

PART II -- THE WRONG CHOICE

The Dominance of the Particle Theory of Matter and Light

The wave - particle dilemma is that light exhibits behavior and properties that lead to characterizing it both as a wave and as a particle. This dichotomy was essentially resolved in the late 19th Century - early 20th Century in favor of the particle form of light. Also, the issue of a wave nature of matter particles having arisen with the discovery of matter waves, the dichotomy in the form of matter was likewise resolved in favor of particles.

That all seemed essentially reasonable. It is much more natural to us to conceive of matter particles, with all of their forms and activities, as like little round balls than as some form of wave.

But, the choice in favor of particles and neglecting waves was unfortunate in that it is the wave nature of matter that leads to the solution of the problem of Einstein's "spooky" action at a distance.

This Part II presents the evolution of this dilemma and of the dominance of the particle view of light and matter, the consequent early foundations of quantum mechanics, and the resolution of the dichotomy in favor of waves showing, also, that it is impossible for light to be particles.

- The Wave-Particle Dilemma

. The Matter Wave Problem

- Planck's and Einstein's Quanta

- Analysis of the Photon

