**SCIENCE IN TEN MINUTES**

Chandra Emani\*

A new born baby!

Too many times in their careers, researchers and scientists get asked the question, “So, is there any immediate use of what you are doing?” Most of the time, the answer is “Maybe” or “I don’t know it yet.” The scientist in question still has a straight face, sometimes a smile, but the layman is left wondering as to why they keep working on something that has no immediate use. But this question was answered in a rather effective way in 1840 at a place called Royal Institution in London that hosts lectures open to public every Christmas. During one such lecture, a scientist put a circular wire coil on a table and connected a galvanometer to it. “Now watch this,” he told the unsuspecting audience, “I am putting a magnet into the hollow center in the coil.” As soon as he put the magnet in, the needle in the galvanometer flipped in the opposite direction. When he removed the magnet, the needle flipped back into its original position. “The magnet just created electricity” he told the audience and they erupted in applause. He then regaled the audience with more such experiments that showed how electric current can be created at will. When the audience trooped out of the hall, one of them approached the scientist and said, “Mr. Faraday, the magnet’s behavior in the wire is very interesting, but of what possible use can it be?” The scientist Michael Faraday answered politely, “Sir, of what use is a new born baby?” What Faraday left unspoken as a continuation of those famous words was that the newborn baby will one day become an intellectual giant, the greatest human being in the world, and no, he does not come with an instruction manual with readymade immediate applications. We need to work with the potential precious treasure we have in our hands and the important thing to do is have an urge to understand our world in a better way. And then come applications. What Faraday showed that day evolved into an electric generator that made it possible for us to now have 24/7 electricity that is cheap and of unlimited quantity. Everything from your light switch to the ignition key in your car to the buttons in your cell phone and the streetlights on the highway became possible because on that Christmas day in 1840, Faraday showed us that magnets can generate electric current at will. And what of 1969, when we put two astronauts in a tin can and sent them to the moon? Could the the folks at NASA tell everyone that we are just beating the barriers of communication, meaning, we sent out two guys with no telephone wires connecting us, so that in 2014 you could just pull out a palm sized plastic thing off your pocket and send a picture of your newborn baby to the grandparents? And what about Alexander Fleming? He just happened to pick out a bacterial culture plate that he was about to trash because he had a mold in it. What he saw was that mold was in fact clearing the bacteria in the plate. Could he have told you that that mold in fact is Penicillin that we now so routinely use to kill all kinds of bacterial diseases? If you had been reading this column, do you still remember Barbara McClintock? She wanted to understand why the corn cobs have multi-colored seeds in the wild? She ended up discovering the reason as what we know now as jumping genes. If you asked that 80 year old woman who at that time was poring over corn cob after corn cob in a lab, she couldn’t have possibly told you that she was out to find a cure for cancer, AIDS (that didn’t exist at that time!) and the dreaded bubble boy disease. Finally, let’s listen to this patent clerk in Sweden. When he was bored at his office, he sat and wrote four papers that had lot of math equations in them. He could not have told you that what was hidden in those papers could give you television, unlimited nuclear power for electricity, cell phones, computers, better airplanes and cars and those doors that magically flip open when you walk into a departmental store or that scanners they use in that store to check the price barcodes. When this person grew to be a shaggy haired old man who is synonymous with the word genius we all know as Albert Einstein, he said, “It is not the fruits of scientific research that elevate a man and enrich his nature, but it is only the urge to understand.” So, the next time you see a researcher at work, please be a patient before thinking of what his work immediately applies to. What he is showing you or what he is at work with is equivalent of a new born baby that will one day grow to be an intellectual giant.

Speaking of a newborn baby, please sit back, close your eyes and think of this as Christmas is approaching. It is said that the first gift of Christmas was a baby that God gave to this world. Of what use was that baby? I rest my case. Let’s say a prayer.

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