CONTRIBUTION OF ENGLISH SCIENTISTS INTO DISCOVERING OF PHYSICAL PHENOMENA AND POWERS IN NATURE

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Actuality: of the project: Physics takes a great role in discovering and understanding of physical phenomena and powers in nature.

The problem: The explanation of physical phenomena and forces in nature that was discovered by English scientists

Hypothesis: is it true that English physicists were reasonably effective in describing physical phenomena? If we consider the great scientists in history, each of them has come up with an invention that is worth noting. Have the English physicists made a great contribution into this matter?

Goals and objectives of the project:

– to learn physical phenomena and powers that take place in nature;

– to show the importance of physical powers in nature;

– to analyze physical forces and phenomena in nature;

– to find information about the contribution of English scientists into discovering physical phenomena and forces in nature;

Research object: Physical powers and phenomena in nature

Subject of research: The explorations of physical powers and phenomena in nature by English scientists

The progress of the project:

– Studying the available sources on this theme;

– Collecting information about physical powers in nature;

– Preparing the project in the form of the presentation

Research methods:

– Searching for information through the Internet and books;

– the theoretical analysis of literature on the studied problem

Project uniqueness: 60 %

Main body

Observing and studying the phenomena occurring in nature, people found how to use it in their lives. Watching the floating wood, man learned to build ships, conquered seas and oceans. Watching the lightning, scientists discovered electricity, without which people cannot live and work.

There are amount of objects in nature that take part in natural phenomena, such as trees, leaves, air, Earth and others. Objects of nature that are explored by physics are known as physical bodies. Natural phenomena occurring with them, referred to as physical phenomena.

Physics is a science that studies the physical phenomena that occur with physical bodies.

Today I would like to draw your attention to the British scientists who contributed into the discovery of physical phenomena in nature.

Isaac Newton

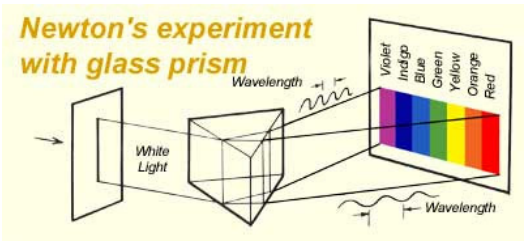
Newton's Prism Experiments

In 1665, Isaac Newton was a young scientist studying at Cambridge University in England. He was very interested in learning all about light and colours. One bright sunny day, Newton darkened his room and made a hole in his window shutter, allowing just one beam of sunlight to enter the room. Then he took a glass prism and placed it in the sunbeam. The result was a spectacular multicoloured band of light just like a rainbow. The multicolored band of light is called a colour spectrum.

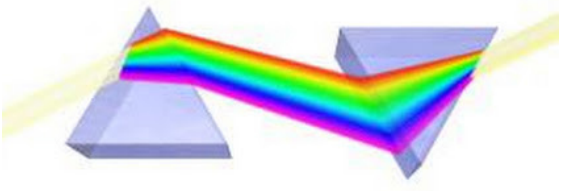
Newton's colour spectrum

Newton introduced the term 'colour spectrum' and although the spectrum appears continuously, with no distinct boundaries between the colours, he chose to divide it into seven: red, orange, yellow, green, blue, indigo, and violet. Newton chose the number seven because of the Ancient Greek belief that seven is a mystical number.

Newton showed that every colour has a unique angle of refraction that can be calculated using a suitable prism. He saw that all objects appear to be the same colour as the beam of coloured light that illuminates them, and that a beam of coloured light would stay the same colour no matter how many times it was reflected or refracted. This led him to conclude that colour is a property of the light that reflects from objects, not a property of the objects themselves.



Newton believed that all the colours he saw were in the sunlight shining into his room. He thought he should be able to combine the colours of the spectrum and make the light white again. To test this, he placed another prism upside-down in front of the first prism. He was right. The band of colours combined again into white sunlight. Newton was the first to prove that white light is made up of all the colours that we can see.



There are many phenomena, which can be explained by the dispersions of light, such as the Rainbow. (Application 1) As a result of refraction of sunlight in drops of water during rain multicolored arc-Rainbow appears in the sky.

Multi-colored arc appears when beam of light is refracting in the droplets of water, and then, returning to the observer at an angle of 42 degrees, is broken down into constituent parts, from red to violet colour.

Everyone knows the history of scholaring of gravity after apple had fallen on his head in 1664. Thanks to this event we learned why objects fall down, and why do planets rotate around the Sun, for the first time.

