

# The End of Physics

## David Lindley

Being somewhat fed up with newer physics-for-the-masses type books owing to their religious content, I decided to dust off some of the older books I still had on neglected book shelves. I first look in the index to see if the greatest physicist who ever lived is mentioned. I am judging greatness here by how many modern physics-for-the-masses books this person is mentioned in. Sure enough there under "D" was Darwin. There was only one reference to the great man of physics. This is unusual, but "The End of Physics" was written seventeen years ago. I looked up the page referred to and there were a few comments relating Darwin's ideas with Kelvin's suppositions. I felt this was innocent enough. Having read the book, I have no idea what Lindley's religious or political beliefs are, which is not the case with most modern books of this type. On that score I rate the book high.

On content I rate the book very high. For someone who is interested in an overview of modern physics put in layman's terms, this is the book to read. Some parts may need to be read several times to understand or may not be understood. This is not because Lindley was confusing in his explanation. It is due to the subject matter.

The infinities found in quantum mechanics of electromagnetism was very interesting. Determining the force quantum mechanically between say two electrons results in infinities where their wave functions overlap. The solution to the problem was ingenious or insidious depending on whether one is a mathematician or a physicist, respectively. The altering of the "true" mass and charge by quantum effects yields the "apparent" mass and charge that we experience. In the universe of mathematics one can be a god and make the "true" mass and charge infinitely negative doing away with the infinities encountered otherwise. One can even conjure "true" and "apparent". In the real universe one cannot be a god outside of New Age fantasy and is restrained by reality. Physicists can look high up on the

mountains of the math landscape and believe those they see at the tops are gods in analogy to their Greek brethren 2500 years ago. We who only tread the low hills do not have to be so bothered. We don't understand any of it.

The Pauli Exclusion Principle is fascinating. The principle states that no two electrons can be in the same quantum mechanical state. I guess more correctly it would be better to say that the probability of two electrons being in the same state is zero. This is true for spin  $\frac{1}{2}$  particles. For particles of integer spin the same state can be realized. The spin  $\frac{1}{2}$  particles give the universe bulk. The integer spin particles hold it together. This is very convenient for us.

The book is thought provoking and a better read than books written more recently.