Details of measurement and crystal structure data will be given in another publication.

DEPARTMENT OF CERAMICS
PENNSYLVANIA STATE COLLEGE
STATE COLLEGE, PA.
NELSON W. TAYLOR
SANDFORD S. COLE

RECEIVED JUNE 22, 1934

THE RELEASE OF SUPERCOOLING IN CRYOSCOPIC DETERMINATIONS

Sir:

The freezing point method of determining molecular weights is one of our most useful procedures and the freezing point lowering of solution is of great theoretical importance. The precise determination of a freezing point may be obtained by supercooling the liquid or solution under suitable conditions and releasing the supercooling to allow the system to come to equilibrium. The exact freezing point is determined in this way. The release of the supercooling without too great supercooling has always been a difficult matter but we have found that a little glass bead may be cooled on a cake of dry ice (solid carbon dioxide) and then introduced into the system and so releasing the slightest amount of supercooling.

Ordinary glass beads 3 mm. in diameter with 0.5 mm. bore may be wet with solvent or liquid and placed on the cake of dry ice for a few minutes and then with forceps may be transferred rapidly to the supercooled liquid. At ordinary laboratory temperatures the little core of ice will not melt in thirty seconds or more, so there is ample time. The suitably cooled bead, quite free of ice, will also release supercooling as it may be introduced into the system while at a very low temperature. If the bead is placed in the closed end of a thin-walled tube it may be cooled on dry ice and rapidly rolled into the supercooled system. We have readily released liquids or solutions supercooled only 0.04° and with experience a supercooling of as little as 0.01° is feasible. This should be of importance in determining the true freezing point of dilute solutions.

FRICK CHEMICAL LABORATORY
PRINCETON UNIVERSITY
PRINCETON, N. J.
DAVID E. KENYON
GEORGE A. HULETT

RECEIVED JUNE 23, 1934

THE SEPARATION OF THE OXYGEN ISOTOPES

Sir:

Although Washburn, Smith and Frandsen [*Bur. Standards J. Res.*, **11**, 453 (1933)] state that the electrolysis of sodium sulfate and sulfuric acid solutions produces oxygen with a greater proportion of O^{16} than is present in the water electrolyzed, Lewis and Macdonald [*J. Chem. Physics*, **1**, 341 (1933)] reported that no concentration of O^{18} was found when deuterium was concentrated by the electrolysis of sodium hydroxide solutions with nickel electrodes. Their method of analysis may not have been sensitive enough, however, to have detected small shifts in the isotopic composition of the water. We have electrolyzed 5% sodium hydroxide solutions with nickel electrodes and compared the density of water produced by burning this oxygen in purified tank hydrogen with that of water produced by burning air in the same hydrogen. The water from the electrolytic oxygen proved to be 7.7 p. p. m. lighter than Cambridge tap water and that from the air burned in the same hydrogen 1.1 p. p. m. heavier. Our results thus agree with those of Washburn, Smith and Frandsen in indicating a small but definite separation of the oxygen isotopes.

THE CHEMICAL LABORATORIES OF
RADCLIFFE COLLEGE AND
HARVARD UNIVERSITY
CAMBRIDGE, MASS.
CHARLES H. GREENE
ROGER J. VOSKUYL

RECEIVED JUNE 25, 1934

THE RELATIVE PROPORTIONS OF DEUTERIUM IN SOME NATURAL HYDROGEN COMPOUNDS

Sir:

The interesting observations of Lewis [THIS JOURNAL, **55**, 3503 (1933)] upon the antigerminative property of deuterium oxide led us to investigate the isotopic composition of the hydrogen utilized by plants in the synthesis of organic compounds with an expectation of finding a preference for protium in the biological synthesis. We find, however, in common with others who have reported upon parallel investigations [E. W. Washburn and E. R. Smith, *Science*, **79**, 188 (1934); M. Dole, THIS JOURNAL, **56**, 999 (1934)] since we began our work, that in some natural sources deuterium is more abundant than in ordinary water.

In our experiments "Mazola" corn oil was burned in dried air and the products of combustion passed over hot copper oxide before condensing the water. Natural gas from northern Pennsylvania was burned in air of such low humidity that any admixture of the water formed with ordinary water was negligible. After care-