9. The complete program, including a list of attendees, is given in R. B. Warder, "Proceedings of the Congress on Chemistry Held in Chicago, Illinois, August 21 to 26, 1893", *J. Am. Chem. Soc.*, **1893**, *15*, 305 (June number, issued 6 October.)

10. These papers are scattered throughout *J. Am. Chem. Soc.* for 1893 and 1894 but are poorly identified as having originated at the Congress.

11. F. W. Clarke, et al., "International Chemical Congresses", *J. Am. Chem. Soc.*, **1894**, *16*, 880.

12. The only mention of the Brussels meeting by the Society occurred in the preliminary announcement for the 2nd International Congress of Applied Chemistry held in Paris in 1896; see Anon., *J. Am. Chem. Soc.*, **1896**, *17*, 307.

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TRANSLATIONS

The following experiment is taken from Tiberius Cavallo's "A Treatise on the Nature and Properties of Air," London, 1781. Readers wishing to submit their interpretations of the chemistry involved, complete with balanced equations, should send their answers to the editor by the copy due date listed inside the front cover. Answers will appear in the next issue along with a fresh puzzle.

Dr. Higgins' Experiment of Detonating Cupreous Nitre by Contact with Tin. This salt [i.e., cupreous nitre] taken moist, but not very wet, and beaten to the fineness of basket sea-salt in a mortar, is to be strewed to the thickness of a shilling on a piece of tin, twelve inches in length, and three in breadth.

Then the foil is to be instantly rolled up, so as to include the salt as it lay between the coils. The ends are to be shut by pinching them together, and the whole is to be pressed flat and close.

All this being done as quick as possible, the first part of the phenomena is, a part of the salt deliquesces. 2. The part, impregnated with tin changed in colour, and of a thicker consistence, begins to froth forth from the ends of the coil. 3. A strong frothing, accompanied with moderate warmth. 4. The emission of copious nitrous fumes. 5. Heat intolerable to the fingers. 6. Explosion and fire, which burst and fuse the tinfoil in several places, if it be very thin.

The Answer to Last Issue's Puzzle

No reader responses were received and, indeed, it took the editor nearly a week of library research to unravel the mystery. The result, which is quite interesting, appears as this issue's *Whatever Happened To ... ?* column.

WHATEVER HAPPENED TO HOMBERG'S PYROPHORUS?

William B. Jensen, University of Cincinnati

"Homberg's Pyrophorus" was accidentally discovered by Wilhelm Homberg (1652-1715) sometime around 1680 while attempting to extract an "odorless white oil" from human excrement for the purpose of transmuting mercury into silver (1). In the course of these experiments, Homberg distilled the excrement with a wide variety of other materials, one of which happened to be common potash or potassium alum [$K_2(SO_4)Al_2(SO_4)_3.24H_2O$], and noticed that, after cooling the apparatus and breaking open the luting, the dry residue in the retort spontaneously burst into flame.

This result quite naturally caught Homberg's attention, as one of his abiding fascinations, like that of many of his contemporaries, was with the preparation and study of materials which were either spontaneously inflammable or phosphorescent or both. Indeed, during his student travels in Italy, he had investigated the preparation and properties of the so-called Bologna Stone, a form of phosphorescent barium sulfide, and he later perfected a recipe for a phosphorescent variety of calcium dichloride (known as "Homberg's Phosphorus") made by heating a mixture of slaked lime [$Ca(OH)_2$] and sal ammoniac [$(NH_4)Cl$]. Homberg is also credited with having obtained the original recipe for the preparation of elemental phosphorus from Johann Kunckel, supposedly in exchange for a toy barometer invented by Otto Guericke in which the humidity of the air was indicated by "a little man who came out of his house and stood at the door in dry weather but retired under cover in moist weather"(2). Apparently in the 17th century trinkets could buy more than just prime New York real estate!

Incredibly, given his persistent interest in both pyrophoric and phosphorescent substances, Homberg failed to follow up on his alum-excrement observations until 1711, or nearly 30 years after the original experiments, when he again returned to the subject and finally published a paper describing the preparation and offering a rationale for its properties (3). Assuming the product to be a mixture of a water-free salt (obtained from the alum) and an easily inflammable oil (obtained from the excrement), he postulated that its spontaneous ignition was due to the reaction of the salt with the moisture in the air. Like the reaction of quick lime [CaO] and water, this reaction supposedly generated sufficient heat to ignite the inflammable oil.

Homberg initially described his mixture as yet another kind of "phosphorus", but later adopted the more appropriate term of "pyrophorus" - a word which eventually came to signify all spontaneously inflammable solids. The curious properties of