face should be nearly touching the zone boundaries. Likewise in Li, distortion of the Fermi surface would be large and comparable to that in Cs. The experiments have shown that in K the Fermi surface is slightly more distorted than in Na though still very close to a sphere; the radial distortion is about 1 in 10^3. In Rb, the distortion amounts to about 1% in radius and in Cs (Okumura and Templeton, 1965) to only about 5%. In lithium (Stewart *et al.*, 1964) the Fermi surface is known only from positron-annihilation experiments; these indicate a radial distortion, as in Cs, of about 5%. We see, therefore, that the calculations give the right trend of distortion among the alkali metals, although numerically the agreement is not too close. One might, therefore, expect a similar result for the pressure dependence: i.e., that Ham's predictions would be qualitatively correct, but might overestimate the effects. This would imply that the Fermi surfaces of Li and Cs would be particularly susceptible to change under pressure. So far, however, no experimental evidence on these two metals is available. As we shall see below, however, Ham's calculations have been used with some success to calculate changes of resistivity under pressure.

9. *The Noble Metals: Theory*

Segall's calculations of the Fermi surface of Cu at atmospheric pressure illustrated the importance of the low-lying fully occupied *d* band on the shape of the Fermi surface. Segall emphasized that the interaction between the *d* levels and the *sp* energy bands depends on the symmetry direction under consideration. It is particularly strong in the [110] directions. Where this interaction can occur its effect is illustrated in Fig. 15. From this Figure it is clear that if the Fermi level lies above the general average energy associated with the *d* levels, the effect of this interaction is to push the E–k curve of the *s* like electrons in towards the origin. This means that compared to the free electron sphere, the true Fermi surface of the noble metals tends to be pushed in in the [110] directions. Such concave areas around the [110] directions are indeed found; they are particularly conspicuous in Au and Cu. Since in the monovalent metals, one electron per unit cell has to be accommodated within the Fermi surface, this inward bulging