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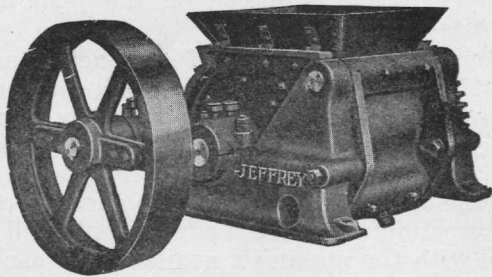
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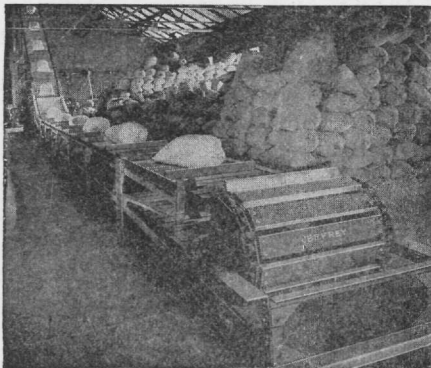
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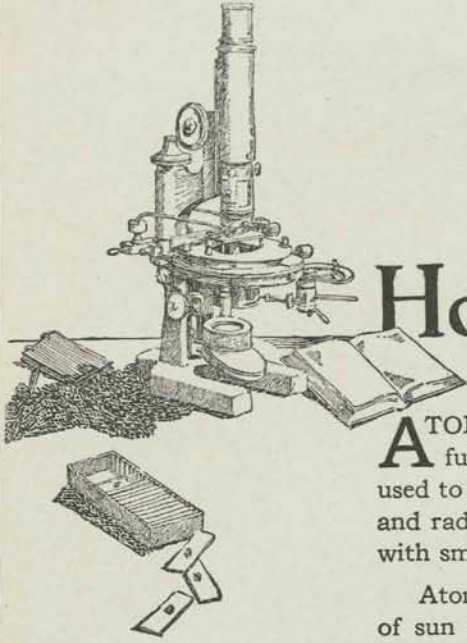
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How Large is an Atom?

ATOMS are so infinitesimal that to be seen under the most powerful microscope one hundred million must be grouped. The atom used to be the smallest indivisible unit of matter. When the X-Rays and radium were discovered physicists found that they were dealing with smaller things than atoms—with particles they call “electrons.”

Atoms are built up of electrons, just as the solar system is built up of sun and planets. Magnify the hydrogen atom, says Sir Oliver Lodge, to the size of a cathedral, and an electron, in comparison, will be no bigger than a bird-shot.

