

thyself long life, nor riches, nor the destruction of thy enemies, behold, I will give thee wisdom so that there shall be none like unto thee; and I will also give thee what thou hast not asked; both riches and honor; and if thou wilt walk in my ways, and keep my laws, as thy father David did, I will give thee long life also. And Solomon awoke; and, behold, it was a dream!"

EXERCISE II.

Charge of the Light Brigade at Balaclava.

(1.) Half a league, half a league, half a league onward, all in the valley of Death, rode the six hundred. "Charge!" was the captain's cry; theirs not to reason why; theirs not to make reply; theirs but to do and die! Into the valley of Death rode the six hundred.

(2.) Cannon to right of them, cannon to left of them, cannon in front of them, volleyed and thundered. Stormed at with shot and shell, boldly they rode and well; into the jaws of Death, into the mouth of Hell, rode the six hundred.

(3.) Flashed all their sabres bare, flashed all at once in air, sabering and gunners there, charging on an army, while all the world wondered. Plunged in the battery smoke, fiercely the line they broke; strong was the sabre stroke, making an army reel, shakén and sundered. Then they rode back; but not—the six hundred!

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ARE GRAVITY AND ELECTRICITY THE SAME THING?

There is no question occupying more attention among the highest order of intellects than the question of the identity of the several invisible forces of nature. The relations of magnetism, electricity, chemical affinity, heat and light, are certainly very close and very complicated. Each one of these forces is capable of producing either or all of the others. They may also all generate mechanical power, and mechanical power, on the other hand may generate all these forces. Perhaps as good an illustration of this as any is to be found in the electric light invented by Professor Way, of London, which we described last week. First, the mechanical power of a steam engine turns a wheel which carries a number of permanent magnets at its periphery, these magnets, as they are carried past the ends of soft iron cores which have insulated wires wound around them in helical form, cause waves of electricity to flash through the helical wires; the electricity, darting along from drop to drop of an exceedingly slender stream of flowing mercury, produces

an intense light; it also generates heat, by which the mercury is evaporated. But whence comes the mechanical power of the steam engine? That results from the expansion of steam caused by heat, and the heat is produced by the combustion of fuel, which is its chemical combination with oxygen; in other words, *chemical affinity*.

If we replace the steam engine by a water wheel, we have the several forces produced by gravitation. It is to be remarked, however, that gravitation cannot, be generated, in its turn, by any of the other natural forces or by mechanical power.

It is known that sound is simply motion of the particles of the air. The vibratory theory supposes that light, also, is nothing but the vibration of the particles, of a very subtle ether pervading all space. This theory is now almost—if not quite—universally adopted, and is regarded by many sound minds as absolutely demonstrated. There is also a plausible theory of heat which regards it as simply vibratory motions in a subtle ether or in the particles of the heated body. Iron may be heated red hot by simply pounding it. As the heat will generate motion, so the destruction of motion will generate heat. It is thought that one cause of the sudden heating of meteoric stones, as they pass through our atmosphere, is the destruction of a portion of their motion by the resistance of the air. Professor Newmann's *Journal*, on the great meteor of Nov. 16, 1850, goes into a calculation of the amount of heat that would be imparted to the meteor by the destruction of its velocity, and finds it sufficient to evaporate iron or any other known substance.

From these several facts, and others of the same kind—enough to fill volumes—the grand and simple idea has been suggested, that all the forces in nature are the same thing; merely matter in motion. This suggestion implies that all the countless phenomena of chemical combination—all the appearances produced by light; its endless variety of color and shade, its refractions, reflections and polarizations, with the miraculous revelations which these have given us through the telescope and the microscope—the tremendous power of heat, with its contractions, expansions, freezings and evaporations—all the swift and subtle operations of electricity in the galvanic battery, the lightning rod and telegraph, and, finally, the growth and decay of plants and animals, and action of the muscles, the stomach, the lungs, the nerves, in short, all the phenomena of the universe—are produced merely by changes in either the velocity or the direction of the motions of matter.

Such is the doctrine of the homogeneity of forces. A sublime and comprehensive theory, whether true or false! A few pretty capable men have committed themselves to it fully, but most able philosophers regard it as unproved, though it seems to us that there is a general leaning towards it—a prevalent feeling that it will turn out to be true. As the relations of the natural forces to each other caused the conception of the theory, so the

pronunciation of the theory has led to a very close study of these relations; and the field is as rich in curious and wonderful facts as any that has ever been explored by the student of Nature.—*Scientific American.*

"PERSEVERANTIA VINCIT OMNIA."

This good old Latin exaggeration, so much relied on by teachers and leaders to stimulate the industry and ambition of their pupils and followers, besides helping to effect a great deal of good, has contributed towards accomplishing a vast amount of mischief. It has been the encouragement and the excuse of thousands of young persons, who, dazzled by the brilliant career of certain masters in their professions, have applied their time and energies to pursuits for which they were conscious they had but little natural aptitude, in the fond persuasion that equal success might be realized by themselves if the single condition implied in the above inspiring motto were faithfully observed.

"Perseverance conquers all things," says a young man to himself, after listening to an eloquent discourse by the Rev. Dr. So-and-so, "It has made of the speaker before me one of the first divines in the country,—why may it not do as much for me? I have abundant energy to carry me through the necessary preparation; I would gladly assume the cares and trials incident to the ministerial profession, if thereby I might assist in the great work of a world's reformation; and if in any way I lack fitness, those animating words '*Perseverantia Vincit Omnia*,' that have helped me through many a hard task, give assurance that patient industry will supply all deficiencies.—Yes, I will be a preacher." Accordingly, he enters on the work of preparation,—he studies hard,—he strives to gather all the graces of ancient and modern literature to embellish his style; and he assiduously cultivates the arts of oratory to lend persuasion to his speech,—he passes a triumphant examination, obtains a charge, undergoes the usual ceremonies of ordination, and commences the career of a Minister of the Gospel. For a time, no doubt, he is well pleased with the life he has chosen—he sees that he is improving—the preparation of his sermons costs him less time and labor than at first; they are besides of better quality, and he receives plenty of fair words from his hearers. But, by and-by, when he comes to look about for the result of his preaching, the chances are that he finds but little to encourage him. It is small satisfaction to him to hear his praise from the lips of his parishioners,—he seeks rather to read it in their lives—and if any perceptible good effect of his efforts exists there, it is so insignificant, compared with what he promised himself, that discontent begin to creep into his soul. Unwilling to believe the fault lies in himself, he meditates a change of location: he will try what a difference in his latitude or longitude will do for him; he goes West, perhaps. But he takes the old self with him, and human nature is the same everywhere. After