NOTE ON THE SO-CALLED "SYNTHETIC AQUA MARINE."

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As is well known, there have been on the market for some years artificial sapphires of various colors, notably blue, red (ruby), pink, white, golden, hyacinth red, and one type which is bluish green by bright daylight but amethystine by artificial light.

All the above artificial precious stones have been found to have essentially the properties and composition of sapphire. Recently there have appeared stones of a light blue tint which have been offered and sold under the name of "Hope aqua marines." The properties of this new stone have been studied by the author and they will be listed and discussed in this note.

A rough boule of the new "aqua marine" procured from L. Heller & Sons of New York was found to have two well developed crystal faces. This is unusual, as most of the boules of artificial sapphire are anhedral. On measuring the angle between these two faces it was found to be the same, within the limits of error of the method, as that between the octahedral faces of a cleavage octahedron of fluorite. This led at once to the conclusion that we probably had to deal with a material that crystallizes in the cubic system rather than in the hexagonal. True aqua marine is beryl, which crystallizes in the hexagonal system.

On testing the optical properties of the synthetic "aqua marine" it was found to be singly refracting, and without dichroism, as would be expected of a crystal in the cubic system. Its hardness proved to be greater than that of natural aqua marine but less than that of sapphire. Its specific gravity was greater than that of beryl but less than that of sapphire. The refractive index also lay between the indices of sapphire and of beryl.

Suspecting from its properties that the new material was artificial spinel, more accurate determinations of several of the properties were made. The specific gravity, refractive index, hardness on Mohs' scale and angle between crystal faces were all found to agree with those of natural spinel. It was therefore concluded that the material might more properly be called a light blue artificial spinel than an "aqua marine."

It may be said that the new artificial stone is a worthy material in every way. It is really better in nearly every respect than natural aqua marine since it is harder, of higher refractive index (and consequently capable of being cut to produce greater brilliancy) and of better color than most natural aqua marine. The prices asked for it too are very reasonable and it may be had in adequate size for almost any purpose. It is not sold as a natural material so there is no fraud. It might however be better to sell it under the name of synthetic spinel, although commercially that would involve educating the buying public in regard to a little known gem.

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