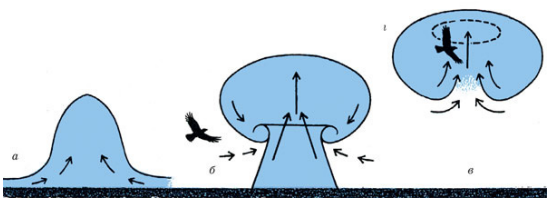
Do you remember how a turtle commit concave movement during swimming? We can see the third Newton's law, is that when two bodies interact with each other with opposing forces in, but with equal module. The turtle swims because it shoves water jerk back that propels it forward. (Application 2).

Benjamin Thompson

Another scientist was Benjamin Thompson. He discovered the phenomenon of convection:

You have, probably, noticed that the birds often accompany the ships at sea. In the calm weather they keep behind the ship, and when the weather is windy – closer to the leeward side.

The matter of fact is that smart birds catch the warm air flows from the engine compartments. These warm flows keep birds at certain height and help them to travel long distances easily. This occurs like this, because birds know about the phenomenon of convection, in which the internal energy is transmitted to the jets and streams. And you know it, too, now.



Scientists like Franklin, William Gilbert and Faraday dedicated their research activities to studying of the nature of magnetism and electricity:

Benjamin Franklin

Franklin opened the electrical nature of lightning (atmospheric electricity) and invented the lightning rod.

On the 10th of May in 1752 Franklin and his son started sky kite, during a thunderstorm.

The kite was attached to thick rope near the ground which was attached to a usual metal key from a castle. The essence of the experiment was to «provoke» a lightning strike at the metal rod and to allocate part of its electric charge on wet rope to the key.

When lightning strike struck the kite, glowing Halo was formed around the key, which proved the electrical nature of this phenomenon.

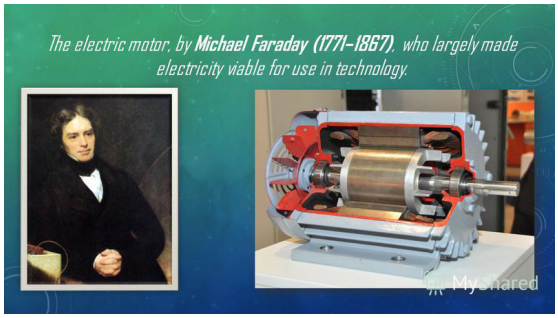
William Gilbert

An Englishman William Gilbert published his work on magnetic bodies in 1600.

This work presented facts about related nature of magnetism and electricity, as well as evidence that minerals, such as opal, amethyst, diamond and others can be electrified. Bodies,

which were capable to conduct electricity the scientist called conductors of electricity and the property itself was called electricity. He was the first who theorized that lightning is connected with electricity.

Michael Faraday



Michael Faraday voiced his theory about the unity of all existing energy in 1840. He claimed that all types of energy can all become one another.

So he came to the concept of power lines. Faraday Effect was opened in 1848. It was linking magnetism and optics. As the matter of fact, it was the polarization of light, which interacted with the force lines of the magnetic field. The scientist described his discovery with the following words: «I have made magnetize». If Faraday had not existed there couldn't have been such inalienable things of modern life, as electricity, computer, aluminum spoons, copper wires, stainless steel, electric motor and etc.

Conclusion

With the development of the scientific knowledge the material world has deepened and refined. Not all properties of the material world and the laws of nature have already been known and studied. Science proves that the material world is knowable and the learning process is endless. Humanity shall forever be indebted to the invaluable contributions made by all great minds and contribution of English scientists is not an exception. Each of these men and women has conducted hundreds of experiments. From discovery of a microorganism to creation of nuclear weapons, all by a few men who dared to ask 'Why, How, When, What, Where'. Their quest for answers has helped awaken mankind from its deep slumber in the Dark Ages.

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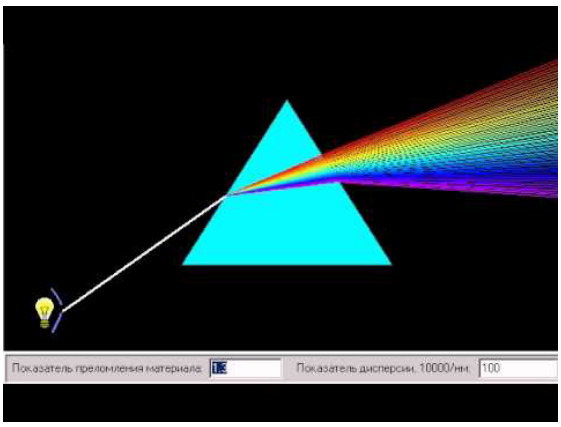
Application



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