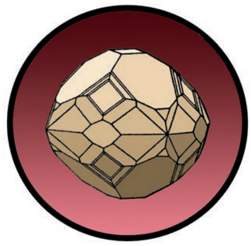

Reichenstein-Grieserntal Quartz Twins:

Two Angles Named in a Single Twin Law

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Quartz is probably the best known of all mineral species among collectors, and it is the most common mineral in the Earth's crust. V-shaped Japan-law twins are popular with collectors, but other twin laws may not be so familiar, and one has presented a mystery for well over 100 years: is it actually one law or two?

INTRODUCTION

Quartz crystals are known to form twins in several ways. Most common are twins with parallel *c*-axes according to two twin laws, the Dauphiné Law and the Brazil Law. Then there are twins where the crystals meet at an angle. By far the most common are those of the Japan Law, with crystal *c*-axes that meet at an angle of 84, with a (112) twin plane.

There are other inclined-axis twin laws. Frondel listed 15 with various inclined axes, after the work of Zyndel. About them, Frondel stated that most "are of doubtful validity"; he specifies that the criterion for establishing a twin law is that examples are found with "a frequency of occurrence greater than chance."

At the time of Frondel's writing the Reichenstein-Grieserntal Law had not met that criterion. Since then, twins of this law have gained notice among quartz enthusiasts.

Although they are rarer than Japan-Law twins, Reichenstein-Grieserntal twins have been found at several localities around the world. Lew Landers ***(Figure 1)*** has quietly harvested over 30 examples from four claims along the Snoqualmie Valley just east of Seattle, Washington. He states confidently that many more of these twins must exist and will be found when people learn what to look for.

The name itself is quite a mouthful and is often shortened in conversation to the "R-G Law," which abbreviation will be used here for convenience.

EARLY FINDS

A new quartz twin law had been speculated about for years, but based only on a couple of known examples. A controversial example had been described by Gustav Rose in 1851, found at **Reichenstein**, Silesia, (now in Poland) ***(Figure 2).*** A second one was reported by Victor Goldschmidt in 1905, collected at **Grieserntal**, Switzerland—though it didn't look much like a twin ***(Figure 4).*** More recent examples found at intervals beginning in the 1970s have confirmed the law conclusively ***(Figure 3).***

What lay behind the initial thought about this law was that two crystals might form a twin by growing from a mutual contact that is a common crystal face found on quartz, one of the faces that terminate a typical quartz crystal. These are faces of the rhombohedral (101) form, given the standard designation *r*. Take two quartz crystals and hold them together on those faces and you have the R-G Law twin angle ***(Figure 5)***.

Rose's Reichenstein specimen has the special feature that corresponding *r* faces on both sides of the twin boundary are parallel, an aspect made obvious because they flash reflections of light at the same angle. What made his find even more remarkable was that there are *three* twin members emanating from one central crystal. It is, in effect, a cyclic twin or trilling ***(Figure 2).***

But this is not like the result of putting crystals together on their *r* faces to produce a 76°26' angle. The angles of Rose's twins emanating from the one central crystal measure 103°34', which