of platinum and the other precious metals radioactive suggest to us that such a grave step should be avoided – at least for so long as natural supplies of the platinum group metals can keep pace with industrial needs. The platinum mines do in fact possess the capability of expansion to meet such increased demands. This makes it unnecessary to consider using fission metal at present (5).

Finally we cannot advocate the use of materials which might raise rather than reduce the amount of environmental pollution.

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Dimensionally Stable Electrodes

PAPERS AT THE ELECTROCHEMICAL SOCIETY MAY MEETING

Platinum metals have many and diverse applications in electrochemistry; hence it was no surprise that they formed the subjects of several papers at the May meeting of the Electrochemical Society in Los Angeles. Of particular interest is the fact that three of these papers dealt with the dimensionally stable electrodes under development by Oronzio de Nora-Impianti Elettrochimici of Milan.

Dimensionally stable electrodes preserve their shape and voltage characteristics even under the most severe conditions of anodic attack prevailing in brine electrolysis, whereas the graphite electrodes generally in use at present are eroded and require frequent maintenance to keep voltage losses to a minimum. The dimensionally stable electrodes consist of a thin film of ruthenium oxide deposited on titanium and were developed from the work of H. Beer, of Magnetochemie N.V. in the Netherlands.

Vittorio de Nora described at Los Angeles the characteristics and advantages of dimensionally stable electrodes. After fabrication of the titanium it is coated with ruthenium oxide, which has low overvoltage and good corrosion resistance. The main applications of these electrodes have been in chlorine and chlorate production where a saving in electrical power consumption of over 20 per cent is claimed. Chlorine produced by this means is purer, no further plant to eliminate oxygen and carbon dioxide being required. Hydrogen content is less too. Furthermore, the anodes tolerate much less pure brine feed so that new plant can be constructed more cheaply. Such electrodes have been operating for more than two years, apparently with no reduction in performance.

De Nora suggested that the electrodes could be adapted to electro-organic oxidation processes and to the electrowinning of such metals as copper and cobalt.

H. S. Holden and R. E. Loftfield, of Electrode Corporation, reporting on practical problems of introducing dimensionally stable electrodes to the chlor-alkali electrolysis process, said that it was possible to make them compatible with the widely differing operating conditions found in commercial mercury and diaphragm cell rooms.

M. M. Jaksic, from the Yugoslav Institute of Chemistry, Technology and Metallurgy described how, on the basis of kinetic, hydrodynamic and polarisation measurements, a chlorate cell was scaled up from 2.0 A rating load to an optimum industrial rate of 40,000 A with efficient operation still possible at 60,000 A. The optimum rate was obtained with an anode current density of about 30 A/dm^2, which gave a current efficiency of 96 to 98 per cent at 80°C and low overvoltage.

Two other related papers were also of interest. C. C. Lu, K. Fueki, T. Mukaibo and S. Asakura reported that periodic pulse activation of the platinum anode during brine electrolysis maintained its lower over-voltage indefinitely, while E. H. Cook and M. P. Grotheer showed that platinum anode weight loss during sodium perchlorate production depends on the fraction of sodium chlorate converted.