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ARCHÆOLOGY

Finds Explain Visby

Why the beautiful little city of Visby in the Swedish island of Gothland held such unusual commercial power in the Middle Ages has at last been accounted for by archæological finds. Excavations in the northern part of the town recently yielded important remains of extensive iron works. From the evidence archæologists have concluded that during the Middle Ages and possibly even by the end of the Viking Age, Visby was a center for the smelting and refining of iron and copper, which industry contributed greatly to its prosperity.

Pieces of iron ore found indicate that the ore used at the Visby works was imported from Utoe Island, near Stockholm, according to John Nihlen, Swedish archæologist, writing in *Art and Archæology*.

"Thousands of large slag lumps prove the ore had been melted in furnaces," he states. "Numerous objects of iron also indicate that skilled blacksmiths worked the metal. Finally, certain circumstances seem to show that the people of Gothland during this period exported wrought iron to neighboring countries."

"Existence of this iron trade has hitherto been quite unknown," Mr. Nihlen states. "Only the name of the street where the industry was located, Smedjegatan or the Smiths' Street, contains a memory of the time when iron was worked on a large scale in these outskirts of the town."

Visby has been inhabited since a Stone Age period, some 7,000 years ago, and excavations there have revealed innumerable relics of its history through different centuries. Its far-reaching trade relations as its commercial prosperity grew is shown by such articles as a cup made in China and a sea-shell from the Indian Ocean, found in graves dating from the Iron Age.

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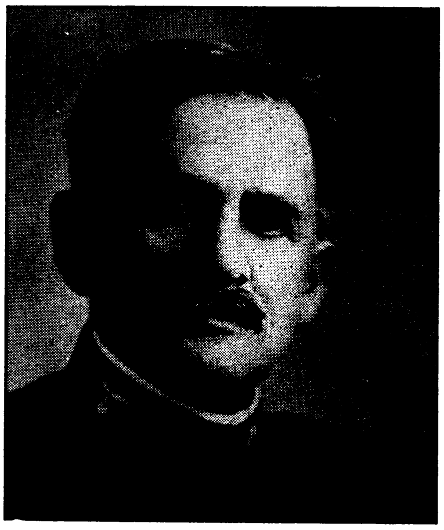
PHYSICS



ALBERT ABRAHAM MICHELSON

Time Keeper On Light

When an athletic coach wants to see how fast a runner can go, he measures the time it takes him to run a known distance, and when Prof. Michelson wanted to see how fast the messenger which brings us knowledge of the most distant stars and galaxies—a beam of light—travels, he timed it between two California mountain peaks. And by his results we know that in a single second a beam of light will travel 299,796 kilometers.

Many years ago, in a classical series of experiments, he started the train of thought which finally produced the theory of relativity; a new standard for measurement was given the world when he determined the length of the meter in terms of an invariable wave length of light; and his interferometer has made possible measures of the diameters of some of the largest stars. All these achievements have brought him many honors, including the Nobel Prize in Physics, and the presidency of the National Academy of Sciences, which meets in Washington next week, April 25 to 27.

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ELECTRICITY

New Electrical Insulator

Cheaper electric lights and less expensive electrical heating are possible outcomes of recent work on electrical insulations by a group of Russian scientists, under the leadership of Dr. Abram Joffe, head of the Physical-Technical Institute of Leningrad.

Dr. Joffe describes his researches on a new type of insulating material, which scientists believe may revolutionize the whole aspect of high-power transmission problems, in the *Journal of Mathematics and Physics* of the Massachusetts Institute of Technology. As a result of this work, entirely new ways of manufacturing electrical insulators may be opened up.

He has found that a very thin layer of a comparatively cheap and readily available varnish-like material substitutes for the large bulky porcelain insulators now used. Investigation of the dependence of dielectric strength; that is, the resistance to electrical puncture or breakdown on the thickness of a sample has shown that considerable potentials can be insulated by very thin films, their dielectric strength approaching the tremendous figure of 100,000,000 volts per centimeter of insulator thickness.

In addition to giving the electrical industry a new insulating material, Dr. Joffe's work gives the experimental physicist a new method of subjecting materials to immense pressures. When the electrical current is in a wire it creates pressure at the wire's surface in trying to get out. Since Dr. Joffe's new insulating material resists the electricity's efforts for freedom more strenuously than other materials, greater pressures are created at the surface of the conductor than ever before obtained. He has obtained the extraordinary pressure of 300,000 atmospheres, some 4,500,000 pounds per square inch. The highest pressure previously obtained in scientific work

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