The value of n^* passes through a minimum and then rises rapidly; no additional assumptions need be introduced to account for the observed minimum of n^* for cesium.

The experimental data are semi-quantitatively fitted using non-zero C_1's of the form shown in Fig. 4-1. A quantitative fit does not seem feasible at this stage; some theoretical guidance as to the form of C_1 is needed. It is a striking feature of the semi-quantitative fit that the magnitude of C_1 is much greater than that of A_1. It is also worth noting that while the consideration of non-zero C_1's was forced upon us by the direction of the change in n^*, a non-zero value of C_1 is also needed in order to account for the magnitude of the change in n^* in sodium and lithium, where the change in A_1 is very small. However, several difficulties should be considered.

Ham's data give the warping for sodium as zero both at atmospheric pressure and at 15,000 kg/cm^2 and make it impossible to attribute the change in n^* to the pressure dependence of A_1. On the other hand, the existence of the low temperature magneto-resistance implies, subject to the reservations mentioned in Section I, that there is a small anisotropy of the Fermi surface. If this is so, we expect the anisotropy to change with pressure; if C_1 is large enough the small change in A_1 might account for the observed effect.

The change in A_1 for lithium is small, (.004); to account for the observed change in n^*, about 5 percent, we choose a value for C_1 of $-.4 + 5A_1$ to obtain a sufficiently steep initial slope on the n^* vs. A_1 curves. The value of n^* for lithium at atmospheric pressure obtained from the curve for $C_1 = -.4 + 5A_1$ is .78; this is in agreement with the fact that the absolute value of n^* for lithium is substantially less than one (Table III-2). The absolute values of n^* for the other alkali metals are larger and much closer to unity; this suggests that the value of C_1 for lithium should be different from that for the other alkalis.

Most of the curves of n^* vs. A_1 have minima for values of $|A_1|$ less than the atmospheric pressure $|A_1|$ computed for cesium; this is not true for the curve with $C_1 = -.4 + 5A_1$, but the values of n^* at $A_1 = -.045$ are much too low. To fit the cesium data we must postulate that the atmospheric

pressure warping for cesium is considerably less than that given by Ham's data; a value for A_1 of -.01 or -.02 is probably needed. Since the work of Ham indicates that in cesium the Fermi surface nearly touches the zone boundary, it is possible that the drastic change in the behavior of n^* vs. pressure at the minimum is due to the beginning of contact with the zone face. In this case the discussion of the data in terms of the Cooper and Raimes description of the Fermi surface is unreliable. Since the only case in which a minimum in n^* vs. pressure has been observed may be explained in terms of the Fermi surface touching the zone face, it may be worth repeating that C_1 was introduced primarily to yield a decrease in n^* with increasing $|A_1|$ rather than a dependence showing a minimum.

From Fig. 4 - 1 we see that another result of anisotropic scattering times is that the values of n^* for $A_1 = 0$ are always less than one. Since the literature values of n^* for sodium and potassium were greater than unity we used our Hall effect data where thickness measurements were available to obtain the absolute value of the Hall constant and n^*. The results were presented in Table 3 - 2. Although the measurements of Studer and Williams [7] were made on double distilled material in glass and should be reliable, the large n^* for sodium, 1.17, is unacceptable. Ham's data indicate that the Fermi surface in sodium is spherical; the magneto-resistance and thermo-power experiments discussed in Sec. I also suggest that the surface is nearly spherical. If A and A_1 are zero and $C_1 \neq 0, n^*$ is less than one. Small A_1, of the order of -.01, and fairly large C_1, of the order of +.3, can make n^* greater than one, but only by about 2 percent. In view of this we suspect the value of n^* obtained from the data of Studer and Williams and prefer our own. The same objection applies to their potassium data, which give $n^* = 1.11$. The only other Hall data on sodium are the 1886 measurements of Ettingshausen and Nernst [8], which give $n^* = .98$. If we accept our values of n^* for sodium and potassium, the atmospheric pressure value of n^* is less than one for all the alkalis; the proposed explanation for this is the existence of a non-zero C_1.