specimens and fracture mechanics test techniques. The fatigue crack growth data measured in air follow well the prediction made earlier, based on the modulus correlation for fatigue crack growth rates as a function of the cyclic stress intensity range and the elastic modulus. From this it may be expected that some platinum metals may have the highest resistance to fatigue crack growth of all metals. Vacuum as a test environment may result in crack growth rates even lower than predicted by the modulus correlation. This may be due to partial rewelding of the fatigue cracks and to crack branching on a micro scale, as observed already with platinum and palladium.

A corresponding study of the metals rhodium, iridium, osmium, ruthenium and rhenium would be highly interesting. In some of these metals, the fracture toughness would have to be taken into consideration.

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New United Kingdom Refinery for the Platinum Metals

A new multi-million pound plant for the refining of the platinum metals is to be built for Matthey Rustenburg Refiners (U.K.) Limited, the refining company owned jointly by Rustenburg Platinum Mines (Pty) Limited of South Africa, and Johnson Matthey.

Instead of employing selective precipitation for the separation and purification of the individual platinum metals the new plant will employ a novel process incorporating solvent extraction. This has been researched and developed at the Johnson Matthey Group Research Centre and in the Development Department of Matthey Rustenburg Refiners, at Royston, where pilot plant trials have generated the design data for the new plant.

The process reduces both the number of refining stages and the time required, while it also yields higher purity products than the conventional process. In addition, the fundamental change from selective precipitation to solvent extraction will enable increased automation to be utilised in the refinery.

It is anticipated that construction work will be completed in late 1982, and that the plant will be operating early in 1983.