Faraday Centenary

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found that static electricity could be transmitted from one body to another by induction; Benjamin Franklin's famous kite experiment with lightning; the first known current of electricity in the Voltaic pile and Galvani's experiments; Humphry Davy's first tiny arc light from a battery of cells; Oersted's outstanding discovery that there was some relation between magnetism and electricity; and in the early nineteenth century of Faraday's line in his notebook: "Convert magnetism into electricity. A splendid problem, but how to do it?"

Referring briefly to the work of other experimenters, Mr. Gregory passed on to Faraday's first unsuccessful experiment with coils of wire, then to his first iron core transformer, and the manner in which the first almost insignificant kick of the measuring instrument, the galvanometer, proved that a current passing through one coil of wire could induce a current in a second coil not connected with the first.

From that point Faraday's progress was amazingly fast. Day by day he applied the basic fact in new experiments until, on the ninth day, he was able to construct a new electrical machine. Borrowing the most powerful magnet he could procure, he introduced a disc of copper which was so mounted that it could be revolved between the poles of the magnet. He pressed springy collectors to the shaft and the edge of the disc, and these he connected to a galvanometer. On revolving the disc he produced a steady deflection of the galvanometer needle.

"Here was the world's first magnetic electric generator, the forerunner of present-day electricity, and though only 100 years have passed since this discovery, and we live in an electrical age," said Mr. Gregory, "the science is only in its infancy, and no man can foretell what the future holds, for even in our lives we have seen the wonders of wireless, and now television, and the transmission of thousands of horse-power in electrical energy to inconceivable distances, all due to the discovery of Michael Faraday, to whose memory this lecture and meeting are dedicated."

As each step was referred to Mr. Gregory demonstrated Faraday's experiments upon apparatus made as nearly as possible like the original apparatus. On page 7 is a photograph of some of the facsimile apparatus.

The next speaker, Professor Florance, of the Physics Department, Victoria University, gave further demonstrations of the work of the early experimenters—of some preceding Faraday and of others who applied the principle of electro-magnetic induction in various ways. He mentioned a few of Faraday's researches, such as the principle of the electric motor and the dynamo, electro-static induction investigation, the laws of electrolysis, electro-optical work, the liquefication of gases and the magnetic properties of material. Faraday had had a profound insight into the obscure mysteries of the universe and had been convinced of the relationship between electricity and matter, electricity and magnetism, electro-magnetism and light, and electro-magnetism and gravitation. He held a conspicuous place among the benefactors of mankind.

Faraday did not believe the "action at a distance" explanation of magnetism, so popular among his contemporaries, and was convinced that some force existed in the medium separating the two bodies. This led to the development of the idea of lines of force and on this was based his explanation of electro-magnetic induction.

Mr. A. Gibbs, Chief Electrical Engineer, then traced the development of Faraday's principle to its outstanding present-day application in heavy power machinery, lighting, electro-chemistry and electro-metallurgy, telegraphy, telephony, radio-telephony and the beginning of television.

"So well and truly did Faraday lay the foundations of electrical engineering," continued Mr. Gibbs, "that to-day hundreds of millions of capital are invested, and hundreds and thousands of persons are working in various sections of the industry. Moreover, it would be difficult to estimate how vitally the human race depends for its comforts and its amenities upon the many branches of electrical engineering. It is surely very fitting that electrical engineers and the public generally should show their appreciation of Faraday's pioneer work, and in honouring Faraday we have the added satisfaction of knowing that we are honouring one who possessed more than genius, for he was a man of simple and upright mind and of high ideals which call forth our admiration to-day as they did that of his contemporaries."

At the conclusion of the addresses a vote of thanks to the speakers was moved by Mr. D. K. Blair, president of the New Zealand Society of Civil Engineers, and was enthusiastically carried.

A Comprehensive Display.

SUBSEQUENTLY the audience visited the physics laboratories on lower floors, where a first-rate show of electrical apparatus and experiments had been arranged.

In the lower laboratory a very spectacular display had been arranged. In one corner was a Wimshurst machine, producing a constant stream of weaving, crackling, blue sparks between the discharge knobs. In another was a huge induction coil, labelled 200,000 volts, which sent a similar blinding discharge across a 16-inch spark gap. Occasionally a heavy gauge wire was loaded to breakdown point and disappeared in a roaring, banging flash.

On a nearby bench a demonstration of the Faraday dark space—in evidence during the discharge of electricity through gas at low pressure—attracted large crowds.

Upstairs the detail work was displayed. More reproductions of early apparatus were displayed, and, arranged along the benches in general order of development, their present-day types and developments. A very early (and unsatisfactory) telephone was contrasted with the latest automatic style, while a section of an automatic telephone exchange in working order aroused much interest. Another popular feature of the display was a Post Office telegraphic sender. Messages are typed as on an ordinary typewriter keyboard, automatically converted into a code and dispatched, the message emerging already typed from the receiver at the other end—perhaps hundreds of miles away.

Radio and its applications were shown in various ways. In one display were exhibited some thirty or forty different types of valves, ranging from the oldest two-element valve to the latest in pentodes and screen-grids. On another bench was exhibited specimens of quartz crystals of the type used in broadcasting for preserving frequency stability. One of these was vibrating at one million times per second.

A selenium cell, used for the automatic control of street lights; a singing flame, in which Faraday was interested; a neon display sign; a portable X-ray outfit, and many other interesting exhibits were to be seen by interested visitors.

Novel Competition

Does Voice Indicate Character?

A POPULAR radio competition at present being conducted by Ravag, Vienna's principal broadcasting station, consists in guessing the sex—which should seldom be difficult—age, height, occupation, grade of education, and general appearance of a speaker—dark or fair, stout or thin, clean-shaven or otherwise—and intellectual capacity, after hearing a few, or in some cases many, words spoken before the microphone. In most cases those taking part are to be persons quite unaccustomed to public speaking, and they may read from a book or from some prepared and approved script. The idea is admittedly taken from experiments recently conducted by a Manchester professor, in which the answers of 4000 persons concerning the utterances of nine men and women are said to have proved that the voice alone does indicate certain leading external characteristics of the individual as well as his or her character.