

# SCIENCE

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## HIGH VOLTAGE<sup>1</sup>

By Dr. KARL T. COMPTON

PRESIDENT OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

WHILE there is much truth in the statement that necessity is the mother of invention, it has often been pointed out that it is far from true that necessity is the mother of discovery. Discoveries come often most unexpectedly, in the pursuit of knowledge by the curious and observant. The great background of natural phenomena which have thus been discovered form an immense reservoir from which may be drawn natural laws or combinations of phenomena which can be made to work for the solution of men's needs or desires when necessity arises.

One of the most excellent examples of the fact that necessity is the mother of invention is found in the great number of applications of science which were made during the past war to cope with situations which never before had challenged the ingenuity of man. Such situations were the detection and location

of submarines or of airplanes flying by night. There were also the location of underground mining operations or of enemy artillery by sound, or the direction of counter-battery artillery fire, also by sound. Such examples could be multiplied almost indefinitely, but the interesting feature of them all is that every one was handled by the application of some scientific phenomenon which had been known in the laboratory for many years. The necessities of war brought forth the means of applying these phenomena for particular purposes.

It is to a very recent example of this natural sequence of events that I will call your attention to-night, an example taken from the field of electricity, the chosen field of Joseph Henry, in whose honor this lecture has been named. It is a modern application of one of the oldest branches of electricity, a branch so old that some ultramodern text-book writers have advocated omitting it entirely from text-books

<sup>1</sup> The third Joseph Henry lecture delivered before the Philosophical Society of Washington on March 11, 1933.

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