

a balance between electronic and physical effects. Thus, while there is fairly general agreement that hydrogen donates its electrons to a collective metallic electron band there is still dispute as to the effect that this can have on the energetics of hydrogen absorption. It will be of future interest to see which of the physical or electronic factors have most relevance not only in the palladium-hydrogen system but in all transition metal-hydrogen systems.

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Cubane-type Platinum Metal Complexes

Recent X-ray diffraction studies have shown that the two platinum metal complexes $[(C_2H_5)_3PtCl]_4$ and $[(CO)_3OsO]_4$ have cubane-type structure. The eight carbon atoms of cubane, C_8H_8 , are situated at the corners of a cube. The structure of $[(C_2H_5)_3PtCl]_4$ is shown in the diagram to resemble cubane and that of the osmium compound is similar, the four osmium and four oxygen atoms being at alternate corners of a cube with the osmium atoms each bound to three terminal carbonyl groups.

In a joint communication Professor Sir Ronald Nyholm and Professor Mary R. Truter (University College, London) and C. W. Bradford (Johnson

Matthey Research Laboratories) point out (*Nature*, 1970, **228**, (5272, November 14), 648-651) that Pt(IV) and Os(II) are iso-electronic and that similar structures might be expected for other iso-electronic metals, e.g. W(O), Re(I) and Ir(III). In fact

$[(CO)_2(NO)Mo(OH)]_4$ is formally of this type with one NO and two CO groups on each Mo(O) atom, OH being the negative group. The NO group is assumed to act as a uni-positive radical. Furthermore Re(I) and Mn(I) form compounds $[(CO)_3M(SR)]_4$, which have structures with cubic symmetry. So far, however, no compounds of this type have been reported for the triad Co(III), Rh(III) and Ir(III).

