From the Mineral Inventory Files

The Oxford Tripoli Company Diatomite Mine at East New Annan

Most people aren't aware that Nova Scotia had a fairly lucrative period of diatomaceous earth mining between 1889 and 1955. This product, most commonly referred to as diatomite, is a mineral or rock formed by the accumulation over time of the shells of microscopic diatoms, an algae, that has thrived in many of our alpine lakes since the last ice age. Diatoms extract silica from the lake water to make their shells and, when they die, the shells sink and accumulate as beds up to a few metres thick and a few hectares in area.

Diatomite shells are essentially pure silica and very small. Each shell is permeated by microscopic pores and spine-like protrusions that together form a delicate, lace-like structure that is useful in many applications. The most notable use of diatomite is as a filter aid in the beverage industry for the clarification of wine, beer and fruit juices, and in water purification systems. Diatomite is also calcined (calcination involves the heating of a substance to its temperature of dissociation) and used as an absorbent: diatomite absorbs six times its dry weight. As a filler, diatomite is used in the tire-making industry and in concrete it makes a stronger, lighter product that is resistant to salt water erosion. Diatomite is an excellent, nontoxic, insect control agent on creatures such as slugs, ants and even bed bugs, which are killed by crawling over the razor sharp silica fragments.

Lakes with beds of pure diatomite are common in Nova Scotia, but the biggest and purest deposits are found in lakes and bogs of highland regions underlain by siliceous metasedimentary and plutonic rocks. The siliceous rocks provide a ready and continuous source of silica to the lakes via underground springs, and the cool conditions limit the number of competing organisms for nutrients. This allows the diatoms to dominate and, therefore, form deposits that are very pure.

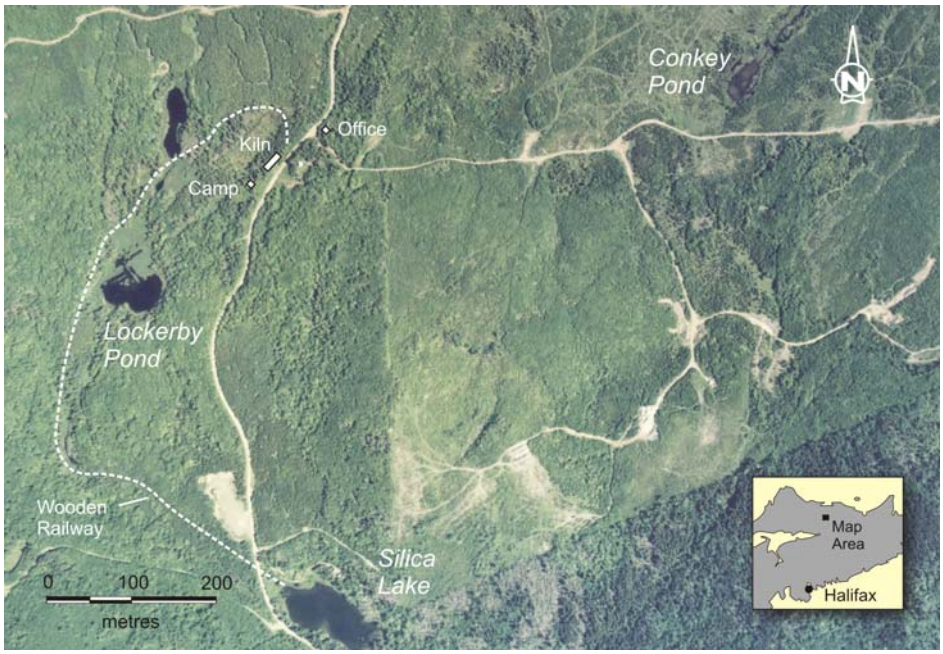

Figure 1. Workings of the Oxford Tripoli Company at East New Annan, Colchester County. Note remnant drag line scars in Lockerby Pond.

Mining of diatomite in Nova Scotia took place in many locations, but most notable were deposits on Digby Neck and in the Cobequid Mountains. A large deposit in Silica Lake at Castlereagh, high above Bass River, was developed by the Oxford Tripoli Company in 1889 and produced 540 tons of dry diatomite per year until 1923 when the deposit was exhausted. Oxford Tripoli then moved to East New Annan (Fig. 1) where they produced diatomite from several small lakes (one of which is also called Silica Lake) and bogs. This operation produced 7,700 tons of dry product between 1928 and 1940 when fire destroyed the plant. Oxford Tripoli sold their product to several markets, including a sugar refinery in Dartmouth, a cable and glass factory in England, and Goodrich and Goodyear Tire in the United States.

Extraction of the diatomite was done by a mixture of drag lines and hand digging. Typically, the lake would be drained, or at least lowered, and the material removed and transported to a centrally located plant where heating burned off organics and dried the product. East New Annan also had a calcining kiln.

A considerable resource of at least several hundred thousand tonnes of diatomite remains in Nova Scotia's lakes. The obvious environmental issues associated with extracting the diatomite, even using more modern methods, may be prohibitive to future operations. It should be noted, however, that even though the former mines operated without any environmental controls whatsoever, all of the lakes and ponds mined have recovered on their own. This fact should be considered toward the feasibility of using modern era methods to extract this diatomite resource which lies waiting for some keen entrepreneur.

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