

## **More about Storm Glass**

In the 19th century, storm glasses were used in Europe. Storm glasses have interesting characteristics. Crystals are formed in storm glass, and they seem to change because of the weather. We tested each of the following 4 hypotheses: first, the main factor in crystal formation is temperature; second, the main ingredient in the crystals' structure is camphor; third, the storm glass composition is camphor-saturated near 30 degrees Celsius; last, appearance of crystals is related to atmospheric electricity. The storm glass used was composed of water, camphor,  $\text{KNO}_3$  and  $\text{NH}_4\text{Cl}$ . In the first experiment, weather, temperature, humidity and atmospheric pressure were measured three times a day: in the morning, at noon and in the afternoon; crystal formation was observed during these periods. In the second, a camphor-ethanol solution was used to test camphor saturation. In the third, x-ray diffraction was used to determine storm glass composition. In the final experiment, positive electricity was applied to storm glass. The results were that crystal formation had an unclear correlation with temperature; storm glass was camphor-saturated at nearly 30 degrees Celsius; x-ray diffraction determined main component in crystals was camphor and applied electricity had no effect in crystal formation. These results suggest pressure, humidity and weather could also play major roles in crystal formation, but atmospheric electricity can be ruled out. Changing the ratio of  $\text{KNO}_3$  and  $\text{NH}_4\text{Cl}$  should be done in future experiments to investigate how camphor deposition would be affected.