

Polygalitol has been isolated from *Polygala senega*.

Aceritol has been proved to be identical with polygalitol.

1,5-Anhydrodulcitol has been prepared and characterized by its crystalline tetraacetate.

NEW YORK, N. Y.

RECEIVED JUNE 19, 1937

[CONTRIBUTION FROM THE RESEARCH LABORATORY OF THE PORCELAIN ENAMEL & MFG. CO.]

## Automatic Compensation of Flowmeters for Pressure Variations

BY ROGER K. TAYLOR

It frequently happens that it is desired to pass a gas or mixture of gases through an apparatus at a constant rate. When flowmeters are employed in the usual manner, any change in pressure at the flowmeter outlets—such as may follow, for instance, from attachment of other units to the apparatus, or changing resistance to flow offered by contained material, or withdrawal of a sample of gas for analysis—produces a corresponding change in the delivery rates of the flowmeters. Such variation is especially objectionable when dealing with mixtures of gases, as in general there results a change in proportion as well as in total amount of the mixture.

A method of compensating for pressure variations has already been described.<sup>1</sup> However, the compensation is not quite complete, while the device here illustrated does afford complete compensation.

The principles involved will be obvious from the diagram. Tap water enters at "A" and escapes at "B"; the rate of flow is adjusted according to the anticipated rate of pressure variation in the apparatus. Should, for example, the pressure rise, the water level at "B" is correspondingly depressed, and overflow at "B" is interrupted until the level in "C" has risen to an extent corresponding to the pressure change, thus increasing the pressure at the flowmeter inlet and restoring the original delivery rate of the flowmeter. In other words, the pressure drop across the flowmeter depends on the vertical distance from "b" to "c," and is independent of the pressure in the apparatus.

For the sake of simplicity, only one flowmeter is depicted; clearly, however, any number may be accommodated either by having the additional gas-overflow tubes dip into "C," or by attaching

at "A" other tubes corresponding to "C" for the other flowmeters.

The overflow tube at "B" must be sufficiently large so that the escaping water will flow down the sides of the tube without trapping gas. It is also advisable to use connecting tubing of rather large bore, to minimize back-pressure from the flowing water.

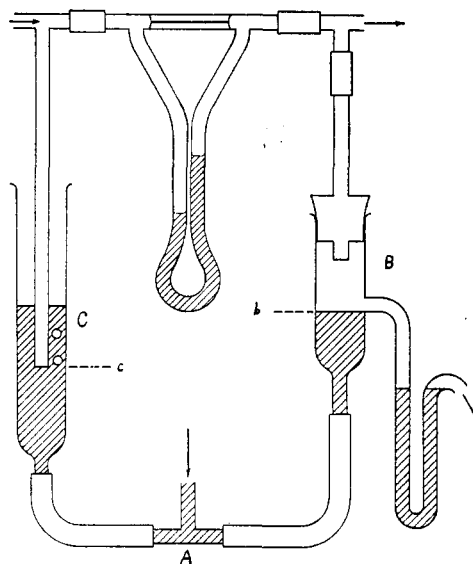


Fig. 1.

If the possible entrance of air bubbles with the tap water into "B" and thence into the apparatus, is undesirable, the water may, of course, be delivered into the top of "C" instead of at "A."

### Summary

A device is described for the maintenance of constant delivery rates from flowmeters, irrespective of pressure variations at the flowmeter outlets.

(1) Oberfell and Mase, *Ind. Eng. Chem.*, 11, 294 (1919).