



Michigan's Greenstone - Chlorastrolite

In 1972, the chlorastrolite became the official State Gem for Michigan. Chlorastrolite is a beautiful green mineral with a chatlyant "turtle-back" pattern. Don't feel too bad if you are unfamiliar with the name. First of all, it is quite uncommon. Gem varieties are only found in Michigan. Secondly, there has been some confusion over the correct name as well as its true identity. It has been considered to be a zoisite, a variety of prehnite and a variety of thomsonite. It has been called lotrite, kearsargeite, zonochlorite, lintonite, pumpellyite, chlorastrolite and greenstone. After much research, the IMA has ruled that the gem we are talking about is to be called "pumpellyite, variety chlorastrolite," - Michigan collectors call it by the common name, "greenstone".

Greenstone formed as small vesicle fillings in basalt. The usual size varies between 1/8 and 1/2 inch. Larger stones are found; however, the quality is usually poor in the larger sizes. Gem-quality stones larger than 1/2 inch are rarely ever found for sale and a stone of gem-quality larger than 3/4 inch is museum material. What is thought to be the largest chlorastrolite in existence is at the Smithsonian and measures 1-1/2 by three inches. Chlorastrolite is often found with epidote, thomsonite, chlorite and calcite. The nodules may be solid or hollow and may even be found with copper or silver inclusions.

Chlorastrolite occurred in the basalt layer deep under the Keweenaw Peninsula, while Isle Royale was formed off-shore from Keweenaw by an upheaval of the bedrock under Lake Superior. This tilting of the bedrock exposed the greenstone-bearing basalt. Wave action erodes the greenstones free and they may be found as beach gravel on the Isle. For many years this was thought to be the only source of the gem. When first offered in jewelry by the New York fashion stores in the 1890s, they were referred to as "Isle Royale Greenstones." To this day, many persons fail to realize that much of the chlorastrolite occurred under the Keweenaw Peninsula and was discarded on mine dumps by the copper miners when they tunneled to the copper. The mines are not operating now and new material is not being brought to the surface, but the greenstones are usually overlooked by the rockhounds searching for copper. You can find gem-quality chlorastrolite at the mine dumps if you look carefully.

Greenstones have been found at most of the mines at Keweenaw; however, some mines produce better greenstones than other mines. The Central Mine, located just off US 41 north of Calumet, has been the source of some of the largest greenstones.

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Michigan's Greenstone – Pumpellyite (Another Name – Another Story)

Shortly after the beginning of time, Mother Nature was busy baking the crust of the earth. One day when she was working on the Keweenaw Peninsula, she felt like creating something particularly beautiful. Her specific task was to fill up all the little gas holes in the amygdaloidal basalt. She filled some with agates, tomsonite, calcite, quartz, etc. She wanted to create something green, not the yellow-green of the epidote crystals, but a soft blue-green.

So she opened her cupboard to select from the ten elements stored there. She was starting from scratch. Just as flour is the basic ingredient used when we bake bread, Mother Nature used silicon generously when she baked the earth's crust; in fact, most of the igneous rocks contain silicon.

For her lovely blue-green creation she chose, in addition to silicon, some calcium, aluminum, oxygen and hydrogen (sometimes adding a dash of manganese or a sprinkling of iron). She mixed it all with water. The result was as gorgeous as she had hoped. Some of the opaque blue-green crystals looked like jack straws. Sometimes they lay flat in vugs; other times they were piled in star-like aggregates to look like miniature castles – particularly lovely when in company with pink or white feldspar minerals.

Eons later, a man by the name of Marguci found some of these crystals, which he called lotrite, in the Carpathian Mountains. About the same time, copper was discovered in the Keweenaw. A geologist by the name of Palache studying the area discovered the same mineral in abundance in the copper ores. He called it kearsargeite. A fellow geologist, Butler, didn't like the name, so Palache crossed it out and wrote in pumpellyite after another famous geologist – at one time the geologist for the State of Michigan.

In 1940, Griffithe from the University of Michigan proved that the solid form, which has been called chlorastrolite, was actually a form of pumpellyite. This truly beautiful mineral was named the gemstone for Michigan in 1972 by the seventy-sixth state legislature. It is known officially as pumpellyite, variety chlorastrolite – the gem we commonly call the Michigan greenstone. With the major world source the Keweenaw land and Isle Royale, Mother Nature was most kind to us.

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