ceptibilities (from nuclear magnetic resonance) was shown by Dr H. Montgomery (Argonne) and Dr C. Froidevaux (Orsay).

Some of the new theoretical aspects were then presented. Dr S. Doniach (Imperial College) introduced the ideas of wave-vector and energy dependent susceptibilities and explained how the long range effects in palladium lead one to expect spin fluctuations of long lifetime. These can be responsible for real scattering effects (of neutrons, as discussed later by Dr R. Lowde (AERE) for nickel above its Curie temperature, and electrons) and for renormalisation effects which are seen in enhanced specific heat effective masses. (A great deal of discussion took place at various times during the Conference of the magnitude of this enhancement; the theoretical and experimental consensus being that a factor of much more than two is unlikely for pure palladium, although data of Dr C. A. Mackliet (NRL) for **Pd**-Ni alloys are strong evidence for significant enhancement. There were also a number of discussions of how far changes in specific heat on alloying should be ascribed to changes in this factor and how far to changes in band structure).

Dr J. R. Schrieffer (University of Pennsylvania) considered a number of aspects of spin fluctuation theory, including the role of the specific character of the band structure (Fermi surface multiplicity reduces the calculated mass enhancement) and the opposition provided by spin coupling effects to the establishment of superconductivity.

Thermal and Transport Properties

Specific heat data play a large part in discussions of both experimental and theoretical results, and Professor E. P. Wohlfarth (Imperial College) indicated the various ways in which the traditional interpretations of $\gamma T + \beta T^3$ form may require modification because of the partly localised-partly itinerant character of the *d*-electrons in palladium and the types of spin ordering that can be set up in alloys. He also reminded us that anomalous temperature dependence can be found for the γ of good old-fashioned Bloch electrons if the density of states varies very rapidly with energy.

The final session was devoted to transport properties. The writer looked at the history of our view of them and concluded that the frame of the traditional picture could be kept although the objects inside it had changed their form and number, and scattering by paramagnons rather than individual *d*-electrons was reponsible for the T^2 term at low temperatures.

Dr D. Greig (University of Leeds) showed thermopower data for alloys that not only fitted the old frame but even the much-abused rigid band model.

Paramagnon scattering in electrical resistivity was the subject of theoretical contributions by Dr M. J. Rice (Imperial College) and Dr P. Lederer (Orsay) who, using different models, arrived at remarkable agreement with the results found by Dr Schindler. These results showed a very large and convincing increase in the T^2 term as nickel was added to palladium, with a consequent increase in exchange interaction effects.

Differential Thermal Analysis in Platinum Equipment

Differential thermal analysis of volatile materials in contact with thermocouple junctions has hitherto proved impossible, but work by A. D. Russell at the Building Research Station (*J. Sci. Instrum.*, 1967, **44**, (5), 399) has now extended this technique to such samples by encapsulating them in a small platinum tube which, with a platinum wire welded to one end, forms one limb of the thermocouple, a 10 per cent rhodium-platinum wire forming the other limb. The reference junction containing an inert material is constructed similarly. Both junctions are protected by a platinum shield, and the alumina tubes carrying the thermocouple leads are sheathed in platinum. The apparatus has shown fast response and accurate results with calcium fluoride, which melts about 1413°C, and with volatile systems involving dicalcium silicate.