mechanism is analogous to that which is commonly used to explain the operation of normal transition metal superconductors (7).

Since polarisation involves merely the movement of a single electron in the side chain, rather than the vibration of comparatively massive metal atoms, high transition temperatures are to be expected from these organic long chain compounds. Little suggests that room temperature superconduction should theoretically be possible with the right type of molecule and concludes that dyes similar to diethyl-cyanine iodide, which is readily ionisable, should form a suitable base for the side arms component.

Although structural analogies can be drawn between these organic molecules and the square planar platinum complexes being studied at Johns Hopkins, the prospects for room temperature superconductivity are still very remote. The progress so far made, however, should not be underestimated and in this connection it may be of interest to mention the anisotropic electrical properties of the mixed oxidation state compound $[Pd^{II}(NH_3)_2Cl_2,Pd^{IV}(NH_3)_2Cl_4]$ now being studied by workers at the University College of North Wales (8). This compound has a chain structure with chlorine atoms bridging alternate Pd^{II} and Pd^{IV} atoms. The resistivity along the metallic axis is, however, approximately nine orders of magnitude higher than that found in Perlstein's compounds, due no doubt to the bridging halogen atom.

At the present time the importance of Professor Perlstein's work resides in the improved understanding it provides into the nature of the chemical interactions involved in square planar platinum complexes. The intimate relationships between his own molecules and those of Little might well be fruitful, however, and future developments will be awaited with interest. A. S. D.

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Miniature Palladium Diffusion Tubes for Chromatography

The use of palladium to purify hydrogen is well known throughout industry and Johnson Matthey have developed units capable of handling up to many thousands of litres per hour.

At the other end of the scale the California Institute of Technology's Jet Propulsion Laboratory at Pasadena has devised a miniature gas chromatograph with hydrogen as a carrier gas. A minute palladium tube allows the hydrogen to be removed as the gas stream emerges from the chromatograph column, the components of interest remaining with a second carrier gas for transmission to a mass spectrometer. Here a silver-palladium alloy tube removes the remaining hydrogen and samples arrive at the mass spectrometer without loss. The aim of the Laboratory is to design a miniature gas chromatograph/mass spectrometer for use in future space probes landing on Mars to analyse the atmosphere of the planet.

Triangle Environmental Corporation of Raleigh, North Carolina, has adapted this work in its Protran concentrator for use with an ordinary gas chromatograph employing a mixed hydrogen carrier gas. The concentrator follows the chromatograph column and hydrogen passes out of the system through a selectively permeable palladium membrane. The sample becomes concentrated in the remaining gas which passes to the detector. It is claimed that chromatograph sensitivity is increased by up to 30 times or more.