globules to hang on the walls of the valve chamber with a consequent rise in temperature. Unlike vapor pressure devices, operation is unimpaired over a range of at least several hundred degrees centigrade. The

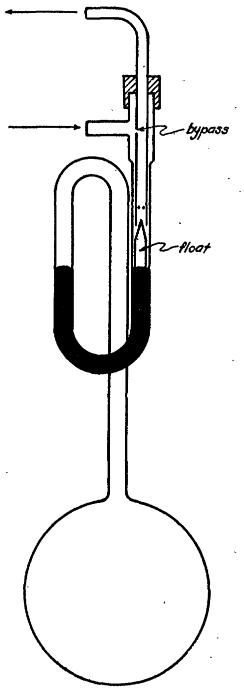

FIG. 1

regulator is ideally adapted to variable operating temperatures, since a change to a new temperature is effected simply by heating or cooling to a little above or below the required temperature, equalizing the mercury in the limbs by establishing the exact temperature and resetting the outlet tube to the proper adjustment. The outlet tube may be easily adjusted to small differences in temperature. Naturally, the precision of temperature control depends upon the volume of the expansion chamber and the inside diameter of the gas limb. With a 250 ml bulb and tubing of 6 mm inside diameter, temperature may be maintained within a ± 0.1° C.

Many modifications are apparent. For use in the thermometer well of an oven, the overall diameter of the loop and gas connections should be small enough to pass through from the interior. If this is undesirable, the loop and bulb may be separated, placed in position on the inside and outside of the oven and connected with a short section of suction tubing. By connecting the bulb to a longer section of glass or copper tubing, the mercury valve may be removed for a more or less remote control.

If it is required to change from one operating temperature to another without going beyond the new temperature, a glass stopcock may be sealed onto the air limb, permitting addition or removal of air from the expansion chamber without the necessity of exceeding the new temperature in order to permit final equalization of the mercury in the limbs. Precision of control may be increased almost indefinitely by the use of a larger expansion chamber.

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THE USE OF NEO-SILVOL AS THE COLLOIDAL SOLUTION IN DEMONSTRATIONS OF DIFFUSION

A COMMON practice in plant physiology laboratory procedure is to demonstrate the relative rates of diffusion of true and colloidal solutions by allowing various colored crystalloids and colloids to move through such gels as agar or gelatin, where the actual diffusion is not affected by convection currents or accidental movement.[1] Such substances as copper sulfate, eosin, cobalt chloride, safranin, and many others, have been used as the true solutions. Congo red and "Argyrol," a preparation of colloidal silver, are probably most often recommended as the colloids to be used. In that connection, the writer wishes to suggest the use of "Neo-silvol." This is a compound of silver iodide with a soluble gelatin base, containing 18 to 22 per cent. silver iodide in colloidal form. A 5 per cent. aqueous solution gives results which are more striking than in the case of either of the commonly used colloids. The tendency for this solution to enter the gel was markedly less than that of either Congo red or "Argyrol." Agar or gelatin work equally well as the medium through which the diffusion takes place, though the results may be more accurately observed with the latter.

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[1] W. E. Loomis and C. A. Shull, "Methods in Plant Physiology," pp. 68–69, 1937.

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