be measured rather accu-

neasures ΔN_B, $\frac{\Delta A_N}{A_N}$ can be

ative change of cross-section
uantity desired.
e metals are summarized in
a very accurate way of meas-

Fermi surface with pressure

nge in astic otropy pressure $\frac{\partial \ln A)}{\partial \ln V)}\Big)$†	Distortion of Fermi surface with pressure
-0·4	..
0	..
0	Small
..	..
..	..
	$\left[\frac{\mathrm{d} \ln r_N}{\mathrm{d} \ln V}\right]$ distortion‡
-0·87	$-1{\cdot}1 \pm 0{\cdot}2$
-0·84	$-2{\cdot}1 \pm 0{\cdot}2$
-2·1	$-1{\cdot}5 \pm 0{\cdot}2$

C_{12}).
ling effects have been subtracted.

of the different cross-sections
increases the area of contact
the distortion of the Fermi
experimental work has been
hirber (1968), and Gerhardt

nts on K under the pressures
asured the relative change in
randomly oriented crystals.
mental error, to those to be
ermi surface to the relative

7. *Effect of Pressure on the Fermi Surfaces of the Monovalent Metals: Theory*

The theoretical situation is very much the inverse of the experimental one. Detailed calculations of the effect of pressure on the band structure of the alkali metals have been made by Ham (1962); on the other hand very little work has been done on pressure effects in the noble metals although, of course, the band structure of Cu at atmospheric pressure has been studied in detail (see, for example, Segall, 1962, and Burdick, 1963). (But see added note on p. 141.)

8. *The Alkali Metals*

Ham's calculations were based on the quantum defect method in which the details of the electron-ion potential in the free state are fed into the calculation directly through the quantum defect parameters which characterize the atomic spectra of the elements. The main purpose of the calculations was to illustrate the trend in the band structures in going through the alkali metal series. This purpose is particularly apposite in the present context because Ham's results can be compared, as we shall see in the next Section, with experimental results on electrical resistivity for all the alkali metals and also with the outcome of some of the theoretical calculations of resistivity in the same group of metals.

The results of Ham's calculations are very detailed: they give the shapes of the Fermi surfaces, the electron velocities, density of states, indeed all the band structure information not only at atmospheric pressure but over a wide range of volumes.

It is not yet possible to compare Ham's predictions about the influence of pressure on the Fermi surface of the alkali metals directly with experiment, but it is possible to test his predictions about the shape of the Fermi surfaces at *atmospheric pressure*, since these (except for Li) are now well established experimentally (Shoenberg and Stiles, 1964; Okumura and Templeton, 1965).

This comparison shows that Ham's calculations consistently overestimate the distortions of the Fermi surface except in Na. In Na, Ham predicted, and experiment has since confirmed, that the Fermi surface is very nearly spherical. In going towards the heavier metals the distortion, according to Ham, should be increased in the sequence K, Rb, Cs. In Cs, the distortion should be so great that the Fermi sur-