system vs. their atomic volume (or some power of it) a steady linear increase is observed, for example, in the sequence: Li, Na, K, Rb and Cs or Be, Mg, Ca, Sr, Ba and Ra. He therefore concluded that[6]: "If one may reason by analogy with alkali metals, solid xenon would be expected to be the most compressible solid element."

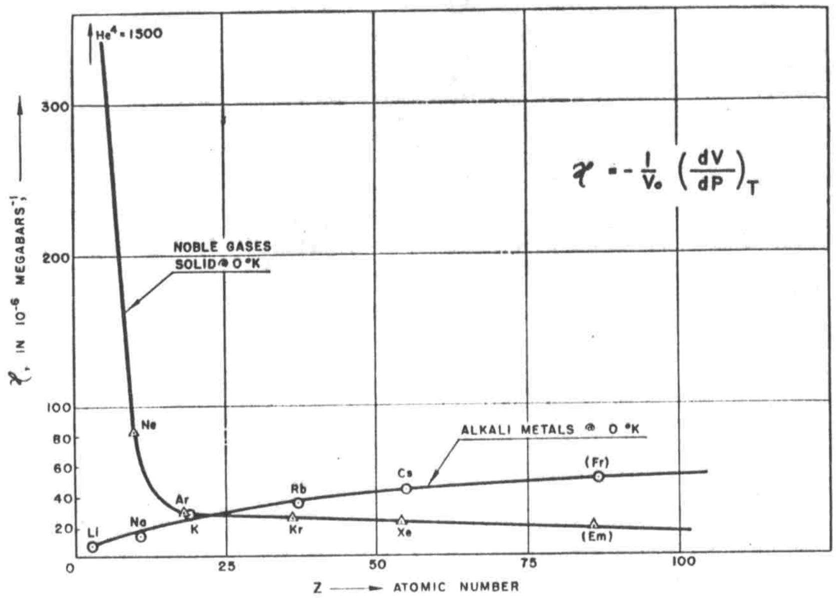

FIG. 1.—Compressibilities, κ, at 0°K (and 0 pressure) of solid noble gases and alkali metals.

It is only now, a third of a century later, that RICHARDS' diagram can be completed. The result is unexpected and, we believe, interesting and proves BRIDGMAN to be half right. The compressibilities of the solid noble gases and the alkali metals, both at 0°K, are plotted in Fig. 1 against their atomic numbers and in Fig. 2 against their respective atomic volumes also at 0°K. It is obvious from these figures that the noble gases behave in a remarkably different manner from all other families or groups of elements. We see that helium is the most compressible solid element known; neon is less so but still substantially more compressible than the alkali metals cesium and francium, the first being according to BRIDGMAN'S early measurement the most compressible element known. Argon is as compressible as potassium, but the higher noble gases, krypton, xenon and emanation, have definitely *smaller* compressibilities than the alkali metals immediately following them in the Periodic System.

Following BRIDGMAN'S procedure, we plot in Fig. 2 the compressibility of an element as *a function of its atomic volume*. In contrast to the alkalis, alkaline earth metals and other groups of the Periodic System, the noble gases again behave quite differently; krypton and its lower homologues have, for the same atomic volume *higher* compressibilities, while xenon and its higher homologues (including eka-emanation or element 118) are much *less* compressible.

(6) P. W. BRIDGMAN, *The Physics of High Pressure*, (1st. Ed) p. 115, Bell, London (1931); reprinted (1949).