Hunting the source of Georgia tektites

Tektites are small masses of silica rich glass, generally a few inches across. They have disk, spindle or dumbbell forms suggesting they were shaped by being blasted through the air. They generally have a pleasant bottle green color and are made into jewelry, and are thus popular with rockhounds. They occur widely scattered in loose sediments in various strewn fields. The ones from Czechoslovakia, called “moldavites”, are particularly well-known and were the first tektites described in 1788. Other famous strewn fields are in Australia (“australites”) and southeastern Asia (“indochinites”). In the U.S., a strewn field is centered in Georgia.

Tektites form at the sites of large terrestrial asteroid impacts. These powerful events flash melt the earth rocks at “ground zero”, throwing small globules of liquid rock out of the crater with supersonic force. These globs cool and are shaped as they speed through the air. They can be scattered in this way hundreds of miles from the impact crater that produced them. In many cases the crater from which the tektites came can be identified. The European moldavites, for example, originated at the Nordslinger Ries Crater in western Germany.

Over the years, over 1,800 tektites have been found scattered over a 7,000 square kilometer area west of Augusta, Georgia. These “georgiaites” have usually turned up in farm fields and gravel roads where recent sediments are used as road materials. Even though they are in modern sediments, their radiometric ages are about 36 million years. Thus they were part of an older formation that have survived reworking into younger materials. This leaves two obvious questions for intrepid tektite hunters. First, what rock layer was eroding to release the tektites? Second where was the impact that formed them?

We’ll take the second question first. In 1996, a major impact structure was found buried under the sediments of Chesapeake Bay. This crater is 90 kilometers in diameter and formed about 36 million years ago. This crater was discovered by geophysical methods, and subsequently drilled, with core samples recovered. It does not outcrop at the surface, but tsunami debris have been found in formations that are exposed. Not only is the impact the same age as the tektites, but it would have melted rocks of just the right chemical composition to make georgiaites. Recently, materials thrown from the crater were found in several clay mines in eastern Georgia. These are found in the Twiggs Clay member of the Dry Branch formation, dated at 36 million years old. This is a relatively soft, poorly exposed formation, so outcrops are scarce. Any tektites found within it would be more resistant to weathering than the surrounding clay. Tektites would accumulate on the

ground surface and be worked into younger sediments, similar to what happens to agates.

Tektite hunters now have a target area for their search. Outcrops and mines where rocks of this age are exposed now or in the past should be good spots to look. Tektite finds in Cape Cod and the coastal plain region of Texas may also be from this impact. Perhaps in time there will as many georgiaites on the market as there are moldavites today.

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