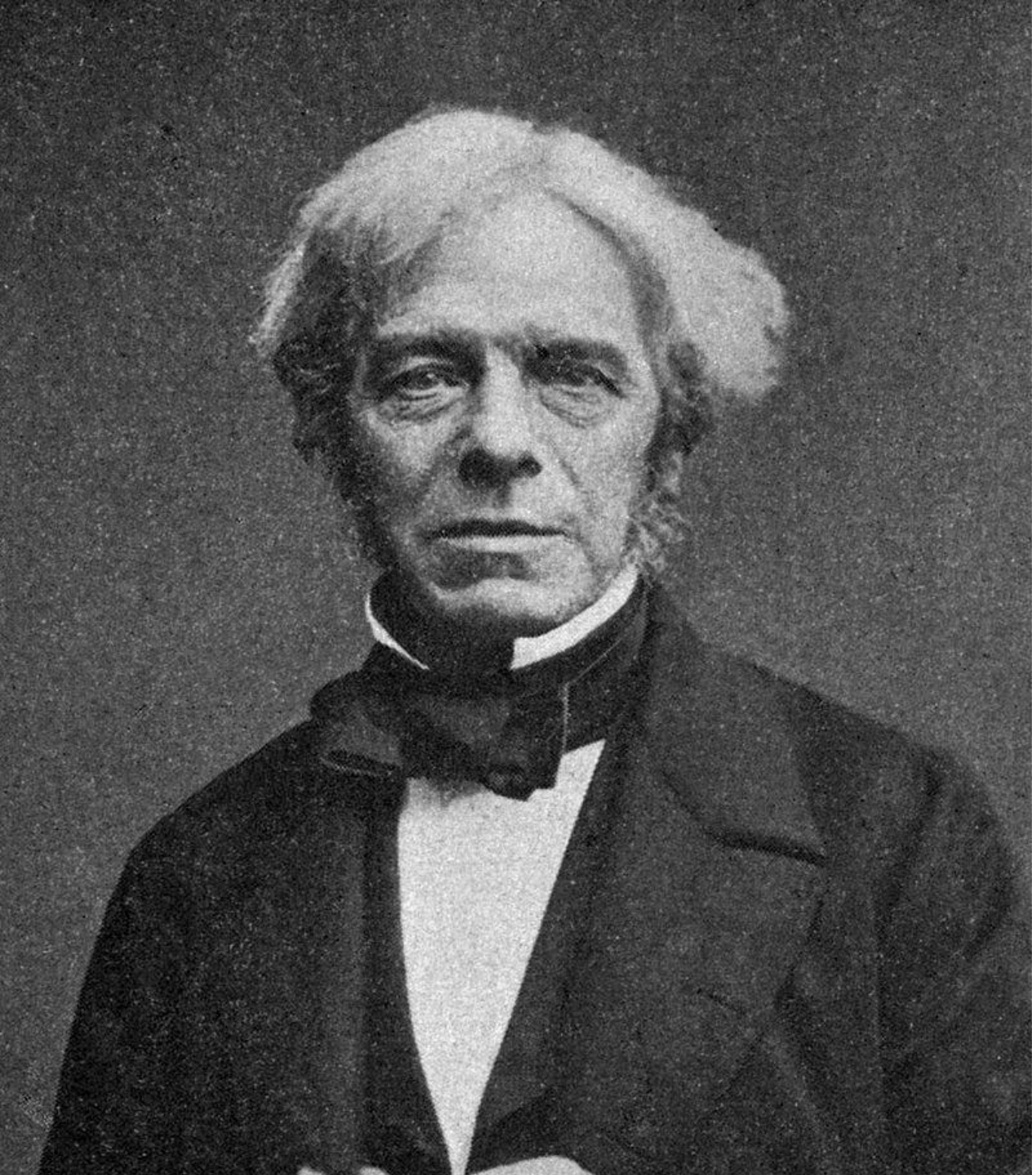


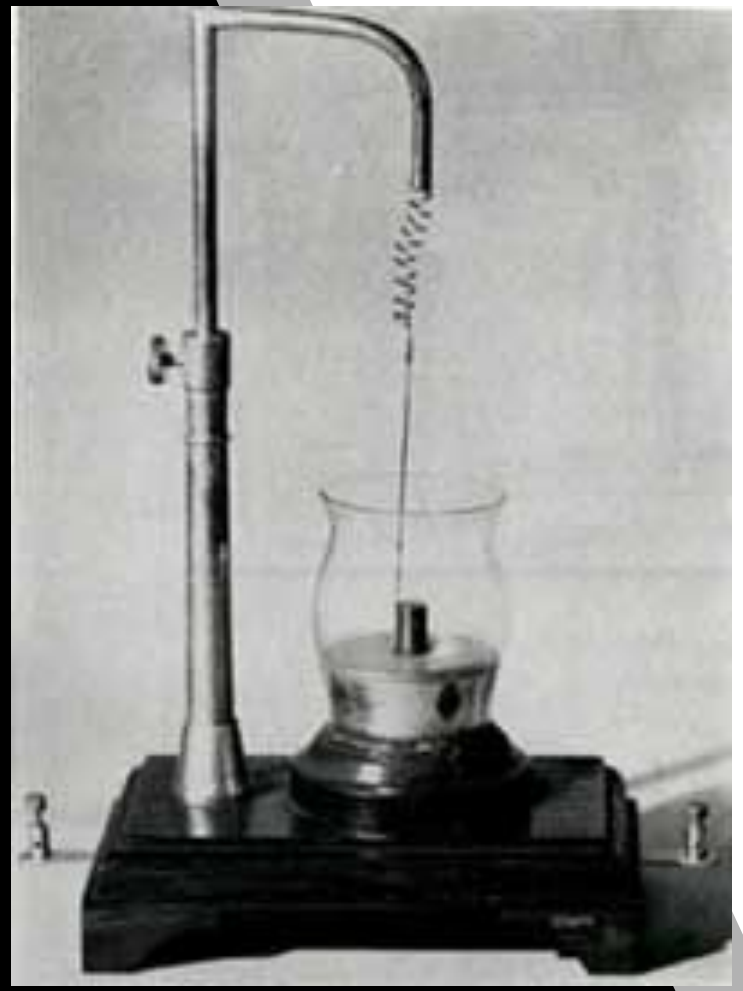
# Michael Faraday

English experimental physicist and chemist

Michael Faraday was born on September 22, 1791 in the village of Newington Butts near London, in the family of a blacksmith. Family: father, mother, 2 brothers and 2 sisters lived in friendship, but at the age of 13, Michael stayed at school and began working as a messenger at a London bookstore. After the probationary period, he became a bookbinder's apprentice.

He needs get a formal education, but early to show curiosity and a passion for reading. The store had a lot of scientific books; in the course of reading books on electricity and chemistry, he immediately began to conduct simple independent experiments. Father and elder brother helped to make the simplest source of electricity - the “Leyden jar”.

