Notices on certain impurities in commercial sulphate of copper

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Washingtonite of Shepard, analysed by Mr. J. S. Kendall under the direction of Dr. Jackson, gave these results:—

		Oxygen.	Ratio.
Titanic acid.	25·28	4·82	1
Peroxide of iron	51·84	10·36	2
Protoxide of iron . . .	22·86	5·08	1
	<u>99·98</u>		

The atomic proportions are thus nearly one atom titanic acid, two atoms peroxide of iron, one atom protoxide of iron; or, a trititanate of iron, consisting of two atoms trititanated peroxide and one atom trititanated protoxide. If we unite the magnesia and lime with protoxide of iron in the following analysis of an ilmenite from Arendal*, by Mosander, we obtain precisely the same result. The crystalline form of the two varieties is also the same, and there can be no doubt of their identity as one species†.

Titanic acid.	24·19	
Peroxide of iron	53·01	
Protoxide of iron	19·91	} 20·92
Magnesia and lime . . .	1·01	

By referring to the analyses of ilmenite from other localities, it will be seen that the essential constituents, titanic acid and the two oxides of iron, so interchange with each as to produce different varieties, but all having the same crystalline form.

NOTICE ON CERTAIN IMPURITIES IN COMMERCIAL SULPHATE OF COPPER. BY MR. S. PIESSE.

One source of the sulphate of copper of commerce is the treatment of brass and German silver articles technically called dipping, which consists in plunging them for a short time into a mixture of nitric and sulphuric acids, an operation which removes the coat of oxide from the surface of the metal, and leaves the latter in a clean state proper for the reception of varnish* or other finishing. In time this dipping liquid becomes in great measure saturated, and after neutralization with old copper yields on evaporation in leaden pans a large quantity of sulphate of copper in crystals. According to the author not less than 100 tons of dipping liquid are thus disposed of annually at Birmingham by the makers of buttons and other arti-

* The hystatite of Breithaupt.

† An acute rhombohedron, P on P 86° 10', for the ilmenite. Shepard, employing varnished planes of the washingtonite, makes P on P 86°. Prof. Shepard founds the distinction on other than crystallographical characters; for, he says, it is not thus "shown to be distinct, in any essential manner, from the axotomous iron ore of Mohs, or from erichtonite (including ilmenite): indeed, it appears most probable that all these minerals are not only identical in their angles, but are isomorphous with specular iron."—Amer. Journ. vol. xliii. p. 365. The analysis, now, would seem to destroy the groundwork for any distinction.

cles. The crystallized sulphate of copper so obtained is often largely contaminated with sulphate of zinc, which may sometimes be seen in the form of slender white needles on the surface of the dark blue crystals, and in some of the applications of this salt may prove injurious. Sulphate of nickel, sulphate of lead, arsenic, and chlorides are also sometimes present.—*From the Proceedings of the Chemical Society.*

ON A NEW EUDIOMETRIC PROCESS. BY PROF. GRAHAM.

Professor Graham described a new eudiometric process for the rapid absorption of oxygen gas from atmospheric air and other gaseous mixtures containing oxygen. It consists in the employment of a solution in ammonia of a sulphite of the suboxide of copper and ammonia. This salt falls as a granular powder, when a stream of sulphurous acid gas is conveyed into a cold solution of the ammoniacal sulphate of copper. When dissolved in ammonia it absorbs oxygen with singular avidity, and when employed in this form in eudiometry gives results of considerable uniformity.—*From the Proceedings of the Chemical Society.*

EQUIVALENT OF CHLORINE.

M. Gerhardt observes, that M. Marignac has made some observations and experiments tending to show that the atomic weight of chlorine is not thirty-six times that of hydrogen, as he (M. Gerhardt) had concluded, but somewhat less. M. Marignac's conclusions are derived from the weight of chloride of potassium yielded by the calcination of chlorate of potash; to these results M. Gerhardt makes the following objections:—

It is the residue of chloride of potassium obtained, and not that of the oxygen gas, which is weighed; and from the following causes the quantity of chloride might be too small, and would diminish the atomic weight of chlorine:—a trace of moisture on the salt; a portion of chlorate or chloride carried off by the current of oxygen gas; if the oxygen were impure, and contained, as M. Marignac has stated, a trace of chlorine.

Thus, observes M. Gerhardt, all the errors which can be committed in these determinations are referrible to the chlorine, and give it in too small quantity.

From his experiments M. Gerhardt concludes, in opposition to those of M. Marignac, that the equivalents of chlorine, silver and potassium, are exact multiples of the equivalent of hydrogen, that is to say,—

Chlorine	36
Silver	108
Potassium	39

Journ. de Pharm. et de Ch., Avril 1846.