large damage spikes when heavier ions are used (Fig. 2). Slip bands (6) are easily produced *in situ* by applying field stress to the heated specimen (Fig. 3). In tips with not too large radii single dislocations (7, 8) often do not move under the field stress, and their core structure and possible decoration with impurity atoms can be seen (Fig. 4). In platinum, iridium and rhodium a certain impurity, most probably oxygen, shows up as a bright blob with an apparent size larger than the metal atoms (Fig. 5).

There is also a promising application to the study of alloys. In random solute alloys field evaporation cannot produce the absolutely perfect surface geometry which is obtained with the pure metals. Randomness of distribution of the kind of nearest neighbours locally varies the binding energy at equivalent lattice sites (9). However, dilute alloys might be suitable for the study of short range order. Of the alloy systems with long range order, 50 atomic per cent cobalt-platinum is a most promising subject (9, 10) for field ion microscopy (Fig. 6).

The reason for neglecting so long the many opportunities which the platinum metals offer for field ion microscopy lies probably in the fact that this technique is fairly new and requires a skilful operator. With the recently increasing interest in this method of inquiry, the availability of an inexpensive commercial instrument (11) and the progress in image interpretation (12, 13) useful new information on the physical metallurgy of the platinum metals should be obtained in the not too far future.

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Disposal of Radioactive Residues

PHOSPHATE GLASS MELTED IN PLATINUM-LINED CRUCIBLE

During the reprocessing of spent fuel elements from nuclear reactors, highly toxic radioactive fission products are accumulated as waste, which must be carefully stored and controlled for centuries. Glass is being studied as the medium for fixation at several establishments, and A. M. Platt and C. R. Cooley of Battelle-Northwest, Richland, Washington—until recently the Hanford Laboratories operated by the General Electric Company—have now constructed a pilot plant for final demonstration of the techniques involved.

In one technique phosphoric acid is added to a concentrated waste. After further concentration by evaporation of nitric acid and water, the waste is fed into a platinum-lined melter operating at about 1250°C, which further reduces the volume and converts the residue to a molten glass. This overflows into a storage vessel and solidifies. By this means stable nuggets of glass have been produced that resist leaching and incorporate up to 95 per cent of the radioactivity present in the original liquid waste.

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