strength of the δ function is β then the form factor can be represented by:

$$w(q) = \frac{-(4\pi ze^2/q^2) + \beta}{V_0\,\varepsilon(q)} \tag{31}$$

where V_0 is the atomic volume.

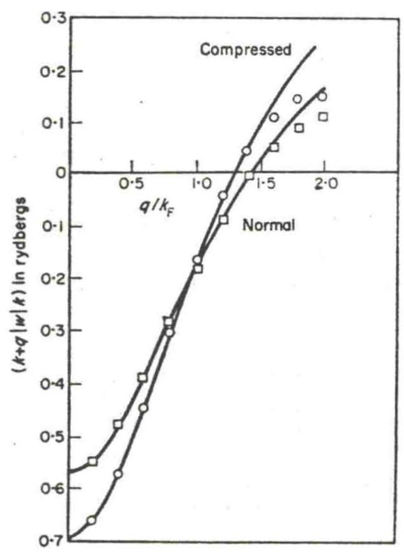

FIG. 8. Form factors for Al at normal volume and for lattice spacing reduced by 10%; the points are computed from the full pseudo-potential theory, and the curves correspond to results calculated from the model form factor. (From Harrison, 1965.)

An illustration of such a form factor is given in Fig. 8. This is as calculated by Harrison for Al at two different atomic volumes, the normal volume and that corresponding to a 10% reduction in lattice parameter. In the Figure the points have been calculated from the full pseudo-potential theory whereas the lines are derived from the simplified form factor expressed in equation (31). In the second derivation both z (= 3 for Al) and β are constant. The parameters that change with pressure are V_0, k_F and hence $\varepsilon(q)$. Thus apart from the volume itself the only change is in k_F, in the Fermi energy and hence in the screening.

We shall see below to what extent this simplified model, the point ion model, is successful in accounting for the effects of pressure on the