Page 214, equation (4.333)

Writing (4.209) in space gradients gives:

$$\sum_{\beta=1}^{n-1}\sum_{\gamma=1}^{n}\omega_{\beta\gamma}\mathrm{grad}\rho_\gamma = -\mathrm{grad}P_n + \rho_n\mathrm{grad}\, g_n - \rho_n\frac{\partial \hat{f}_n}{\partial T}\mathrm{grad}\, T \qquad (1)$$

and similarly for (4.208):

$$\sum_{\gamma=1}^{n}\omega_{\beta\gamma}\mathrm{grad}\rho_\gamma = -\mathrm{grad}P_\beta + \rho_\beta\mathrm{grad}\, g_\beta - \rho_\beta\frac{\partial \hat{f}_\beta}{\partial T}\mathrm{grad}\, T. \qquad (2)$$

Henceforth, equilibrium is supposed and its symbol ^{o} omitted.

Insertion of (4.320), (4.327) and (4.317) into (1) gives (remember that $\mathrm{grad}\rho \equiv \mathbf{h}$ and $\mathrm{grad}\, T \equiv \mathbf{g}$):

$$\sum_{\beta=1}^{n-1}\mathbf{k}_\beta = -\rho_n(\mathbf{b}_n + \mathbf{i}_n) - \mathbf{k}_n + \rho_n\mathrm{grad}\, g_n$$

and with respect to (4.328):

$$\rho_n(\mathbf{b}_n + \mathbf{i}_n) = \rho_n\mathrm{grad}\, g_n. \qquad (3)$$

Similar substitution into (2) results in

$$\mathbf{k}_\beta = \rho_\beta(\mathbf{b}_\beta + \mathbf{i}_\beta) + \mathbf{k}_\beta - \rho_\beta\mathrm{grad}\, g_\beta,\ \beta = 1, ..., n-1$$

and

$$\mathrm{grad}\, g_\beta = (\mathbf{b}_\beta + \mathbf{i}_\beta),\ \beta = 1, ..., n-1. \qquad (4)$$

Equations (3) and (4) together (and not omitting the symbol ^{o}) form (4.333).