

Reasons to look up

Patricia's sweetie gave me a book about physics for Christmas last year. He has his Masters in particle physics. I love this book and making this humble foray into physics, about which I heretofore knew nothing and considered an overwhelmingly obtuse subject rather outside my particular range of thinking, but it is now melting under the patient tutelage of Lisa Randall, author of the book. This is like swimming in a pool of substance not water but like it? a pool of thoughts which are new to me. It is really wonderful and now everything about the science is attractive.

My introduction to physics has come at an excellent time: the Golden Age of Astro Physics has just dawned.

Added to the book, I was recently sent a link to the Perimeter Institute a couple of months ago. Now? listen to this: "...gravitational waves. These are ripples in spacetime, created when two massive objects - such as black holes or neutron stars? hurtle around each other at extremely high speeds and collide,?" says the Perimeter Institute website.

Recently, there was an interview on the CBC Radio 1 on Fresh Air, with Neil Turok, head of the Perimeter Institute for Theoretical Physics. Founded in 1999, in Waterloo, Ontario, the Perimeter Institute is respected world-wide for its research into functional physics and its mission to advance our understanding of the universe.

So Dr. Turok was telling us that gravitational waves were expounded upon by Einstein as he developed his theories around relativity and the consequences of that truth 100 years ago. Although Einstein was certain that gravitation waves were true and that space and time bend, he reckoned it would take such a huge detector to pick up the signs of the phenomenon as to make it impossible to prove their existence.

However, scientists, always innovative, have built the Advanced Laser Interferometer Gravitational-Wave Observatory (aLIGO), an extremely large device that led to the following statement last September: "A century after they were proposed in Einstein's theory of general relativity, scientists have finally verified that gravitational waves and black holes exist.?"

The detection of the first confirmed gravitational wave provided scientists with a vision of an occurrence (the melding or collision of two huge black holes) that took place 1.3 billion years ago? an occurrence that had been travelling at light speed, mind you, for the last 1.3 billion years and which was measured by a minuscule degree by the aLIGO.

Once is significant but the second conclusive? sighting? in February created a statistic, an important verification of the first, this one dating back 1.4 billion years ago!

Scientists are now talking about the theoretical and even entirely possible journey back in time by virtue of observing these ancient occurrences to witnessing the Big Bang itself.

Dr. Turok delivered this information on the usually lightweight Fresh Air program somewhat breathlessly.

"When we go back to the Big Bang, we will see where we came from? our beginnings,?" he remarked, clearly in awe of whole matter. Further, as he elucidated, the universe is not full of empty space but dark matter which, while we cannot see it, nevertheless has mass.

"One has to understand that the explosion and dark energy are not the same,?" he contended. "Dark energy is not stable but changing and will eventually produce another big bang.?"

For Dr. Turok, the real wonder in all this is the ingenuity of human beings: "That human minds could figure, a. black holes exist, b. could build detectors to prove them and c. accurately predict the measurements needed to record them with no correction required? this is the power of the human mind.?"

Said Dr. Turok, "The Golden Age of physics discovery should be a source of optimism. Now, if we could only take care of ourselves and the planet, this would be a very exciting time.?"

Well, well. He more or less laughed as he said it, but there was a choke in his voice as well. Scientists are living with their heads in the stars, discovering marvels as quickly as they happen, taking mankind into space in a much more meaningful and dramatic way than hopeless space ships.

The rest of us insist on keep our heads in the mud, overshadowing the stars with hideous city lights so that we can barely see them. Once upon a time, many more of us than scientists were excited by marvels of nature, of intellect and of space. For our whole existence until very recently, we have been preoccupied by the beauty of what hangs over our head in the night sky.

When did we decide to ignore that? And why?

It can only be hoped that Dr. Turok's excitement, that the passion of scientists about the beauty and wonder of the universe, which is ours for the viewing even with just our own eyes will return to us and we will learn to dim down those damned lights.