

**HARD**

Several hammer blows were required to break the block of boric oxide formed into crystals at the Westinghouse Research Laboratories. In the foreground are two samples of its relative, boric oxide glass, shattered by a single blow.

PHYSICS

Accidental Discovery Leads To New Form of Crystal

AN ACCIDENTAL discovery in a research laboratory has led to the discovery of a new crystalline state of boric oxide which promises to change certain commercial glass manufacturing methods.

Leon McCulloch, research engineer of the Westinghouse Electric and Manufacturing Company, recently fused some

boric acid in a tin can in an oven, trying to keep the mixture liquid so that it could be used to impregnate electrical coils and insulate them.

But the mixture turned white and milky and then pasty. Finally it turned stonelike and about as hard as Portland cement.

Such a mass was useless for insula-

tion purposes but Mr. McCulloch began to study its properties. On weighing, it was found to have a specific gravity one-third greater than the comparable boric oxide glass. Moreover, its crystal structure was revealed by a definite melting point and by X-ray studies. In contrast, its relative boric oxide glass has no fixed melting point and does not exhibit a characteristic crystalline X-ray spectrum.

What happened, it now appears, is that the tin can and the hot oven changed the boric acid to a crystalline state just as flavored sugar syrup changes to fudge on boiling.

Boric oxide glass plays an important chemical and industrial role because of its high resistance to heat shock. The new discovery, it is claimed, should prove helpful in commercial glass manufacture, perhaps supplanting boric oxide glass in a number of processes.

The accidental discovery, made in an age when modern research is planned to the last detail, is reminiscent of Good-year's classic discovery of vulcanization by the dropping of rubber and sulfur on a hot stove.

Science News Letter, September 24, 1938

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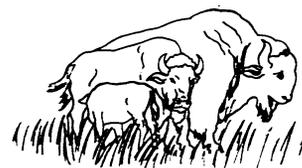
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