Fig. 1: Surrounded by polished natural amber from the Dominican Republic, a modern stink bug encased within a plastic cabochon realistically appears at first glance to be an amber inclusion specimen. 30 x 20 x 13.5 mm (32.18 ct). (Photo by Elise A. Skalwold)

By Elise A. Skalwold

Evolution of the Inclusion Illusion

Gem simulants mirror not only the materials which they seek to emulate, but also the trends of what is popularly valued at any given time. Improbable as it might once have seemed, inclusion specimens have joined the ranks of simulants; the evolution of this can be traced to now widespread acceptance of the importance of inclusion science to that of forensic gemology and equally so to the compelling artistry of gemological photomicrography.

Coveted for millennia, amber is perhaps the only gem long-collected not only for its beauty, but also for inclusions, some of which may elevate its value considerably above what an inclusion-free specimen might otherwise fetch. Given this premium, it is therefore not surprising to run across amber simulants with cleverly included flora and/or fauna (see Fig. 1).

According to Dennis Beals (Xtal - Dennis Beals Minerals), such cabochons featuring nicely centered inclusions are a common offering in the marketplace of Taxco, Guerrero, Mexico. While gemologists will quickly separate true amber from the plastic of this example, gastronomes fond of local fare will just as quickly recognize the included insect as hardly an ancient one, but rather a very modern popular species: the jumil beetle (*Atizies taxcoensis*). Coveted for high iodine

Fig. 2: Similar to the "amber" cabochon, this double cabochon composed of two pieces of quartz with a garnet chip sandwiched between them resembles an aesthetic quartz inclusion specimen (Skalwold 2016). 28 x 18.5 x 15 mm; 42.88 ct; specimen courtesy of Si and Ann Frazier. (Photo by Elise A. Skalwold)

content, during their January-February season jumiles are made into a purportedly delicious green salsa and served up with corn tortillas – while nearby, enterprising gem dealers similarly serve-up jumiles as ornamentation! Who knew a stink bug could be so useful?

Unlike amber, not so long ago inclusions in other gemstones were considered deal-breaking flaws – certainly not something worthy of taking the trouble to mimic. However, interest in the microworld of gems and minerals has risen exponentially over the past several decades. This arguably originated with the pioneering efforts of Dr. Eduard J. Gübelin and GIA's John I. Koivula whose publications have defined the genre both of gemological photomicrography and inclusion science (see Koivula and Skalwold 2014). This relatively recent phenomenon of popularity can be measured not only by the rapid proliferation of Internet websites and social media devoted to the subject, but also by the offerings of inclusion specimens in the marketplace – some with breathtaking prices whereas formerly the same specimen may have gone on the mine tailings heap or into a give-away bin.

With a commensurate rise in their value, inclusion specimen simulants are starting to show up in the marketplace and, as with amber, offer a challenge not only to the aspiring inclusionist, but also to a wider range of gemologists now faced with gems fashioned to *feature* inclusions for their own sake, including cleverly designed simulants such as the "garnet in quartz" double cabochon seen in Fig. 2 (Skalwold 2016) and the improbable creation seen in Fig. 3.

Quite different from simulants designed to mimic gems coveted for their *outward* beauty (such as the opal simulant Slocum Stone of Fig. 4), these newcomers ride the quickly rising tide of the microworld itself, a heretofore unpredicted phenomenon in the world of gems and minerals.♦

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Left. Fig. 3: *An improbable green "shrub inclusion."This quartz cabochon with natural chlorite inclusions was modified by drilling into the back and filling several resulting tubes with brightly colored material. The cabochon's base was then coated to resemble natural matrix and to hide evidence of the drilling. 42.5 x 33 x 18 mm; 176.05 ct; origin, Brazil; specimen courtesy of Luis Lozano, "Lozano Gemologos," Madrid. (Photo by Adolfo De Basilio, "Analytica Promota Gemmis SL," Madrid)*

Right. Fig. 4: *Slocum Stone is a silicate glass developed by John S. Slocum in the late 1970s and marketed both as finished gems and as lapidary rough. Though the exact nature of the process used to produce it remains a secret, its beautiful opal-like appearance is thought to be due to a sedimentation process. 25x20x7mm polished free-form specimen surrounded by four cabochons. (Photo by Elise A. Skalwold)*