

## METALLURGY

# Faraday's Research on Metals Anticipated Modern Steel

## Scientist's Pioneering in Metallurgy Revealed From Analyses of Specimens Found During Summer

**M**ICHAEL FARADAY was a pioneer of modern alloy steel, and his metallurgical researches 107 years ago "anticipated in a remarkable manner the facts and principles on which the present enormous development of alloy steel is based." Sir Robert Hadfield, himself the father of modern alloy steel, revealed at the Faraday Centenary Celebration held in London this week, analyses of 79 small specimens of steel and alloys, discovered during the rebuilding of the Royal Institution this summer, in a small box labeled in Faraday's own handwriting.

This forgotten cache, examined by modern metallurgical methods, shows that Faraday alloyed thirteen metallic elements, and also carbon, silicon and sulphur, with iron, using a forced-draft furnace capable of high heat. By adding chromium and nickel, Faraday anticipated present post-world-war developments of stainless steel. Using the noble metals—gold, iridium, osmium, palladium, platinum, rhodium and silver—Faraday surpassed present-day technical development.

Small knives, made from a piece of Faraday's original high-platinum steel, were presented to the president of the British Association for the Advancement of Science, Gen. Jan Christian

Smuts, and to a few other scientists attending the celebration.

Sir Robert Hadfield's study into Faraday's alloys required nearly five hundred chemical analyses, utilizing, however, less than half a pound of the priceless relics. A full report of the work will soon appear as a large book.

Discovery of Faraday's metallurgical pioneering heaps new honors on his memory, while he is memorialized for the hundredth anniversary of his epochal magnetic induction experiment, fundamental to the electrical industry.

Prof. Elihu Thomson, American electrical pioneer, credited Faraday with the invention of the transformer, which makes power transmission possible. Lord Rutherford hailed his fundamental research on electrolysis. Sir William Bragg called attention to his discovery of benzene, which is fundamental to all modern organic and physiological chemistry and to the chemical industries depending on these sciences. Prof. Peter Debye of Leipzig, told how he recognized the identity of chemical affinity

and electricity. Prof. P. Zeeman of Amsterdam credited the great English pioneer with demonstrating the effect of magnetism on light, fundamental to modern physics, and the Marchese Marconi told how he planted the seed whence wireless has sprung. The Duc de Broglie, of Paris, paid tribute to his laying of the foundation of modern physics, and Prime Minister Ramsay Macdonald related his contributions to the welfare of the British Empire.

Faraday, in making alloy steel, was far ahead of his time. Although his alloys were made at Sheffield on a comparatively large scale, into cutlery, razors, fireplace fenders, etc., lack of industrial demand turned Faraday to electrical investigations which are fundamental to industry today.

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## ARCHAEOLOGY

## Indian Writing Moved From Bottom of Future Lake

**W**HEN the waters of the huge Safe Harbor hydro-electric dam cover islands in the Susquehanna River at Safe Harbor, Pa., to a depth of 40 feet, archaeologists will have no cause for regret. For the objects which made these islands archaeologically valuable—picture writing chiseled in the surface of the rock—have been carefully removed, cut out of solid rock in huge chunks with compressed air drills, to be saved for future study.

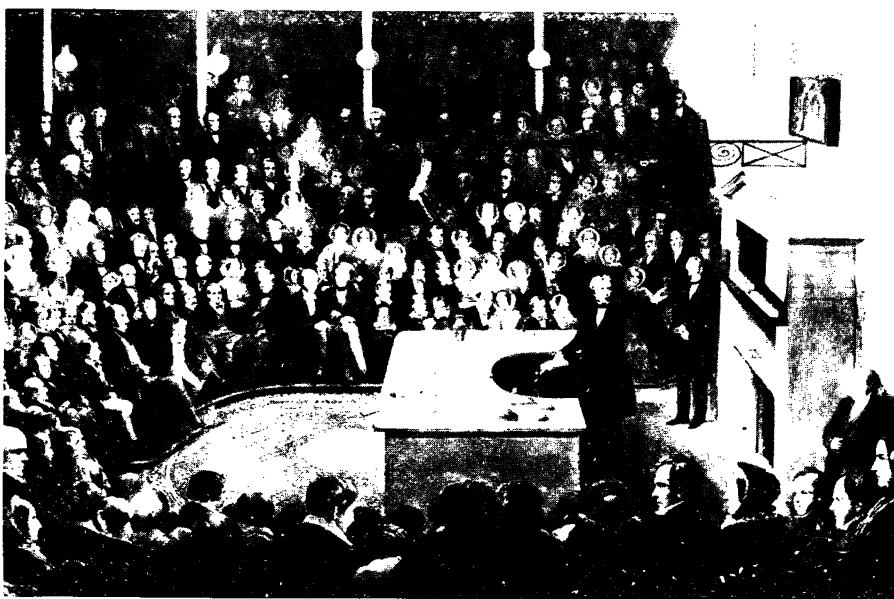
The work of removal has been going

## BOTANY

## Tiny Cellulose Balls May Be Smallest Plant Units

**L**ITTLE CELLULOSE spindles are no longer the smallest known units which make up the structure of a plant; spherical bodies, tinier still, have been discovered. These minute spheres, observed for the first time at the U. S. Forest Products Laboratory, Madison, Wis., measure about one fifty-thousandth of an inch in diameter. They were found through microscopic examination in the spindles which are larger structural units of the plant fiber.

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DESCRIBING HIS DISCOVERIES

*Michael Faraday lecturing before the Royal Institution, December 1855. A reproduction of the original painting by Alexander Blaikley.*