From the values given above for the proportions in cubic centimeters occupied by the several elements, the atomic diameters are easily computed by the method used in the previous paper. The results are not far from those previously found, that for potassium chloride being almost exactly identical with the previous one, and are recorded in Table V. The present method, however, rests on a sounder basis and is open to fewer objections than the earlier attempt.

The application of the method to more complicated salts is less simple, but the underlying principles seem now to be clear, and to be placed upon a firm foundation. These principles are simply those indicated by the theory of atomic compressibility as outlined during the last 23 years and summarized in the Faraday Lecture of 1911 and the Presidential Address of the American Chemical Society in 1914. The present results enforce those conclusions without change in the ideas involved.

Many aspects of the behavior of solids and liquids seems to be clarified by these considerations. Some of them will receive further discussion in the near future.

Summary

The object of this paper is to evaluate the respective bulks of the elements in combination from the study of the compressibilities of the individual elements, and the contraction which occurs during combination. With the help of Bridgman's accurately determined pressure-volume curves for sodium and potassium, and my own earlier study of the compressibilities of bromine and chlorine, extrapolated by careful study of the nature of the curves (for which surprisingly concordant equations of the type $(p + P)$ $(v-B)=K$ are derived), the values of the average internal pressures existing in these salts, as well as the relative volumes of the components and the atomic diameters in combination were computed. Many conclusions are drawn from the outcome, and it is pointed out that the methods employed have wide applications and may lead to interesting results in these as well as in many other directions.

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NOTES

A Lecture Experiment Demonstrating Adsorption.—A quantity of a solution of malachite green oxalate is poured into a clean glass beaker of about 1 liter capacity, and immediately poured out. The beaker is then washed with a copious supply of cold water until the dye apparently has been completely washed away. The beaker is finally rinsed with 5 to 10 cc. of water which is transferred to a test-tube. Not a trace of color can be observed in the water

That an adsorbed film of dye does exist on the glass surface is shown by rinsing the beaker with 5 to 10 cc. of glacial acetic acid. The acid is transferred to another test-tube for comparison with the first. By holding a sheet of white paper back of the 2 test-tubes the difference in color is made sufficiently pronounced to be seen by a large audience. To preclude the possibility that the color of the second rinsing is merely accentuated by the presence of acetic acid, some of the acid may be added to the water in the first test-tube.

The experiment illustrates not only the fact of adsorption itself, but the effect of the solvent upon the equilibrium, and the rapidity with which adsorption takes place.

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Qualitative Analysis of the Iron Group.—The writer has found it feasible to modify the generally accepted analysis of the iron group and finds that the resultant method both shortens the procedure and increases the accuracy of the work of his students.

The following table of results shows that, with proportions rarely met, all separations are quite sharp. The numbers represent milligrams of the ion named.

Zn	Cr	Mn	Fe	Co	Ni
...	..	9	9	1.8	9
...	..	3.6	3.6	3.6	18
...	..	1.3	13.3	0.67	13.3
...	..	2	100	1	100
5	..	..	250	..	..
5	..	250	..	..	..
5	..	250	250	..	..
5	..	500	500	..	..
5	..	500	500	2	3
5	8.5	500	500	2	3
0.5	..	1	..	0.5	5
0.5	..	5	..	5	5
0.5	17	18	20	10	5
2	..	500	500	1	10

The method of W. A. Noyes[1] is used for the separation of aluminum, chromium and zinc, but his method for separating these metals from those of the iron division is modified by the use of a large excess of sodium hydroxide. As the table shows, this gives a sharp enough separation of the zinc to make it unnecessary to search for it in the iron division No difficulty has been met because of the solution of the iron division with the aluminum division.

[1] Noyes, "Qualitative Analysis," Henry Holt and Co., **1911**.