reached, reversing. As the sucrose solution and water mingle a very pronounced contraction in volume is noted.

In case it should be desired to increase the capacity of the instrument, the thermometer may be replaced by a ground glass stopper. It is more convenient for purposes of reading to keep the apparatus always in an upright position. The instrument may, however, be placed in a horizontal position or may even be reversed without disturbing the position of the meniscus.

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NOTE.

The Meyer Molecular Weight Calculation.—In the Victor Meyer method of determining molecular weights of vaporizable substances, as usually carried out, the material is converted into vapor at the bottom of the inner tube, the latter being kept at a constant temperature, at least 20° above the boiling point of the substance, by keeping a suitable liquid in the outer jacket steadily boiling. When the vaporizing occurs, a quantity of air equal to the increase in volume is forced out from the upper part of the inner tube, through the lateral capillary, and collected over water in a eudiometer. It is assumed that this increase in total volume is the volume of the vapor; it would be more correct to deduct from this volume that of the original liquid, but failure to do so introduces an error of usually only one part in two hundred or more, and this may be considered negligible in view of unavoidable experimental inaccuracies.

In passing from the heated tube to the eudiometer the temperature of the air changes to that of the room, with a corresponding volume change; it is assumed that the vapor would undergo the same change in volume if reduced to the same temperature without condensation, since all gases and vapors show a nearly identical behavior with changes in temperature.

After passing into the eudiometer the air is saturated with water vapor. If the air in the inner tube at the beginning of the experiment is already saturated with moisture at room temperature no change in the degree of moistness results, and hence no change in volume due to this cause. It would therefore be incorrect in calculating the volume of air under standard conditions to deduct from the observed barometer reading the pressure of the aqueous vapor.

If, on the other hand, the air in the apparatus is perfectly dry, its volume is increased by its becoming saturated with moisture, and this should be allowed for by deducting the pressure of the aqueous vapor from the barometer reading.

If, lastly, the air in the apparatus at the beginning of the experiment is neither saturated at room temperature nor perfectly dry, the change in the degree of moistness of the air on becoming saturated is what the air originally lacked of being saturated. The appropriate correction to introduce is that fraction of the pressure of aqueous vapor for the room temperature which it lacked of saturation. Suppose the apparatus was originally filled with the air of the room, and that it was 40% saturated at room temperature, sixty one-hundredths of the pressure of aqueous vapor is the number to be subtracted from the observed barometer reading; the corrected reading is $B - \frac{100 - H}{100} w$, in which B is the barometer reading, H is the hygrometer reading in %, and w is the pressure of aqueous vapor for the room temperature.

Nearly all works accessible to the author give such directions for the manipulation as involve the use of the air of the room in the inner tube, yet give for the calculation the correction $B-w$. The error introduced in this way would be greatest if the air were saturated with moisture, and would then amount at a room temperature of 20° to 17 in approximately 760, or 1 in about 45, and this condition is closely approached in damp, warm weather. Omitting the correction altogether when the air used is nearly dry gives an equal error in the opposit direction, approximated in very cold weather.

A quite appreciable error, then, may be avoided and the calculation made more nearly correct, theoretically, by using the correction given above.

Of the works accessible to the author only H. Erdmann's Anorganische Chemie discusses the correction, directing that if the apparatus is filled with a dried gas the pressure of aqueous vapor should be deducted; if with ordinary air, no correction should be made. All other works fail to consider the point, some deducting the pressure, others not, without specifying the conditions. PERCY N. EVANS.

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ON THE REACTIONS OF THE FORMAMIDINES. III. ON THE SYNTHESIS OF ISOXAZOLONE, ISOXAZOLE, CYANOACETIC AND BENZOYLACETIC ACID DERIVATIVES.

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Received May 31, 1913.

In previous papers,[1] it has been shown that compounds containing a methylene group, CH_2, such as acetoacetic ester, benzoylacetic ester, cyanoacetic ester, methylphenylpyrazolone, etc., were capable of reacting with the aryl formamidines yielding derivatives of the type XYC : CHNHR, in which the two methylene hydrogens were replaced

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[1] *Ber.*, **35**, 2496; THIS JOURNAL, **31**, 1148.