the second radiation constant, of 0.014388 metre kelvin. The numerical values of temperature in this range show a net increase over the 1948 values, the higher value of the gold point causing an increase and the higher value of c_2 a decrease.

The values of the freezing points of the metals relevant to this discussion and given either as defining fixed points of the temperature scale or in the list of secondary fixed points are set out in Table II with the corresponding IPTS–48 values for comparison.

Table II
New Freezing Points of Metals

	IPTS–68	IPTS–48
Silver	961.93°C	960.8°C
Gold	1064.43	1063
Palladium	1554	1552
Platinum	1772	1769
Rhodium	1963	1960
Iridium	2447	2443

The freezing points of silver and gold are defining fixed points of the Scale and therefore the temperatures assigned are the best available values of thermodynamic temperature. The other values in Table II are obtained from the IPTS–48 values corrected according to the differences in Table I and then rounded to the nearest kelvin.

The IPTS–68 embodies the decision of the CIPM to discontinue the use of "degree kelvin, symbol °K" in favour of the "kelvin" to describe the unit of thermodynamic temperature which is defined as "the fraction 1/273.16 of the temperature of the triple point of water". It is appropriate to refer to a temperature difference in kelvins even when the temperatures are expressed in degrees Celsius, and this practice has been followed in the text of the Scale.

The full text of the English version of the IPTS is obtainable from Her Majesty's Stationery Office. The official French text is obtainable from the International Bureau of Weights & Measures, F92, Sèvres, France.

Palladium-Titanium Alloy in Chemical Plant

The natural resistance of titanium to corrosion in oxidising conditions has been extended to reducing conditions by the addition of small amounts of palladium, and the wider use of titanium in chemical plant which this permits has been the subject of comment in this journal, most recently on the work of Takamura in Japan (1).

Whereas Takamura used the 0.13 per cent palladium-titanium alloy in hot concentrated chloride solutions, W. R. Fischer, of Friedrich Krupp, Essen, has now shown that the Krupp standard alloy containing 0.2 per cent palladium is most generally useful in extended tests with a number of chloride solutions (2). Adequate protection against crevice corrosion and pitting was obtained. However, in exceptional cases an alloy with more than 0.2 per cent palladium may be necessary where particularly awkward angles occur in fabricated chemical plant.

Fischer measured weight losses and potentials of palladium-titanium alloys with 0, 0.1, 0.5, and 1.0 per cent palladium in hot sulphuric acid and hydrochloric acids and in concentrated chloride solutions. His results show that 0.1 per cent palladium is inadequate to give titanium protection in reducing conditions but that 0.5 and 1.0 per cent alloys both give sufficient protection.

He warns that pilot tests to determine the most suitable palladium content are necessary in extreme conditions, where 0.2 per cent is insufficient. However, short-term tests may be inadequate as time is needed for the formation of the palladium-rich protective film.

The weldability of the alloys is comparable to that of ordinary titanium but the usual precautions are necessary. Pure dry argon should be used to prevent access of oxygen and nitrogen to the weld and iron and other metallic impurities must be excluded.

Fischer adds that a special palladium-tantalum-titanium alloy has yet higher corrosion resistance, especially in non-oxidising acids, and is available for special purposes.

F. J. S.

1 *Platinum Metals Rev.*, 1968, **12**, (2), 53
2 W. R. Fischer, *Tech. Mitt. Krupp Werksber.*, 1969, **27**, (1), 19