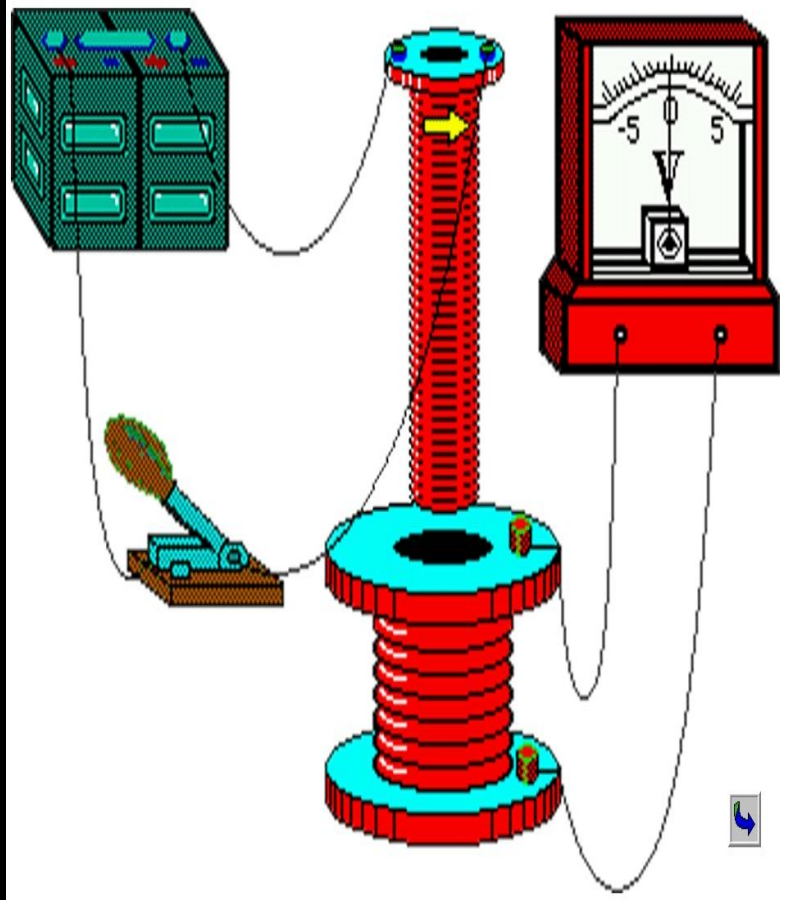
Одновременно Фарадей, при благожелательном содействии Дэви, проводил собственные химические эксперименты по интересующим его вопросам. Свои служебные обязанности Фарадей исполнял настолько тщательно и умело, что вскоре стал незаменимым помощником Дэви. Осенью 1813 года Фарадей отправился вместе с профессором и его женой, как помощник и секретарь, в двухлетнее путешествие по научным центрам Европы, только что разгромившей Наполеона. Это путешествие имело для Фарадея большое значение: Дэви как знаменитость мирового масштаба приветствовали многие выдающиеся учёные того времени, в том числе А. Ампер, М. Шеврель, Ж. Л. Гей-Люссак и А. Вольта. Некоторые из них обратили внимание на блестящие способности молодого англичанина.



