

An American patent was recently granted Armand Müller-Jacobs for the use of zirconium nitrate for the preservation of food, etc. "The substance is immersed in a suitable concentrated solution of a zirconium compound capable of emanating radio-active rays." As zirconium compounds emit no radio-active rays nor give off an emanation that has been recognized as yet, the preservative action is doubtless due to something else, if there is any.

*Pigments.* The oxides of certain of the rare earths are characterized by colors, hence repeated proposals have been made for their use as pigments. For instance Strohecker suggested the use of the cerium oxides (obtained by him from the Hainstädt cerite clays) for painting purposes. According to Müller, the cerium colors of Strohecker proved to be mixtures of iron oxide, lime, clay, etc. A process for making rust-proof colors by means of peroxides of cerium earths is due to Kosmann. According to the patent, the peroxides of the cerium earths must be ground, singly or in mixtures, with linseed-oil varnish, with the addition of a siccativ. The register of patents also contains a process of the Rummelsberg chemical factory, of Berlin, for the production of colors from rare earths. According to this process, the dark-brown powder obtained from the glowing of praseodymium salts of volatile acids (praseodymium peroxide,  $\text{Pr}_2\text{O}_3$ ) yields an earth color of excellent covering and durability.

The application of pure praseodymium compounds as pigments is now out of the question on account of the expense. It is possible that mixtures of the oxides, which are readily obtained as by-products in the treatment of various minerals, monazite, for example, may be used. It remains to be determined, however, whether these bodies possess sufficiently unique and durable tints to warrant the cost. The colors of the mixed oxides vary from a cream to a reddish brown and even black (0.5 to 1% of praseodymium peroxide for the latter two), according to the presence and amount of praseodymium.

*Dyeing.* A number of propositions have been made looking to the application of the peroxides of the rare metals in the textile industry. In 1898, a process was submitted to the Société Industrielle de Mulhouse in a prize essay. According to Kosmann, colors are produced by simply boiling the web with solutions of cerium salts, and then treating it with an ammoniacal