workers in the field.

From the historical point of view the peak of his achievement to date has undoubtedly been the role which he played in the emergence of the renormalization group. Kenneth Wilson has stated publicly that all his knowledge of critical phenomena was acquired from Michael Fisher. Michael's presence at Cornell was an essential ingredient of this major achievement of the present era.

The Boltzmann model for 1983 is awarded to Michael Fisher for his many illuminating contributions to phase transitions and critical phenomena during the past 25 years.