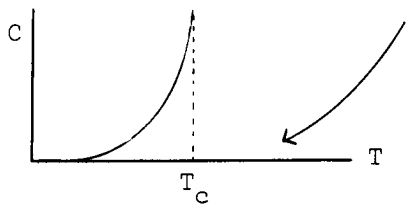
CHAPTER 22

1. Disordered state: S given by Eq. (2.48) with <f> as averaged over 3 Cu and 1 Au atom. Ordered state:
$S(hk\ell) = f_{Au} + f_{Cu}(e^{-i\pi(k+\ell)} + e^{-i\ (h+\ell)} + e^{-i\pi(h+k)})$ Consider the following reflections: (x ≡ refl. present)

Indices	Disordered	Ordered
100	no	x
110	no	x
111	x	x
200	x	x
210	no	x
211	no	x
220	x	x
221	no	x
222	x	x

2. $C = \partial E/\partial T$; now use E from Eq. (5): $E = E_0 + 2NUP^2$. Thus $C_{config} = 4NUP(T)\ \partial P/\partial T$, and we recall that U is negative, as otherwise an ordered state does not occur.
From Fig. 7b,



in this region a treatment based on P alone gives $C_{config} = 0$. We should look at the short range order!