Since 1820, Faraday was extremely fascinated by the problem of studying the links between electricity and magnetism.

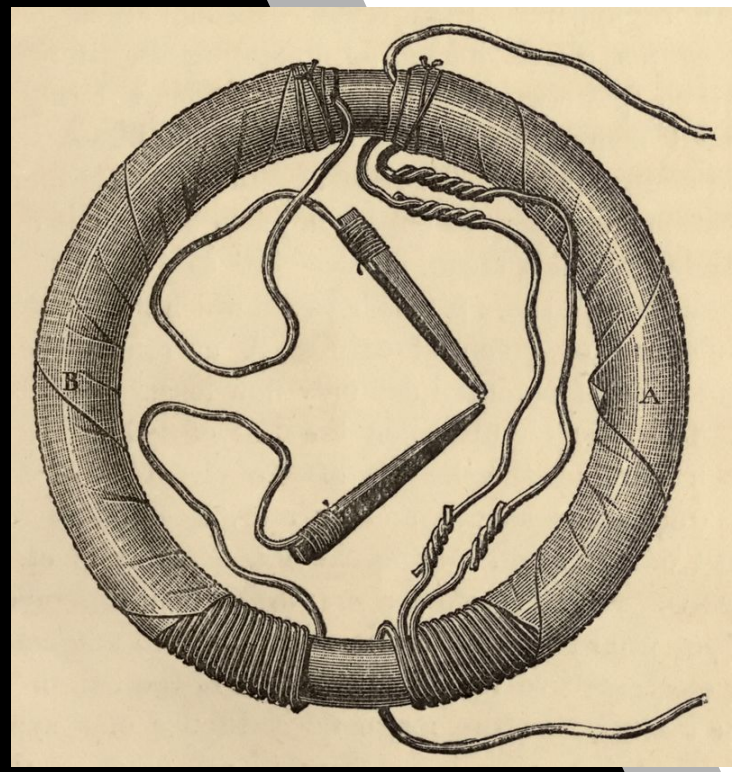
After a series of experiments, Faraday published in 1821 an article entitled “On Some New Electromagnetic Motions and the Theory of Magnetism,” where he showed how to make the magnetized arrow continuously rotate around one of the magnetic poles. In essence, this design was still an imperfect, but quite efficient, electric motor, the first in the world to realize the continuous conversion of electrical energy into mechanical energy. The name of Faraday becomes world famous.

In 1822, an entry appeared in Faraday's laboratory diary: “Turn magnetism into electricity.” Faraday's reasoning was as follows: if, in Oersted's experiment, electric current has magnetic force, and, according to Faraday, all forces are interconvertible, then the motion of the magnet should excite electric current.




The path to the electric generator was not easy - the first experiments were unsuccessful. The main reason for the failures was the ignorance of the fact that the electric current is generated only by an alternating magnetic field, and is strong enough (otherwise the current will be too weak to register). To enhance the effect, the magnet (or conductor) should be moved quickly, and the conductor rolled into a coil. Only ten years later, in 1831, Faraday finally found a solution to the problem, finding electromagnetic induction.

This discovery began the most fruitful period of Faraday research (1831–1840), which gave the scientific world its famous series of articles “Experimental studies on electricity” (he published 30 issues in the Philosophical Transactions from 1831 to 1835). Already in 1832, Faraday was awarded the Copley Medal for the discovery of induction.




If the opening of an electric motor showed how electricity can be used, then induction experiments indicated how to create a powerful source of electricity (an electric generator). Since then, the difficulties in the way of widespread introduction of electricity have become purely technical.

In 1832, Faraday investigated another important problem in those years. At that time, several sources of electricity were known: friction, a volt column, some animals (for example, an electric ramp), a Faraday induction, a thermoelement. Some scientists expressed doubt that all these effects have a single nature, and even used different terms: "galvanism", "animal electricity", etc.

Faraday conducted hundreds of experiments and closed the problem, showing that all manifestations of electricity (heat, light, chemical, physiological, magnetic and mechanical) are exactly the same, regardless of the source of its production.