

JOSEPH HENRY.

May, 1916, Marks His 38th Death Anniversary.

Born, Dec. 17, 1797—Died May 13, 1878.

PROFESSOR Joseph Henry was born in Albany, N.Y., December 17, 1797, where much of his early life was passed. He had at first only the advantages



Prof. Joseph Henry, the Famous Electrician.

of a common school education, but later, after two years of work as a watchmaker, he went to the Albany Academy, where he developed a degree of mathematical talent which, in 1826, led to his being selected for the duties of instructor of mathematics in that institution.

While occupied with his duties as a teacher of mathematics in the academy, then in charge of Dr. T. Romeyn Beck, he commenced that line of investigation in electricity which resulted in the important discoveries which made his name famous. He attended the lectures of Dr. Beck on chemistry and assisted him in the preparation of his experiments. At this time he devised and published an improvement on the form of Wollaston's sliding scale of chemical equivalents, in which hydrogen was adopted as the radix, a contrivance which is hardly known even by name to the present generation of chemists. Thus while Professor Henry's original contributions to science were chiefly physical, his first scientific work was in the department of chemistry. His work with Dr. Beck enabled him, after his removal to Princeton, where he became Professor of Natural Philosophy in 1832, to take up the duties of the chemist, Dr. Torry, when that well-known teacher became ill.

It was in the interval between 1828 and 1837 that the most important work of his life was accomplished; that is, in the line of scientific research. His "Contributions to Electricity and Magnetism" were collected in a separate volume in 1839. The analysis of these important researches and a discussion of their priority will be the duty of the academician to whom shall be assigned the preparation of a memoir or eulogy on this distinguished scholar. Some of his most important memoirs and discoveries are: 1. The development for the first time of magnetic power in soft iron sufficient to sustain tons in weight by a comparatively feeble galvanic current. 2. The

first application of electro-magnetism as a power to produce continued motion in a machine. 3. An exposition of the method by which electro-magnetism might be employed in transmitting power to a distance and the demonstration of the practicability of an electro-magnetic telegraph, which, without these discoveries, was practically impossible. 4. The discovery of the induction of an electric current in a long wire upon itself, or the means of increasing the intensity by the use of a spiral or coiled conductor. 5. The discovery that the discharge of a Leyden jar consists of a series of oscillations backward and forward until equilibrium is restored. 6. The induction of a current of electricity from lightning at a great distance and proof that the discharge from a thunder cloud also consists of a series of oscillations. He has also contributed to science in meteorology, capillarity, acoustics and other branches of physics.

After a successful scientific career, Professor Joseph Henry died on the thirteenth of May, 1878, at his home in Washington, D.C.

HOW GUNNERS HEAR TELEPHONE MESSAGES ON THE BATTLEFIELD.

The accompanying illustration shows an ingenious English device known as "Ear Defenders" which are to be worn in the ears while on the battlefield during gun-fire. They are so designed that they may be worn inside of gas-protector helmets and the like. They are said to be used on every ship of the British navy and besides are supplied to all land batteries now engaged in the great struggle across the Atlantic. The hollow ear pieces here shown are furnished in a small pocket case and may be instantly removed when desired as they are supported between soft rubber pillars. These tubular nipples have small diaphragms within them, which take up the heavy concussive vibrations occasioned by cannon fire and bursting shells, thereby protecting the sensitive diaphragm of the human ear.

These attachments may be placed in the opening of the ear so as to rest in same securely and without inconvenience to the

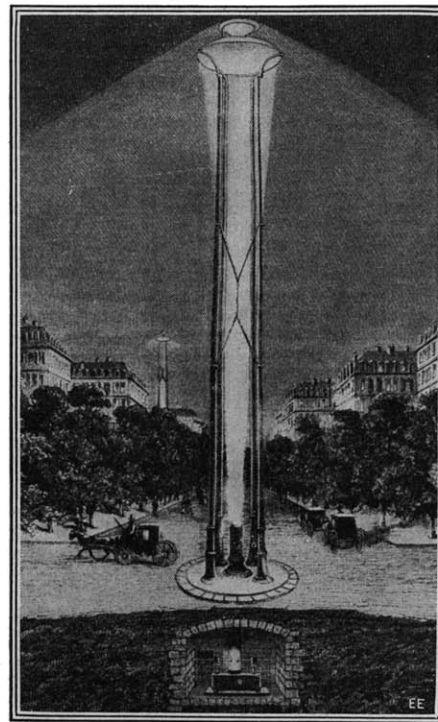


Ear Defenders Worn by European Soldiers.

wearer. Moreover regular telephone or radio receivers can be placed against the ear and speech is transmitted perfectly satisfactorily just as if the Ear Defenders

AN EARLY FRENCH ARC LAMP FOR STREET LIGHTING.

Street lighting with arcs was quite common during the latter part of the Nineteenth Century, and while one can imagine the curious designs of arcs that have been



Early Form of Inverted Arc Lamp Used in France.

employed at different periods the remarkable design here shown is indeed radical. In this country the open arc lights were used at an early date and usually hung on some suitable pole supports. On the other hand in some of the foreign countries when electric arcs were first employed for street lighting they were often curiously built. The photograph herewith shown illustrates a unique form of street lamp which was used in France in the first days of the art.

This powerful arc lamp, although very unique and picturesque, was not very efficient from the engineer's point of view as the light emitted by the arc is improperly transmitted to its surrounding surface. The two carbon electrodes are supported on a suitable frame which is enclosed in a brick chamber placed below the surface of the ground, as perceived. The terminal conductors are carried underground to the power house. Over the arc is placed a special metallic tube which passes through the upper part of the brick chamber and it is used to transmit the light developed by the arc to the open air. A unique structure is placed around the light tube and supports at its upper extremity a reflector so that the transformed light is equally distributed.

were not worn at all. Also ordinary conversation can be heard with them without any trouble during gun-fire, but due to their peculiar design involving the use of the shock absorption diaphragm, aforementioned, sudden explosions will not directly affect or injure the ear-drum. They were designed by two English engineers, Mr. A. Mallock, F.R.S., and Sir W. G. Armstrong. It is said that they may be worn continuously without any discomfort to the ear, even for hours at a time.

A MONG the hundreds of new devices and appliances published monthly in *The Electrical Experimenter*, there are several, as a rule, which interest you. Full information on these subjects, as well as the name of the manufacturer, will be gladly furnished to you, free of charge, by addressing our Technical Information Bureau.