SCHEELITE IN NOVA SCOTIA.—BY A. L. MCCALLUM, B. SC., Halifax.

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The deposit under consideration is situated at the western boundary of the Moose River gold district, Halifax county, being about $1\frac{1}{2}$ miles west of the old Torquay crusher.

The first discovery made was a boulder containing a fairly large amount of tungstite. Up to the present no more of this tungstite has been found, but always unaltered scheelite.

The first scheelite drift was found in the bed of a small brook which runs through the property. Scheelite drift was found quite plentifully in this brook up to a point beyond which at that time we were not able to find more. At this point a cut was made in the bank with the result that the first scheelite vein was found. A small trial pit was sunk at this place and another one a little further east on the same vein.

The formation shown by this work was as follows: Very sharply defined "whin" (quartzite) walls with a three foot slate belt between, dipping at an angle of about 75° N. The vein is on the footwall and consists of a series of lenses of varying sizes. The vein-matter is composed of scheelite, quartz and a little mispickel (arsenopyrite). The vein-matter is very irregular in composition, varying from pure scheelite to pure quartz or pure mispickel, and all combinations of these three.

Subsequently drift was found north of this vein, and eventually three veins were found about fifty feet north. To the south of this first vein, ten veins in all have been opened up. Several of these at the points opened up are too low-grade to be of any value. The rest are all fairly high grade. On account of the great variations in the composition of the vein-matter, it is difficult to form an opinion of the average contents of the veins taken as a whole; but leaving out those that are too low-grade, the remainder will probably average between 30 and 50 per cent. scheelite.

So far, prospecting has been confined to a belt 200 feet wide north and south, and a distance about 1200 feet east and west. The total width of vein-matter in the 200 feet would be about 50 inches.

Wolframite has been known for centuries to German and Cornish tin miners. It was found by experience that when smelted with tin in the furnace it impeded the reduction of the tin and facilitated its scorification, so it was thought it ate up the tin, as the wolf eats the sheep. Hence the derivation of the word wolfram.

In Cornwall the miners termed it "call" or mock-lead on account of its great weight, thinking it contained lead. But the Swedish chemist, Scheele, proved in 1781 that this mineral, as well as another which he had called tungsten, contained a specific mineral acid now called tungstic acid, and that wolframite is essentially a tungstate of iron, and tungsten now called scheelite, is tungstate of lime.

These minerals were employed in 1840 by the English chemist Robert Oxland for the preparation of tungstate of soda to be used as a mordant in dyeing cloth, and as proposed by Versmann and Lyon Playfair, for the impregnation of vegetable tissues, linen and cotton, to render them non-inflammable and almost fire-proof.

Its greatest use is as an alloy with steel. Tungsten steel was first made in 1855 in Austria, and was introduced to the trade later by Musket, an Englishman. It makes armor plate very tough and difficult to fracture and split. In projectiles and high speed tools it forms an alloy which retains its temper at a red heat. It makes car springs stiffer. It increases the permanency of magnets and makes a more powerful response in sounding plates and wires for musical instruments.

It is commonly stated that it will take the place of carbon in producing hardness, but this is not true. It is more correct to say that it will assist carbon in producing hardness and therefore high tungsten steels may have a lower carbon.

No amount of tungsten or any other element will make steel hard in the absence of carbon or even when the carbon is low. The tungsten produces hardness by its effect on the condition of the carbon; that is, by helping to retain the carbon in its solid solution and not by any effect of its own. It is for this reason that a lesser amount of carbon will produce hardness in the presence of tungsten or other similar element.

A variety of bronze-powder is made by fusing potassium, tungstate and tin. It is also used for coloring glass and as a glaze for porcelain. Recently metallic tungsten is being used extensively in the manufacture of incandescent electric lamps. It is claimed that it uses only one-third the amount of current required by a carbon lamp, and that it maintains its rated candle power for 1,000 hours.