peared as a viscous, slightly pigmented oil. It bears no resemblance in physical properties to a crystalline product with a melting point of 69° claimed to be pure vitamin K by Doisy and co-workers [*Science*, **88**, 243 (1938)].

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Relation between Compressibility and Solubility of Metals in Acids

BY SOFRONIO BALCE

If we apply to metals the compressibility formula for compounds as given in an earlier paper,[1] the equation becomes

$$B_{\text{calcd.}} = \frac{V_a}{5.6 \times 10^{12} Z}$$

where $B_{\text{calcd.}}$ is the calculated compressibility, 5.6×10^{12} is a universal constant relating physical properties of substances to shrinkage in volume per unit volume incident to compound formation, Z is the valence of the metal elements, and V_a the atomic volume.

This calculated compressibility, however, does not check with observed values. But when the $B_{\text{calcd.}}$ calculated compressibility is less than the $B_{\text{obsd.}}$ observed value, the metal may be said to be comparatively soft and is subject to solvent action by non-oxidizing acids; and when the calculated compressibility is greater than the observed, the metal does not displace the hydrogen.

As may be noted in the accompanying table, the order in which the metals occur in the electromotive series can be approximated by dividing the deviation, $\Delta B = B_{\text{calcd.}} - B_{\text{obsd.}}$ by $B_{\text{calcd.}}$. The units of compressibility in the table are changed to cc./atmosphere.

TABLE I

SHOWING THE DIFFERENCES BETWEEN METALS THAT DISPLACE HYDROGEN FROM ACIDS AND THOSE THAT DO NOT

Metal	Z	Compressibility[a] in cc./atm. $B_{\text{calcd.}}$	$B_{\text{obsd.}}$	$\frac{B_{\text{obsd.}} - B_{\text{calcd.}}}{B_{\text{calcd.}}}$
Cs	1	12.9×10^{-6}	62×10^{-6}	3.81
Li	1	2.35	9.1	2.87
Rb	1	10.5	40.5	2.86
K	1	8.54	32.1	2.76
Na	1	4.3	15.8	2.67
Sr	2	3.05	8.1[b]	1.65
Ca	2	2.29	5.8	1.53
Mg	2	1.21	2.9	1.4
Al	3	0.61	1.34	1.2
Zn	2	.86	1.45	0.68
Cr	3	.45	0.73[c]	.64
Fe	3	.43	.654	.52
Cd	2	1.17	1.72	.47
Co	3	0.405	0.557	.375
Ni	3	.40	.542	.364
Sn	2	1.47	1.9	.29
Pb	2	1.65	2	.23
Cu	1	1.29	0.756	− .41
Ag	1	1.85	1.02	− .45
Pt	2	0.82	0.328	− .60
Au	1	1.845	.552	− .66
Ir	2	0.778	.244	− .89

[a] The figures on compressibility are from the "International Critical Tables."

[b] P. W. Bridgman, *Proc. Am. Acad.*, **70**, 285–317 (1935).

[c] T. W. Richards, "The Compressibilities of the Elements and Their Periodic Relations," Carnegie Institution of Washington, 1907.

(1) S. Balce, *Philip. J. Sci.*, **60**, 251–254 (1936) [*Chem. Zentr.*, **108**, II, 2113 (1937); British *C. A.*, A, I, 176 (1937); *C. A.*, **31**, 2881 (1937)].

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Note on the Solubility of Strontium Chromate

BY T. W. DAVIS AND J. E. RICCI

In connection with an attempted study of the solubility of strontium chromate in dioxane-water mixtures as solvents, which had to be abandoned because of the extreme slowness with which equilibrium is approached, some observations were made on the solubility of this salt in water.

The figure uniformly given for the solubility of strontium chromate at room temperature is the determination of Fresenius,[1] 0.12 g. in 100 g. of solution at 15°, which was a confirmation of work by Meschtschersky.[2]

The only values for other temperatures are those of Reichard[3]: namely, 0.465% at 10°, 1.000% at 20°, 2.417% at 50° and 3.000% at 100°. The last figure for 100°, is the one quoted in the "Handbook of Chemistry and Physics,"[4] in its current editions. These incredible figures are evidently the basis for the Noyes procedure for the qualitative analysis of the alkaline earths, in which one is cautioned against much washing of the strontium chromate precipitate which is then redissolved by passing hot water through the filter paper.

(1) Fresenius, *Z. anal. Chem.*, **29**, 418 (1890).
(2) Meschtschersky, *ibid.*, **21**, 399 (1882).
(3) Reichard, *Chem. Ztg.*, **27**, 877 (1903).
(4) Chemical Rubber Publishing Co., Cleveland, Ohio.