	Amount of color. Gram.	Amount of fiber. Gram.	Amount of pancreatine. Gram.	Duration of experiment. Hour.	Amount of fiber dissolved. Gram.
1	0.0	1	0.3	6½	1.0
2	1.0	1	0.3	6½	0.0
3	0.5	1	0.3	6½	0.0
4	0.25	1	0.3	6½	0.40
5	0.125	1	0.3	6½	0.60
6	0.062	1	0.3	6½	0.73

The solutions of tests 2 and 3 gave no precipitate with tannin. In all other tests the precipitate was either marked or heavy.

8. PANCREATINE AND METHYL ORANGE.

This color in all of the tests behaved like the last three colors described, completely stopping the action of the pancreatine in the two strongest solutions and retarding it to a marked extent in the weakest. The tabular statement would be similar to the last.

It seems then, so far as these four colors are concerned, that none interfere with both peptic and pancreatic digestion, but that each color interferes seriously with either the one or the other. What the action of other coal tar colors may be, can, of course, not be inferred from this limited number of experiments, but it may safely be said that bodies which have such a decided action in retarding the most important functions of the animal economy, cannot properly have a place in our daily food and drink.

[Contribution from the John Harrison Laboratory of Chemistry, No. 19.]

THE ACTION OF ACID VAPORS ON METALLIC SULPHIDES.

By Jerome Kelley, Jr. and Edgar F. Smith.

Received October 2, 1896.

Experiments made in this laboratory on the action of the vapors of hydrochloric acid upon the sulphide of arsenic proved that the latter is wholly volatilized. The purpose of the present communication is to record further observations along analogous lines. Thus, when washed and dried arsenic trisulphide is exposed to the action of hydrobromic acid gas, it volatilizes completely. Indeed the action commences in the cold with the formation of a liquid that passes out of the containing vessel upon the application of a very gentle heat. In evidence of this, two quantitative experiments may be given :

Arsenic sulphide taken. Gram.	Arsenic sulphide expelled. Gram.
0.2945	0.2941
0.4632	0.4628

Antimony trisulphide, like that of arsenic, is volatilized by hydrochloric acid gas. It was quite probable that a like deportment would be observed if hydrobromic acid gas should be substituted. This was found to be the case. When the gas came in contact with the sulphide it became liquid and volatilized as soon as a gentle heat was played upon the boat in which the sulphide was contained.

Antimony sulphide taken. Gram.	Antimony sulphide expelled. Gram.
0.1473	0.1469
0.0938	0.0935

Upon substituting stannic sulphide for antimony sulphide, an experience similar to that observed with antimony and arsenic sulphides followed. There was a complete volatilization with but a trifling residue, which proved to be carbon from filter paper that had adhered to the metallic sulphide.

Stannic sulphide taken. Gram.	Stannic sulphide expelled. Gram.
0.1880	0.1880
0.5527	0.5521
0.4174	0.4169

The oxides of arsenic, antimony and tin (at least in the stannic form) can be volatilized in a current of hydrochloric acid gas. This is also true of the sulphides of arsenic and antimony, but how the two sulphides of tin would act under like conditions was not known.

Experiments recently made demonstrate the perfect volatility of stannic sulphide in this way. With stannous sulphide it was found that by the continued action of the gas in the cold there followed a complete conversion into chloride without any volatilization. That the residue was the chloride was evident from its action upon a mercuric salt solution. The figures obtained in the several trials were :

Stannous chloride found. Gram.	Stannous chloride theory. Gram.
0.3544	0.3523
0.4893	0.4903

Several attempts were made to separate stannous and stannic sulphides by this procedure. The results were unsatisfactory. In order to drive out the stannic salt completely it is necessary to heat the mixture, and this caused a partial volatilization of the stannous chloride, so that quantitative results could not be obtained.

Comparatively few metallic sulphides have been studied in the direction indicated in the preceding lines, so that it is probable a wider application of the method will disclose interesting behaviors, and that probably new separations can be brought about in this way. The action of the vapors of haloid acids has also been tried on natural sulphides with a fair degree of success.

[CONTRIBUTION FROM THE JOHN HARRISON LABORATORY OF CHEMISTRY, NO. 20.]

TUNGSTEN HEXABROMIDE.

BY HERBERT A. SCHAFFER AND EDGAR F. SMITH.

Received October 10, 1896.

THE most recent work upon tungsten bromides is that of Roscoe,[1] who endeavored to prepare a hexabromide, but obtained instead a penta derivative from which the dibromide was subsequently made. By reference to the literature bearing upon this subject it will be noticed that bromine, diluted with carbon dioxide, was made to act upon tungsten metal exposed to a red heat. Experimental evidence is at hand that tungsten at high temperatures deoxidizes carbon dioxide, thus allowing ample opportunity for the production of oxybromides, which, in spite of the greatest care, are sure to appear in larger or smaller amount. The thought also suggested itself that possibly the "red heat" at which the action was allowed to occur might have been detrimental and have indeed prevented the formation of the hexabromide.

Hence, we determined to operate in an atmosphere of nitro-

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[1] *Ann. Chem.* (Liebig), 162, 362.