

Local Sapphires' source still remain a mystery

Dear Science Mine: *I have heard that sapphires can be found near Butte. Is this true? Where do they come from?*

— A Butte resident

The answer to your first question is simple - yes.

Your second question is an excellent question that I wish I could answer for sure.

Sapphires have been mined intermittently from Dry Cottonwood Creek northwest of

Science Mine



DICK BERG

Butte since their discovery in gravel about 1889, probably by gold miners. Until 1943 when man-made sapphire came into use for watch bearings, huge quantities of sapphires from Montana deposits were mined for this use. Now Montana sapphires are mined solely for the gemstone market. Closer to Butte, sapphires are reported to occur in the gravels along Brown's Gulch and also Flume Gulch. There are also several reports of sapphires having been found in the gravels along Whiskey Gulch just west of Butte. A few years ago a recreational miner washing gravel for gold near the confluence of Whiskey

Gulch and Silver Bow Creek found a very pale green sapphire about the size of a large pea in his rocker.

Sapphires were also recovered during gold mining in the lower four miles of Lowland Creek. Sapphires may be confused with quartz (I have made this mistake) but those from Dry Cottonwood Creek or Lowland Creek are typically faintly colored, usually a very pale green or blue, and have a frosted surface as compared to the glassy surface of quartz.

The bedrock source of the sapphires found in gravel not only in the Butte area, but also east of Helena along the Missouri River and in the Rock Creek (Gem Mountain) area west of Philipsburg, is one of the greatest puzzles in Montana geology. The total amount of sapphires that has been mined from these deposits, mainly for watch bearings, is estimated to be at least 50 tons. Yet, in spite of more than 100 years of searching, the bedrock source for all of those sapphires has not been discovered.

Geologists differ, as they usually do, as to the source. At this stage of our knowledge there are three competing hypotheses:

- The sapphires come from metamorphic rocks in the Bitterroot Mountains west of the Bitterroot River;
- They come from metamorphic rocks on the west flank of the Sapphire Range; or

- They come from volcanic rocks related to those that form Big Butte.

There is pretty good evidence that sapphires from Dry Cottonwood Creek weathered out of volcanic rocks. Several sapphires from Dry Cottonwood Creek have small amounts of adhering volcanic rock which is similar to that found at the head of this creek. However, until someone actually finds a sapphire in an outcrop of rock, we can go on arguing about it.

If we knew all of the answers it wouldn't be any fun.

Dick Berg is curator of the Mineral Museum and senior research geologist for the Montana Bureau of Mines and Geology, Butte, Montana.

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