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On a New Mineral (Stibiotantalite).

By G. A. Goyder, F.C.S., Assayer, School of Mines.

[Read April 4, 1893.]

Some samples of this mineral were given to Mr. J. J. East, Registrar of the School of Mines and Industries, by Mr. Knox Brown, of Bunbury, West Australia, the latter explaining that although the sluiced tin-ore from the alluvial at Greenbushes appeared to the miners of a fair, even character as regards freedom from associated minerals, the assay values from Melbourne varied in a most irregular manner. Mr. East's attention was taken with part of the sample submitted, which had been called locally "pale tin" and "resin tin." On being submitted to a preliminary examination in the School Laboratory this was found to contain antimony, but did not appear to have the properties of any of the ordinary antimonial minerals.

Mr. East then handed it to me for analysis, the result of which was as follows:—

Tantalic acid, Ta_2O_5	51·13	per cent.
Niobic acid, Nb_2O_5	7·56	"
Antimony oxide, Sb_2O_3 ...	40·23	"
Bismuth oxide, Bi_2O_3	0·82	"
Nickel oxide, NiO	0·08	"
	99·82	"

From the above analysis it appears that the mineral consists essentially of tantalate of antimony, part of the tantalic acid being replaced by niobic acid, and part of the antimony by bismuth.

No record could be found in any of the text-books of mineralogy of any mineral constituted as above, and in none of the published analyses of the tantalates is there a trace of antimony reported.

Physical Properties, &c.

The specific gravity of different samples of the mineral was found to vary from 6·47 to 7·37, the latter being the S.G. of the sample analysed. All the specimens were waterworn, and although some of them, if not all, were crystalline, the form could not be determined. Fracture uneven to sub-conchoidal

with an adamantine lustre, which, after long exposure, appears resinous. Hardness, 5 to 5·5. Brittle. Infusible, and on charcoal *per se* yields only a faint sublimate. With soda on charcoal easily reduced to metallic antimony, the tantalic acid forming a fusible slag with the soda.

An analysis of the specifically lighter portion is being made, and I anticipate that this will contain a larger proportion of niobic acid, if indeed it should not prove to be principally a niobate.*

I propose the name of "Stibiotantalite" for this new mineral-species, which is expressive of its chemical composition.

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* The analysis of the second sample has been completed, and the lighter specific gravity found to be caused by an intermixture of impurities, principally silica; the relative quantities of tantalic and niobic acids and oxide of antimony being approximately the same as in the foregoing analysis.—G. A. G., April 24, 1893.