

do this by using a silver-palladium membrane permeable only to hydrogen.

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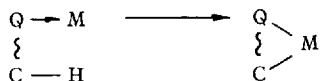
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Organometallic Compounds as Reagents in Organic Synthesis

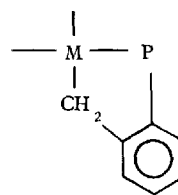
PAPERS AT THE CHEMICAL SOCIETY MEETING

One symposium during the Joint Annual Meeting of the Royal Institute of Chemistry and the Chemical Society held at the University of Sussex was devoted to organometallic compounds as reagents in organic synthesis. An increasing number of research groups is studying the reactivity of coordinated organo-ligands. During this meeting subjects ranged from the industrial use of organometallic complexes as catalysts in the production of organic compounds to simple stoichiometric reactions involving similar reagents. The bulk of this work was concerned with complexes of the transition metals.

Among the papers concerned with the platinum metals, B. L. Shaw (University of Leeds) concisely reviewed the metallation of C-H bonds, particularly of the type:



Q=P or N donor, i.e. a donor ligand which contains an "active" hydrogen. Several examples are known and in all these complexes the ligand functions as a chelate, bonding through both the donor atom (P or N) and a M-C σ -bond. Shaw has been examining systems centred on P atoms, where the tendency to form the M-C bond is enhanced by having bulky substituents on P. The best group to undergo metallation is the *o*-tolyl group illustrated. The facility with which such reactions proceed falls in the order *o*-tolyl > *p*-tolyl > phenyl > *n*-propyl



and for the other ligands on the metal as Me > I > Br > Cl.

D. Clark (Imperial Chemical Industries HOC Division) gave an explicit account of the problems encountered in the vinyl acetate process involving palladium-copper catalysts. He recounted much of the current thought behind the process and described the effect of trace amounts of Cl⁻ on the chemistry involved. In passing he mentioned that Pd^I had been observed although the precise nature of the derivative was not considered.

R. F. Heck (Hercules Inc., Wilmington) gave a most impressive account of the variety of arylation, alkylation, and carbo-alkoxylation reactions that may be carried out with organo-palladium compounds. Essentially he was concerned with the reactivity of the highly active species (RPdX) and the substitutions that may be carried out at unsaturated carbon atoms using this reagent. Many reactions depending on R and the substituents on C=C were described. High yields of olefins are reported (75 per cent). If CuCl₂ is present Pd⁰ is reoxidised to Pd^{II}; hence reactions may be catalytic in palladium.

B. F. G. J.