parameters[3] (decrease the Mn-Mn separation distance); thus one might expect T_c to be quite sensitive to pressure and to decrease with the application of pressure. As we shall report on in Sec. III, we have observed a decrease in T_c with increasing pressure for solid solutions in this concentration range.

Goodenough and co-workers have proposed a band model to explain some of the magnetic properties of MnAs.[1,5,6] The essential features of their model are a filled s-p bonding (valence) band and an empty s-p antibonding (conduction) band where the Fermi energy lies between the bonding and antibonding bands, and the Mn 3-d states lie near the Fermi energy. In the hexagonal FM phase the crystalline field splits the Mn 3-d states into three distinct energy levels labeled t_o, $t_\pm$, and e_g.[6] The t_o orbital is directed toward the near neighbor (nn) Mn along the c-axis, the two $t_\pm$ orbitals are directed toward nn Mn in the basal plane, and the two e_g orbitals are directed toward nn As. It is also argued that there is a critical Mn-Mn separation, R_c ~3.1-3.7Å, such that an itinerant description is used if the Mn-Mn separation is less than R_c and a localized description is used if the Mn-Mn separation is greater than R_c.[1,7] Since the Mn-Mn separation is less than R_c along the c-axis, the t_o and e_g levels broaden into narrow itinerant bands.[8] However, in the basal plane the $t_\pm$ levels are transitional since the Mn-Mn separation can be greater or less than R_c depending upon the crystallographic phase. Finally in their model, it is postulated that there is an intra-atomic exchange splitting between the up and down spin bands.

Over the entire concentration range of the solid solutions, the Mn-Mn separation distance along the c-axis remains less than R_c, and thus the t_o and e_g levels should be narrow itinerant bands. One might then expect that an itinerant electron model may describe the pressure dependence of the FM to PM transition. The weak itinerant electron theory as developed by Wohlfarth[9] and

Edwards and Wohlfarth[10] has been used to study the magnetic behavior of such materials as $ZrZn_2$[9] and the Invar alloys.[11] Recently, Wohlfarth and Bartel[12] have shown how to estimate electron correlation effects from pressure measurements for weak itinerant FM's. In Sec. II we extend the itinerant electron model to include the so-called strong itinerant FM's, and we shall show how pressure measurements may be used to determine a minimum value for the Stoner enhancement factor and consequently estimate the correlation effects. This model describes a second-order phase transition, and it will be used to analyze the experimental data presented in Sec. IV for only those solid solutions in the concentration range $x < 0.9$ where these materials exhibit a second-order behavior. In Sec. IV we shall also comment on how inclusion of electron-lattice and exchange-striction effects may be able to explain the first-order nature of the transition for $x > 0.90$.

It has been established in MnAs that above a critical pressure of 4 kbars the orthorhombic phase is stabilized.[1,6] According to Goodenough and Kafalas,[6] the existence of this critical pressure is related to a critical molar volume. Within this critical molar volume there is a high-spin to low-spin transition which they interpret as a "drastic" change in the intra-atomic exchange energy at a maximum critical bandwidth. Then as we substitute Sb for As the lattice expands and the bandwidth decreases so that a higher critical pressure should result for stabilizing the orthorhombic phase. Since the orthorhombic phase exists in the solid solutions only over the concentration range $0.90 \leq x \leq 1$, we have measured the pertinent part of the pressure-temperature magnetic phase diagram of the solid solution $MnAs_{0.90}Sb_{0.10}$. The maximum allowable Sb concentration was chosen to maximize the increase in critical pressure. These results will also be presented in Sec. III and discussed in Sec. IV.