INTRODUCTION

SOME ASPECTS OF THE SHEFFIELD SYMPOSIUM

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For several years the Institute of Mathematical Statistics (IMS) has attempted to focus special and extra attention on some of the more prominent directions in probability and its applications. In accordance with this initiative the Symposium on Applied Probability at Sheffield in August 1989 was sponsored jointly by the IMS and the University of Sheffield.

This volume contains several major papers of current interest in the important area of applied probability. The research topics covered include models in epidemiology, genetics, random fields, branching processes, random walks, directed polymers and evolution time-scales among others. The readers will find a broad array of interesting problems discussed by eminent scientists in these exciting fields of applied probability.

This volume contains 18 technical articles on various topics of current interest, in addition to the introductory articles by Joe and Chris on some of the historical background and the current and future developments in applied probability. A brief outline of the contents follows. Henry E. Daniels discusses perturbation approximations for epidemics, and Peter Whittle introduces processes with history-dependent transition intensities. Peter Jagers et al give an account of their thoughts on the time scale of evolution under an attractive title: "When did Joe's great ... grandfather live?" David Aldous studies random walk on finite graphs whereas J. D. Biggins discusses martingales in branching random walks. Niels Becker is concerned with the analysis of infectious disease data via martingales. D. R. Grey and Lu Zhunwei consider extinction probabilities in branching processes with random environments, and Andre Adler discusses accumulation points in a random walk. P. E. Greenwood and Mina Ossiander give a scholarly account of a central limit theorem for evolving random fields. Erwin Bolthausen discusses directed polymers in a random environment. Michael Phelan discusses the use of point processes in modeling and inference for random fields for rainfall. Kenneth Hochberg gives an interesting account of measure-valued pro-