the Te solubility to $In_{0.80}Te$; previously we reported that it extends to $In_{0.82}Te$. The results of superconductivity tests on these specimens are given in Table 1.

The lattice constants of all specimens are listed in Table 1 and plotted vs. composition in Fig. 1.* On the In-rich side, there is practically no change in lattice constant with change in In concentration; this was one of the reasons we thought earlier that solid solution on the In-rich side did not exist. Further, although excess Te enhances the odd-index X-ray reflections, excess In does not appear to do so. In fact, careful examination now shows that although we can just see the {111} reflection of stoichiometric InTe, it can no longer be seen in the photograph of $In_{1.15}Te$. Also, the stability at atmospheric pressure of these phases is greater, the greater the Te content; on the In-rich side, the stability is markedly less than that of stoichiometric InTe. Superconductivity tests on the In-rich specimens which had already begun to revert indicate that the composition tends to move toward the stoichiometric InTe with exsolution of In possibly containing dissolved Te.

Table 1. *Superconducting transition temperatures,* T_c, *and lattice constants,* a, *and carrier concentrations,* n, *for* $In_{1-x}Te$ *and* $In_{1+x}Te$ *compounds with* NaCl-*type structure*

$1+x$	T_C (°K)	a (Å)	$n \times 10^{-22}$/cm³
1·15	2·60–2·35	6·179 ± 0·005	1·34
1·10	2·80–2·55	6·182	1·45
1·05	3·41–2·95	6·181	1·58
1·015	3·51–3·25	6·178	1·67
1·00	3·45–3·20	6·177	1·71
$1-x$			
0·95	2·7 –2·5	6·14 ± 0·01	1·47
0·91	2·04–1·87	6·110 ± 0·003	1·28
0·87	1·55–1·40	6·081	1·09
0·83	1·15–1·09	6·055	0·88
0·82	1·06–1·02	6·052	0·83
0·80		6·040	

The X-ray data on the In-rich compounds indicate that the excess In atoms replace Te atoms. If Te vacancies were to occur, the intensity of the {111} reflection should first decrease and at about

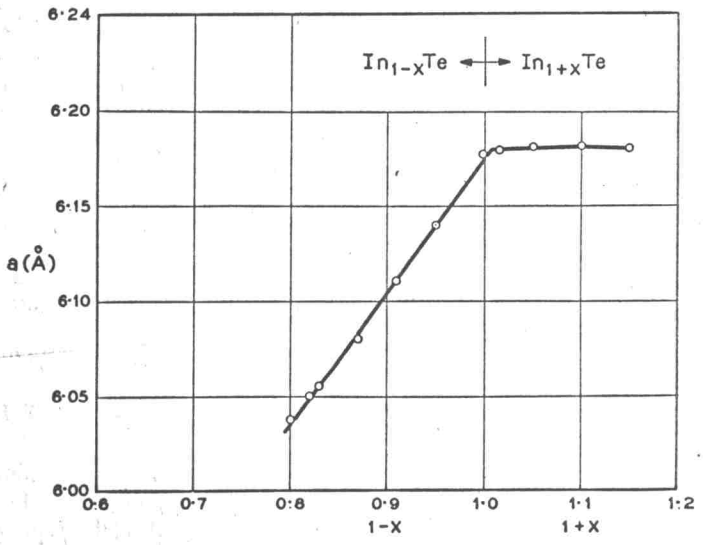

FIG. 1. Lattice constant vs. composition.

* A reconsideration of the plot of lattice constant vs. $1-x$ for the $In_{1-x}Te$ phases[1] indicated that a straight line could be passed through the points for $x \geqslant 0{\cdot}05$. This line extrapolates to $a = 6{\cdot}175$ Å for stoichiometric InTe (see Fig. 1). The back-reflection lines of the powder photograph of our original InTe were quite broad. We have since made a new specimen for which the back-reflection lines were much sharper and which gave $a = 6{\cdot}177$ Å.