er, and 50 parts 2-ethoxy-
using CuK_α radiation and
used to obtain the (331)
r the half-height width was
ropolished for an additional
obtained, half-height width
peated until the minimum
obtained. Scans of the
40), and (531) peaks were
arameters were calculated
ey function. It was found
d be obtained either from
from the lattice parameter

oped by Hays[5], powder was
ogen atmosphere glovebox and
for 3 h. After mounting the
r covered with a cellophane
(511/333), (440), and (531)
nt method. The time neces-
a diffractometer scaler
ents of 2θ for each diffrac-
isteinen and Marburger[6],
d to each of the diffraction
he diffraction angle. The
rabola were at least 90% of
ntensity readings were ini-
ization and background.
little or no change in the
nd was therefore discontin-
ined from the Nelson-Riley

sure Testing - Density
emperature using a fluid
as the displacement medium.

consisting principally of
$C_8F_{16}O$.

Hardness data were obtained on a Wilson "Tukon" Microhardness Tester using a 2 kg load. To achieve a nearly isostatic pressure, specimens approximately 1/8 in thick with an initial area of one square inch were compressed on a 200 ton hydraulic press.

3 Results and Discussion

3.1 Lattice parameter - As illustrated in Fig 6-B, Hay's lattice parameter versus composition data are in good agreement with Ellinger's[1]. This is not surprising considering that homogenized and annealed powders were used in both cases. The data of Gardner, however, are displaced by a constant amount from Hay's and Ellinger's. The presence of a nonrepresentative specimen surface in the solid specimens used by Gardner was felt to be the main source of error since, for compositions less than 1.2 wt.-% Ga, alpha phase formation occurs during the mechanical polish. The effectiveness of removal of the alpha phase during electropolishing is now considered to be an important factor in the validity of the lattice parameter determination. Other than a possible difference in impurity content, no explanation can be given for the large difference between the data of Hays and Ellinger and those of Lee[7].

3.2 Density

3.2.1 Density versus composition data were obtained on alloy in both the as-cast cored condition and homogenized condition, Table 6-II. The linear relationship for the homogenized alloy indicates that the higher densities in the cored alloy for compositions below 0.99 wt.-% Ga were caused by the presence of alpha phase.

3.2.2 In Fig 6-C the above data are compared to those of Miller and White[7] and Elliott and Gschneidner[4]. The data from the three investigations are in reasonably good agreement.

3.3 Hardness

3.3.1 Hardness versus composition data were obtained on alloys in both the as-cast cored condition and the homogenized