losses and is shown in Table III. It has been assumed that all the ruthenium released by dissolution of the chromium remains on the surface of the alloy. As expected, the table shows that the ruthenium accumulated is proportional to the active dissolution time. It is not, however, proportional to the ruthenium content of the alloy in the range being considered because of the greater corrosion resistance of the richer alloys. This may reduce the amount of ruthenium accumulating on the surface of a rich alloy to a lower value than is observed for the less noble alloys.

Previously it has been shown (8, 9) that the noble metal forms separate islets on the surface of the alloy rather than a homogeneous layer. The surface coverage by such microcrystals is not high and we have estimated a value less than one per cent of the total surface. It can thus be understood why the noble metal does not affect the kinetics of active dissolution of the alloys.

Conclusions

It has been shown that ductile chromium alloys with additions of 0.1 to 0.4 per cent of osmium, ruthenium or iridium are stably passive for a wide range of temperatures and sulphuric acid concentrations, and they display high corrosion resistance.

In addition the self-passivation region for a particular alloy composition, and the tendency to repassivate, is reduced by the presence of chloride ions.

Finally, the rate of dissolution of chromium-ruthenium alloys in the active state decreases with increasing ruthenium content in the alloy. Ruthenium accumulating on the surface of the alloy during the corrosion process has no appreciable effect on the anodic dissolution process but does play a major role in shifting the corrosion potential positively, and thus in making the alloy passive and corrosion resistant.

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Advances in Platinum Metallurgy in Russia

Physical Metallurgy of the Platinum Metals BY E. M. SAVITSKII, V. P. POLYAKOVA, N. B. GORINA AND N. R. ROSHAN, Mir Publishers, Moscow, 1979, 395 pages, available from Pergamon Press, £20

Some three years ago a book under the above title was published in Russian and briefly reviewed in this journal (*Platinum Metals Rev.*, 1976, **20**, (3), 99). An English version, revised from the earlier edition and translated by I. V. Savin, is now available.

The volume is again contributed by four leading workers in the laboratories of the A. A. Baikov Institute of Metallurgy of the U.S.S.R. Academy of Sciences and deals fully with the physical metallurgy and metal physics of the platinum metals, with a number of tables of reference data of use to industrial users and research workers.

A number of additional references have also been included in this second edition.