

NOTES AND NEWS

A BOMB FOR USE IN HYDROTHERMAL EXPERIMENTATION

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There is much interest in the decomposition and synthesis of minerals by water at high temperatures and pressures, and a simple and reliable

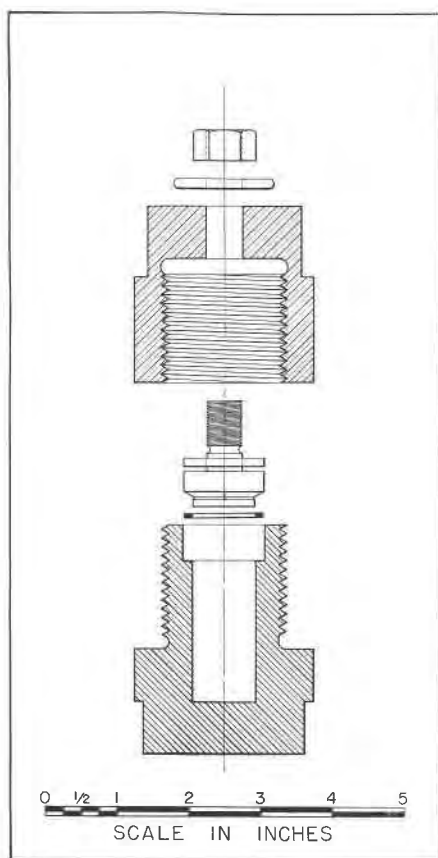


FIG. 1. Bomb for use in hydrothermal experimentation. The body of the bomb and the plunger are made of stainless steel; the screw cap, of tool steel. The washer that effects the seal (shown in black) is of annealed copper.

type of bomb is needed for the study of such reactions. The bomb described by Morey and Fenner¹ has been used by other investigators, and

¹ *Jour. Am. Chem. Soc.*, vol. 36, p. 215, 1914.

is still used by us for some work. For most experiments, however, we have found the smaller type of bomb described herewith to be more convenient.

The new bomb is shown in the figure, drawn to the scale indicated. We have found that stainless steel is not suitable for both the body of the bomb and the screw cap, because of its tendency to "freeze." The threads in a tool-steel bomb, such as was previously used, quickly become hardened by the graphite and oil lubricant so that seizure never becomes troublesome below about 700°, but with stainless steel the surfaces remain almost unaltered, and at temperatures as low as 500° it is difficult to prevent seizure. Accordingly we have adopted the practice of making the body out of stainless steel,² and the screw cap out of tool steel.³ The plug is of the same stainless steel, which gives a chamber consisting entirely of this material. The friction washer, placed between the shoulder of the plug and the screw cap, is of monel metal. The closure is effected by a copper washer, shown in black.

Temperature is measured by a thermocouple, placed in a 3/16" hole (not shown) drilled in the plug to within about 1/4" of the bottom. In some experiments a hole has been drilled entirely through the axis of the plug, the top of which is provided with a fitting to connect to a cylinder of carbon dioxide.

This type of bomb is more convenient to use than the larger type previously described, and has given complete satisfaction.

² Carpenter's Stainless No. 8.

³ Halcomb's Ketos oil hardening steel.