

One of the new Johnson Matthey platinum-wound semiconductor diffusion furnaces in use in the research laboratories of The Plessey Company (U.K.) Limited at Caswell. A charge of silicon slices is being positioned in the hot zone of the furnace prior to the diffusion heat treatment operation.



The furnace is 37 inches long and has a bore of $2\frac{1}{2}$ inches. The axis of the bore of the furnace is 63 inches above floor level.

This furnace is ideal for semiconductor diffusion processes that are carried out at fixed temperatures. Further development is

being directed towards achieving a zone uniformity of better than $\pm 0.5^{\circ}\text{C}$, to increasing the maximum operating temperature, and to providing a temperature programming and recording device.

J. W. G. B.

The Isomerisation of Olefins

CATALYSIS BY PALLADIUM COMPOUNDS

During an experimental study of the Wacker process carried out by Dr M. B. Sparke and his associates at B.P. Chemical Co. Ltd, Sunbury-on-Thames (M. B. Sparke, L. Turner and A. J. M. Wenham, paper AB4-30, presented at the I.U.P.A.C. conference, London, July 1963), it was observed that if the reaction was arrested before completion the original olefin used had isomerised. The isomerisation process was further investigated and was found to proceed rapidly under mild conditions: thus in the case of methyl pentenes and n-hexenes, the thermodynamic equilibrium mixture of isomers was formed when the olefin was refluxed

with catalytic quantities of palladous chloride for $\frac{1}{2}$ to 2 hours. No side reactions were observed.

The induction period which was observed when palladous chloride was used disappeared when ethylene palladous chloride or bis-benzonitrile palladous chloride was used instead. The mechanism of the reaction was not definitely established, but the migration of the double bond in the olefin molecule was shown to proceed stepwise along the carbon chain. Palladium bromide complexes and π -alkenyl-palladium complexes were virtually inactive, but ethylene platinous chloride had a definite but low isomerisation activity.