ANTHRAXOLITE FROM THE NORTHWEST TERRITORIES OF CANADA

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During the summer of 1927 Mr. W. J. Dean, a student at the University of Alberta, was engaged by a prospecting party in the vicinity of Great Slave lake in the District of Mackenzie, Canada. Among the specimens which he collected from the Precambrian rocks were some pieces of a black, shiny material. These have an appearance strikingly similar to our museum specimen of anthraxolite from the Sudbury district in Ontario. The term *anthraxolite* was first used by Chapman as a name for coal-like solids which are the end products of metamorphism of petroleum.[1]

The Sudbury anthraxolite was first described by Dr. Coleman over thirty years ago.[2] Since then several investigators at different times have reported the occurrence of coal in the Precambrian rocks of the Sudbury district. Coleman, in a recent article,[3] has drawn attention to this so-called coal, maintaining it to be the same material as he originally described as anthraxolite. His description of the Sudbury anthraxolite applies equally well to the material which the writer has on hand.

The anthraxolite from Great Slave lake is brittle and black in color and is lustrous on a fresh surface. At first inspection it may appear metallic, due to the lustre and also to the prevalence of cubical outlines which are commonly present. On closer examination these are found to be fracture surfaces. These cube-like particles are on the average less than one-half inch in diameter. When heated in a Bunsen flame the particles decrepitate.

Coleman states that the Sudbury anthraxolite occurs as a vein associated with quartz and a little pyrite. The specimens collected by Mr. Dean all show vein quartz as a common associate. The deposit from which they were taken occurs as a vein a few inches thick in metamorphosed fine-grained sedimentary rocks. Chalcopyrite, pyrite and arsenopyrite were found in the same vein associated with the anthraxolite and quartz. The location of this deposit is near the intersection of longitude 112°

[1] Coleman, A. P., *Am. Jour. Sci.*, Fifth Series, Vol. **XV**, p. 27, 1928.

[2] *Bureau of Mines of Ontario*, Bulletin No. 2, 1886.

[3] *Am. Jour. Sci., op. cit.*, p. 25.

with latitude 62° on the west side of Union island in the east end of Great Slave lake.

An analysis of selected fragments has been made and is tabulated below with that given by Coleman for selected material from the Sudbury district.

ANALYSES OF ANTHRAXOLITE

	(1)	(2)
Carbon	94.25	94.92
Hydrogen	1.26	0.52
Nitrogen	0.78	1.04
Oxygen	1.97	1.69
Sulphur	0.42	0.31
Ash	1.32	1.52

(1) Selected sample from Union Island. Analysis by J. A. Kelso.
(2) Selected sample from Sudbury. Analysis given by Coleman.

A proximate analysis of the same sample from Union island is given under column (1).

	(1)	(2)	(3)
Moisture	1.35	—	—
Volatile Matter	4.08	5.3	5.3
Fixed Carbon	93.27	64.7	74.2
Ash	1.30	30.0	20.5

No. (2) and No. (3) are two proximate analyses of samples from the Sudbury occurrence given by Coleman but these apparently were not made from the same sample as that used for the ultimate analysis.

The ultimate analyses of selected material from Union island and from the Sudbury district are strikingly similar and since the physical properties of both are so similar the writer is of the opinion that they are practically the same substance.

Another specimen of similar material was sent to the Department of Geology at the University of Alberta for identification a number of years ago. It came from Connor Creek, a rural district about 80 miles northwest of Edmonton, and was not suspected to be anthraxolite since this area is underlain by undeformed upper Cretaceous rocks. The specimen was set aside until more information on the geology of the district had been obtained. It is now known that there are frequent occurrences of Keewatin ice-sheet drift deposits in the Connor Creek district and apparently

this specimen is anthraxolite which has been carried to the Connor Creek district in the drift.

The general geology of the Northwest Territories of Canada has not been worked out in any appreciable detail and no correlation of the beds carrying anthraxolite at Union island with those at the Sudbury district can be attempted. The significant features of the two widely separated occurrences of anthraxolite is their similar mode of occurrence, their mineralogical associations and the fact that they occur in Precambrian rocks.