Book Notice

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In this book, Professor Landé, a distinguished contributor to the development of quantum theory, continues his attack on the dualistic view of matter by deriving the statistical theory from general postulates of symmetry and invariance. The work is a lucid restatement of the themes of Foundations of Quantum Mechanics (1955) and of From Dualism to Unity in Quantum Physics (1960), but differs in its emphasis on the importance of Duane's quantum rule for linear momentum in explaining diffraction and other coherence phenomena. If we adopt Born's unitary particle interpretation, in which Born applied to matter what Duane had proposed for light, then it is simply "illogical to construe a dualistic opposition between a thing, a particle, as against one of its many qualities, a symbolic curve representing expectations to find a particle located here or there, even if the curve looks wavelike" (pp. 18–19).

Chapter I, provocatively titled "Dualism versus quantum mechanics," sets the stage for later chapters on causality and chance, continuity and quantum jumps, transition probabilities, thermodynamic background, interference of probabilities, and the origin of the quantum rules. The final chapter, "Quantum fact and fiction," is a delightful attack on misinterpretations of quantum mechanics. Of seven opinions as to what a psi-function describes, for example, Landé suggests that only the following interpretation stands up against realistic criticism: "A psi-function is a well-ordered list of betting odds, based on statistical experience, for the diverse outcomes of specific tests of a microscopic object with a macroscopic instrument" (p. 140).

The volume is substantially enhanced by a summary of the author's indictment of the current quantum philosophy of Bohr and Heisenberg and by four appendices.

Virgil Hinshaw, Jr.