P_0. Equation (9) may also be written as

$$(P_0+L)\exp(v_0/J) = (P+L)\exp(v/J)$$
$$= \text{const.}[\exp(v_0/J)] = H \quad (10)$$

where const. is a constant indicated as (P_0+L) in equation (9). Two methods of the evaluation of the volume are possible once L and J are decided upon. First a value of P_0 may be chosen to correspond to the pressure at volume v_0 and the constant becomes (P_0+L). The second method may be indicated by equation (10).

Now H may be evaluated at each pressure used and the average value taken as the overall value of H. This method has two immediate advantages over the previous method; (*a*) all points are treated as equals in the evaluation of the constant and thus eliminating the weakness of allowing one pressure to dominate the constant; (b) once an average value has been determined the deviation of the individual values from this average may be computed and values having deviations greater than a set limit may be discarded and a new average computed. The theoretical volumes obtained by this approach appeared to agree better with the experimental volumes than did the volumes computed using the approach based on equation (9) for all the alkali metals. Table 2 gives the data obtained by this method and also indicates the number of points eliminated.

Figure 10 shows the specific volume versus pressure graph for the Bridgman data of lithium, sodium, potassium and rubidium. The points are the experimentally determined points of Br II and Br III and the solid line represents the value of the volume as calculated using equation (10) with the values of J and L used being those obtained for the combined Br II and Br III data.

Figure 11 shows the curves for the three sets of cesium data. Again the curves are derived from the J and L values and the points are experimental. From this graph it would seem that the fit is fairly good for the three sets of data.

The first method proved to be less satisfactory than that based on equation (10).

One other factor should be noted in Fig. 10, that is, that in all cases the Br II and Br III volumes blend into each other as a single set of data so that on consideration of the volumes, it is not easily seen that the two sets of data are not continuous. Once the derivative curve is used the discontinuity becomes apparent. That is to say the use of the derivative approach magnifies any difference between the sets of data if present.

Figure 12 shows the volume vs. pressure curve obtained for the Swenson data. An excellent fit is again evident.

Table 2. *Results of the evaluation of H of equation* (10)

Metal	Data	No. of pts.	$H\times10^{-6}$	Comments
Li	Br II	10	2·9710	No pts. discarded
Li	Br III	10	2·9459	1 pt. discarded
Li	Comb. Br II–III	19	3·6224*	No pts. discarded
Na	Br II	10	3·0521	1 pt. discarded
Na	Br III	10	2·3664	1 pt. discarded
Na	Comb. Br. II–III	19	3·2259*	3 pts. discarded
K	Br II	10	2·12937*	2 pts. discarded
K	Br III	10	6·2631	1 pt. discarded
K	Comb. Br II–III	19	5·1668	4 pts. discarded
Rb	Br II	10	1·8065	2 pts. discarded
Rb	Br III	10	1·8434	1 pt. discarded
Rb	Comb. Br II–III	19	1·97998*	No pts. discarded
Cs	Low P Range	7	0·58228	No pts. discarded
Cs	Medium P Range	4	0·58677	No pts. discarded
Cs	High P Range	5	2443·7	No pts. discarded

* Best choice values.