

A NOTE ON A STILL FOR THE PREPARATION OF PURE WATER.—

BY HAROLD S. KING, A. B., Assistant Professor of Chemistry, University of Dalhousie, Halifax, N. S.

(Presented 19 February, 1926)

It is well known that glass is somewhat soluble in hot water. Consequently the condensers used in the preparation of extremely pure water by distillation must be of some other material. Quartz and platinum are satisfactory in regard to insolubility, but the former is fragile and the latter too expensive. Condensers of pure tin are perhaps the most practical and are in general use both commercially and in the laboratory.

This note is concerned with the connection between the tin condenser tube and the distillation flask. T. W. Richards* has pointed out that cork or rubber connections should not be used, and has suggested that the tin pipe be bent so as to fit into the constricted neck of the distillation flask, water effectively sealing the union to prevent the loss of steam.

The construction in the neck makes the filling and the cleaning out of the flask difficult. If the distillation is too rapid, there is a chance that water that has been in contact with the glass, and consequently contaminated with dissolved material, may be swept by the current of steam up into and through the condenser. Moreover, in case of breakage, a new flask with a special neck has to be made.

It has been found that if, instead of constricting the neck of the flask, the end of the condenser tube be made large enough to fit snugly into a flask of stock size, these difficulties are obviated. To accomplish this end, a block of tin, slightly larger than the neck of the flask, was cast and machined down to fit. A hole the size of the condenser was bored through one end of the cylindrical casting and the other end was drilled out leaving a mere shell. Finally the adapter, so made, was fused to the curved end of the tin condenser tube with pure tin. A trap to catch any spray that is formed in the boiling may be in-

* Richards, Proc. Amer. Acad., 30, 380 (1894); Also see Richards and Crail, J. Amer. Chem. Soc., 45, 1163 (1923)

serted into the distillation flask, if the inner diameter of the top of this device be made equal to that of the tin adapter so that the same condenser may be used whether the trap be inserted or not. This apparatus has been in use for several years in the Chemical Laboratory of Dalhousie University and has been found very convenient and satisfactory. Thanks are due to the mechanician, Mr. George Sandoz, for his aid in the construction of the apparatus.