change in composition of the eutectic with increasing pressure and the effect of higher pressures on the meritectic composition. From Newton's observation that the eutectic disappeared at about 30 kbars, the question arose as to whether gross changes in the phase diagram of the NaK system might be occurring at elevated pressures (above 30 kbars). And last of all, there was the hope that high pressures might force new compounds to form which could ultimately be examined in situ in the tetrahedral X-ray press.[9] Solid solubility limits would also be interesting to study, but they could not be determined, at least in the "dilute" alloy regions of the phase diagram (pure Na to 0.25 mole fraction K and 0.80 K to pure K), due to experimental difficulties to be discussed later.

A better understanding of the behavior of a relatively simple alloy system such as NaK under pressure will hopefully lead to an improved theory for more complex systems. In addition, one often wonders what possible practical applications might arise from research of this sort. Kulcinski, et al.,[10] have chosen NaK as a pressure transmitting medium in high pressure work. They used the NaK to transmit the pressure from a gas (helium) to a sample of irradiated uranium up to a temperature of 900°C at one kbar for periods of 100 hours or longer. It is conceivable that these useful properties (as well as the inertness of NaK to attack on stainless steel and other elements) may lead to applications of NaK as a pressure transmitting material at even