erties which are likely to be of more importance with regard to applications than others are treated in more detail. Among the contributions since the appearance of Watson's book, mainly those with connection to applications are included. This of course is quite consistent with the purpose of this book. However, it seems regrettable to the reviewer that Chapter 5 (*Asymptotic expansions*) does not contain anything of the work done by R. E. Langer, T. M. Cherry, F. W. Olver and others. Likewise regrettable is the absence of a more detailed and organized bibliography. But these points may be of minor concern for the majority of the users of this book.

F. OBERHETTINGER

Symposium on Monte Carlo methods. Held at the University of Florida, March 16–17, 1954. Edited by H. A. Meyer. New York, Wiley, 1956. 16+382 pp. $7.50.

The term Monte Carlo methods was coined during the second World War to describe the use of random sampling for the numerical solution of mathematical problems. The questions that gave rise to these techniques had to do with the penetration of radiation into matter, in particular with the shielding properties important in the technology of atomic energy. Instead of solving the complicated integro-differential equations describing these processes by analytical or orthodox numerical methods it was proposed to simulate the physical phenomenon on computing machines by constructing artificially a sufficiently large number of particle biographies. Thus, in dealing with a process in which an elementary particle is subject to collisions resulting in absorption or reflection, possibly with a partial loss of energy, a moving particle with given initial energy and direction would be assumed and its subsequent history decided by playing a sequence of games of chance. The outcome of these games would decide from step to step the free path lengths, the nature of the collisions, the angles of reflection, the loss of energy in the collision, etc. The probability distributions underlying each game must, of course, be taken from physical theory. If a sufficient number of such fictitious biographies have been calculated, physically relevant questions such as the amount of radiation penetrating a given slab can be answered with reasonable accuracy.

The idea of solving mathematical problems by statistical experimentation is not new. Buffon's needle experiment for the determination of π is well known, and statisticians have occasionally used such procedures to obtain preliminary information on the shape of distribution functions under mathematical investigation. However, these new