

Technology before Tesla and Edison

Sitting here a decade-and-a-half into the 21st century, I think back to a museum visit I made just recently that got me to thinking. What, specifically, caused it? A stereoscope.

Young people today seem attached to their smart-phones by an umbilicus. They lounge around, exercising their thumbs, Googling, tweeting, posting, gaming, texting and, occasionally, actually talking. At a time when we take GPS for granted, unmindful of the fact it works because of geo-synchronous satellites whizzing around at 17,000 miles per hour, over 100-miles above us, we don't stop to consider for a moment that the average automobile has computing power on a scale of ten compared to the Apollo space missions. We go to the theater and watch movies in Real 3-D, with digital surround-sound and go home to watch HDTV with essentially the same features—all of the above because of electricity.

That's right—that magical “ether” that Ben Franklin saw spark to a key dangling from his kite string—which powers so much of our modern life. Get to a high place in any city and look down on it. You'll see millions of twinkling lights illuminating the night in every direction. It's evidence, not only of the way we illuminate the hours after sunset, but of the machinery that performs so many mundane tasks in our lives.

Now, consider a time before any of the above existed. Hard to imagine, isn't it? Yet, people had technology at work for them, albeit of a simpler, more direct nature. Let's look at some examples, shall we?

First, let's consider the visual media. By the middle of the 18th century, photography came on the scene and photographers like Matthew Brady (arguably the first photojournalist) popularized the medium. Remember that stereoscope I mentioned earlier? It came along, via technology, shortly after photography. This device enabled a viewer to see a photograph in 3-D! That's right, with not one volt of electricity, a person could travel around the world without leaving his/her armchair and take in the sights—in a glorious three-dimensional panorama—as if he/she stood there in person.

Bear with me for a minute, while I describe the technology used. The stereoscope consists of a few, simple components: a goggle-like eyepiece, mounted on a long strip of wood, a handle on the bottom and a moveable, wood-strip crosspiece with wire bales to hold the stereograph photo cards upright for viewing. Two magnifying lenses in the eyepiece, with a wood divider between and in front of the lenses, allow viewing each card via our binocular vision. The 3-D effect occurs because the two photos of the same subject, though they look the same, are slightly different, taken with a double-lens camera, and the divider forces the viewer to favor his/her dominant eye, allowing the other eye to process the second photo and juxtapose it with the first, a clever bit of visual sleight-of-hand. (In my case, the right eye is dominant and I can't force the view to my left eye. I suppose a left-handed person favors the left eye.) The degree of the 3-D effect varies from scene to scene, depending upon the skill of the photographer to set up the shot and the photo processor. Usually, wide-angle, far off scenes have the least 3-D effect, because there's nothing in the foreground to provide perspective. In close-up scenes, a multi-layered scene appears, sometimes three or four layers deep.

Needless to say, the stereoscope craze took off and lasted past the middle of the 20th century. In the late thirties, about the same time color film debuted, a variant of the stereoscope came on the scene as a device called the View-Master, which uses basically the same method as the earlier devices, but with tiny, dual scenes in color, viewed in binocular fashion on a circular reel. Many youngsters delighted in getting them as Christmas and birthday presents. Imagine, 3-D scenes, right in your hand and no batteries required!

Second, let's examine the arena of sound and music before electricity. Back in the day, many family members could play various musical instruments for family entertainment. However, if people wanted simply to listen to music they could buy a music box, some quite sophisticated, with changeable pin cylinders and discs. These devices use the table they sit on as a sounding board, providing a rich, full sound. Later, thanks to Mr. Edison, you could buy a player that used a wax cylinder and, later, a flat platter-like disc called a record that projected its sound through a trumpet-like "horn." These devices didn't rely on electricity, the cylinders and discs produced sound manually without any electrical input (using the reverse method to record)! Mainsprings (borrowed from clock technology) created the circular movement necessary to produce sounds and music.

Third, let's look at travel. Before electricity (cars require electricity to create a spark for combustion), besides "shank's mare" (walking), you could ride a horse, mule, donkey or ox, or use them to pull a wagon. You could also use a boat on water, propelled by sails, using the wind, or by oars. For centuries, this stood as the means of travel. Then, a clever English engineer, named Thomas Savery, invented a crude steam engine in 1698 to pump water. Improvements came from Thomas Newcomen (way to go, Toms!) and James Watt. This invention, more than any other, created the Industrial Revolution.

From the end of the 17th century, through the 18th century, no really new ideas came along for steam, until Richard Trevithick created the first crude, steam-powered locomotive. Soon, many improvements occurred, one after another and, as they say, the rest is history. Soon, railroads and steamboats revolutionized travel—reducing travel time exponentially—all without one volt of electricity! You could work farm equipment, pump water from a well or mine, power a factory, or take a trip via a steam-powered locomotive, using nothing more than water, wood, coal, or oil for propulsion.

So, the next time you sit down in your living room to watch a high-def movie on your 60-inch flat-screen TV—and occupy yourself during commercial breaks surfing the web via your smart phone—just remember how it used to be back before electricity changed the world. Though a more primitive time, clever men used then extant technology to allow folks to live a richer, fuller life.