

and one of the guiding principles of quantum theory in its later developments is that a formula of quantum theory should reduce to that given by the classical theory under the conditions just mentioned.

Jeans then gives an account of the development of the quantum-theory, describing, in particular, the derivation of Planck's formula which was given by Einstein and the investigations of Poincaré and Fowler regarding the nature of the laws of motion that can lead to Planck's formula.

Chapters IV and V are devoted to Bohr's theory of spectra and to Einstein's theory of the photoelectric effect while Chapter VI contains an account of Debye's theory of the specific heat of solids. Much additional matter is contained in Chapter VII which deals with the dynamics of the quantum theory. The articles on conditionally periodic systems and Bohr's principle of correspondence will be found useful as an introduction to the more complete works mentioned in the text.

The report ends with a short discussion of the physical basis for the quantum theory in which the views expressed are practically the same as in the first edition. The idea of light-quanta is regarded with disfavor but it is perhaps unfortunate that the new report should have been completed just when a big development of the theory of light-quanta was taking place. The beautiful discoveries of Compton and Duane have shown that the phenomena of the scattering and diffraction of X-rays are not incompatible with the idea of light-quanta and the development of the idea of light-molecules by Wolfke, Bothe and de Broglie has shown that Planck's law of radiation is indeed obtained by slight modifications of arguments which previously led to Wien's law. Thus Pauli's remarkable application of the Compton-Debye theory of scattering to the equilibrium between free electrons and cavity radiation has been completed in this way by Bothe and Schrödinger and it now appears that the distribution of energy among the different wave-lengths may be unaltered by collisions of various types, including even the collisions between waves of light and sound which were considered first by Brillouin.

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*Bibliographie des Déterminants à plus de Deux Dimensions.* By Maurice Lecat. Louvain, 1924. 16 pp.

Those interested in determinants will welcome this short bibliography by an author who has made the subject peculiarly his own. It consists of three parts; a bibliography with 121 entries arranged alphabetically, an interesting chronological table, and a list of minor contributions to the subject. It is worthy of note that 50 out of the titles listed are by M. Lecat himself.

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