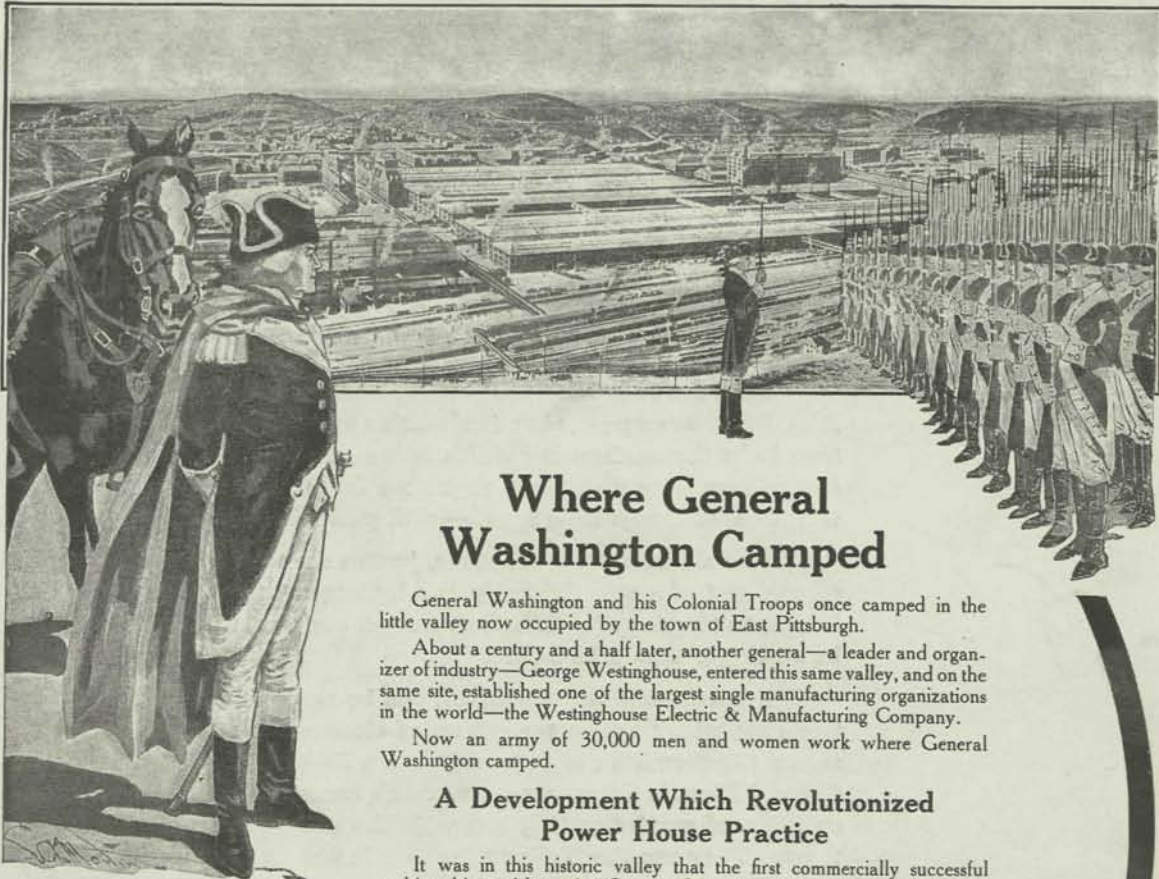
Not much substantial progress can be made in chemical and electrical industries unless the action of electrons is studied. For that reason the chemists and physicists in the Research Laboratories of the General Electric Company are as much concerned with the very constitution of matter as they are with the development of new inventions. They use the X-Ray tube as if it were a machine-gun; for by its means electrons are shot at targets in new ways so as to reveal more about the structure of matter.

As the result of such experiments, the X-Ray tube has been greatly improved and the vacuum tube, now so indispensable in radio communication, has been developed into a kind of trigger device for guiding electrons by radio waves.

Years may thus be spent in what seems to be merely a purely “theoretical” investigation. Yet nothing is so practical as a good theory. The whole structure of modern mechanical engineering is reared on Newton’s laws of gravitation and motion—theories stated in the form of immutable propositions.

In the past the theories that resulted from purely scientific research usually came from the university laboratories, whereupon the industries applied them. The Research Laboratories of the General Electric Company conceive it as part of their task to explore the unknown in the same spirit, even though there may be no immediate commercial goal in view. Sooner or later the world profits by such research in pure science. Wireless communication, for example, was accomplished largely as the result of Herz’s brilliant series of purely scientific experiments demonstrating the existence of wireless waves.

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Where General Washington Camped

General Washington and his Colonial Troops once camped in the little valley now occupied by the town of East Pittsburgh.

About a century and a half later, another general—a leader and organizer of industry—George Westinghouse, entered this same valley, and on the same site, established one of the largest single manufacturing organizations in the world—the Westinghouse Electric & Manufacturing Company.

Now an army of 30,000 men and women work where General Washington camped.

A Development Which Revolutionized Power House Practice

It was in this historic valley that the first commercially successful turbine-driven Alternating-Current Generator was developed under the direction of George Westinghouse. It was tested in the East Pittsburgh Shops in 1896. The splendid operation of this, and two duplicate machines installed a year later, sounded the death knell of the reciprocating steam engine—then in almost universal use.

The steam turbine has effected remarkable savings—one of the most evident of which is floor space—the turbine-generator occupying from one-fourth to one-sixth the space occupied by the reciprocating engine. In our large cities, with floor space valued at thousands of dollars a square foot, this is a consideration of great importance.

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