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REPORT OF THE INTERNATIONAL COMMITTEE ON ATOMIC WEIGHTS.

Received November 3, 1903.

THE International Committee on Atomic Weights[1] has the honor to offer the following report:

In the table of atomic weights for 1904 only two changes from 1903 are recommended. The atomic weight of caesium has been slightly modified to accord with the recent determinations by Richards and Archibald, and that of cerium in conformity with the measurements by Brauner. The value for lanthanum is still in controversy, and any change here would therefore be premature. The same consideration may also be urged with regard to iodine. Ladenburg has shown that the accepted number for iodine is probably too low, but other investigations upon the subject are known to be in progress, and until they have been completed it would be unwise to propose any alteration.

Many of the atomic weights given in the table are well known to be more or less uncertain. This is especially true with respect to the rarer elements, such as gallium, indium, columbium, tantalum, etc. But some of the commoner elements also stand in

[1] The original members of the committee take great pleasure in announcing the addition to their number of Professor Henri Moissan. They are confident that this increase will meet with universal approval.

need of revision, and we venture to call attention to a few of these. Among the metals, the atomic weights of mercury, tin, bismuth and antimony should be redetermined, for the reason that the existing data are not sufficiently concordant. Palladium also, on account of discrepancies between different observers, and possibly vanadium, for which the data are too few, deserve attention. Among the non-metals, phosphorus has been peculiarly neglected; and our knowledge of the atomic weight of silicon rests upon a single ratio. In the latter case, confirmatory data are much to be desired. Upon any of these elements new investigations would be most serviceable.

There is one other point to which we may properly call attention. Many of the ratios from which atomic weights have been calculated, were measured in vessels of glass, by processes involving the use of strong acids. In such cases the solubility of the glass becomes an important consideration, even when no transfer of material from one vessel to another has occurred. A slight conversion of silicate into chloride would cause an increase of weight during the operation, and so introduce an error into the determination. Such errors are doubtless very small, and still they ought not to be neglected. Now that vessels of pure silica, the so-called quartz-glass, are available for use, they might well replace ordinary glass in all processes for the determination of atomic weights. An investigation into the relative availability of the two kinds of glass is most desirable.

(Signed) F. W. CLARKE,
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Committee.

INTERNATIONAL ATOMIC WEIGHTS.

		O = 16.	H = 1.
Aluminum	Al	27.1	26.9
Antimony	Sb	120.2	119.3
Argon	A	39.9	39.6
Arsenic	As	75.0	74.4
Barium	Ba	137.4	136.4
Bismuth	Bi	208.5	206.9
Boron	B	11.	10.9
Bromine	Br	79.96	79.36
Cadmium	Cd	112.4	111.6
Caesium	Cs	132.9	131.9

		O = 16.	H = 1.
Calcium	Ca	40.1	39.8
Carbon	C	12.00	11.91
Cerium	Ce	140.25	139.2
Chlorine	Cl	35.45	35.18
Chromium	Cr	52.1	51.7
Cobalt	Co	59.0	58.56
Columbium	Cb	94.	93.3
Copper	Cu	63.6	63.1
Erbium	Er	166.	164.8
Fluorine	F	19.	18.9
Gadolinium	Gd	156.	155.
Gallium	Ga	70.	69.5
Germanium	Ge	72.5	71.9
Glucinum	Gl	9.1	9.03
Gold	Au	197.2	195.7
Helium	He	4.	4.
Hydrogen	H	1.008	1.000
Indium	In	114.	113.1
Iodine	I	126.85	125.90
Iridium	Ir	193.0	191.5
Iron	Fe	55.9	55.5
Krypton	Kr	81.8	81.2
Lanthanum	La	138.9	137.9
Lead	Pb	206.9	205.35
Lithium	Li	7.03	6.98
Magnesium	Mg	24.36	24.18
Manganese	Mn	55.0	54.6
Mercury	Hg	200.0	198.5
Molybdenum	Mo	96.0	95.3
Neodymium	Nd	143.6	142.5
Neon	Ne	20.	19.9
Nickel	Ni	58.7	58.3
Nitrogen	N	14.04	13.93
Osmium	Os	191.	189.6
Oxygen	O	16.00	15.88
Palladium	Pd	106.5	105.7
Phosphorus	P	31.0	30.77
Platinum	Pt	194.8	193.3
Potassium	K	39.15	38.86
Praseodymium	Pr	140.5	139.4
Radium	Ra	225.	223.3
Rhodium	Rh	103.0	102.2
Rubidium	Rb	85.4	84.8
Ruthenium	Ru	101.7	100.9
Samarium	Sm	150.	148.9
Scandium	Sc	44.1	43.8
Selenium	Se	79.2	78.6

Silicon	Si	28.4	28.2
Silver	Ag	107.93	107.12
Sodium...........	Na	23.05	22.88
Strontium	Sr	87.6	86.94
Sulphur	S	32.06	31.83
Tantalum.........	Ta	183.	181.6
Tellurium	Te	127.6	126.6
Terbium..........	Tb	160.	158.8
Thallium	Tl	204.1	202.6
Thorium	Th	232.5	230.8
Thulium	Tm	171.	169.7
Tin	Sn	119.0	118.1
Titanium	Ti	48.1	47.7
Tungsten	W	184.	182.6
Uranium	U	238.5	236.7
Vanadium	V	51.2	50.8
Xenon	Xe	128.	127.
Ytterbium	Yb	173.0	171.7
Yttrium	Yt	89.0	88.3
Zinc..............	Zn	65.4	64.9
Zirconium	Zr	90.6	89.9

THE VOLUMETRIC DETERMINATION OF ZINC.

BY W. GEORGE WARING.

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THE delicacy and precision of the ferrocyanide titration of zinc in properly conditioned solution is almost wholly negatived by inexact methods used for the separation of zinc from interfering elements and by misleading, contradictory and useless directions given in text-books.

An inquiry into the causes of extraordinary discrepancies in zinc determinations made by a number of public analysts, zinc works chemists, and college instructors upon identical samples has led the writer to prepare this paper, in which he endeavors first to discuss the sources of error peculiar to zinc determinations by the ferrocyanide volumetric methods, adding in the sequel, a description of the methods followed in his laboratory at Webb City, Mo., for the determination of zinc in various combinations.

SOURCES OF ERROR.

Losses may result from:

(1) Volatilization of zinc as chloride.