

BACKGROUNDS.

With your windows enclosed, it will not be necessary to build special backgrounds, provided they are made of attractive material. Otherwise they should be decorated with a background similar to that which should be used in open windows. Special displays should be made from time to time which you should plan before you trim your windows, and considerable thought given to same in order that special displays may serve as special attractions: Easter displays with chickens and rabbits; Fourth of July displays; Thanksgiving displays; Washington's Birthday displays all serve as good advertising mediums, using in connection merchandise that is seasonable.

SIGNS.

Signs are absolutely necessary for every window display as a show-window without a sign is like bread without butter. All window displays should have this silent salesman talk; prominently displayed in the way of a sign. Window strips are exceptionally good for bringing out special features in connection with the soda fountain, cigars and sundry items.

INTERIOR DISPLAY.

Interior display of both show-case as well as general decorations is usually neglected by the average druggist and these features should have careful consideration as the attractiveness of the store depends largely upon the manner in which the interior is decorated. While the main interior decoration should consist of well arranged show cases, yet displays on your show-cases add materially to the attractiveness of your displays, giving it this "merchandisery" effect that a commercial drug store of to-day is endeavoring to have. Then let us repeat what we have already said in just a few words: Advertising supplements salesmanship; show-window displays supplement advertising; show-case displays supplement show-window displays.

NOTE ON THE USE OF COLLOIDAL IRON IN THE DETERMINATION OF LACTOSE IN MILK.*

REUBEN L. HILL.

(From the Department of Physiology and Biochemistry, Cornell University Medical College, Ithaca.)

The method described below has the advantage of being within the reach of the ordinary laboratory student; it requires comparatively little time and gives very accurate results.

In clarifying the milk, a 10 per cent solution of colloidal iron (dialyzed ferric hydroxide) is used. By adding the proper amount of colloidal iron, all the proteins of the milk are completely precipitated and can be rapidly filtered off leaving a perfectly clear colorless filtrate.

* Journal of Biological Chemistry, March, 1915, 175.

The method is as follows: To a 10 gram sample of milk, which has been diluted to about 25 cc., about 3 cc. of a 10 percent solution of colloidal iron are added. The amount of colloidal iron necessary depends upon the composition of the milk and can be accurately determined by adding the last portion drop by drop, and agitating after each addition.

If the precipitation is complete, a clear supernatant liquid separates out from the flocculent precipitate; if too little has been added, the supernatant liquid will appear milky; if too much, it will have a reddish tinge.

The sample is next filtered into a 100 cc. volumetric flask, and the precipitate thoroughly washed with distilled water until the filtrate and washings aggregate about 100 cc. The flask is then filled to the mark and the percentage of lactose determined by Benedict's quantitative method.¹ About 16 cc. of the diluted sample will be required to reduce completely 25 cc. of Benedict's quantitative solution.

A very convenient method of analysis is given by Cole,² in which a 4 ounce flask is used instead of an evaporating dish. The wide mouthed Jena 150 cc. flat bottomed flasks are very convenient for the determination. The flask is fitted into the 2.5 inch ring of a retort stand, and the height above the Bunsen burner so arranged that the contents of the flask will be kept briskly boiling with a small flame. Two flasks can be run simultaneously from the same stand.

Three to four grams of anhydrous sodium carbonate are dissolved, by means of heat, in 25 cc. of *twice diluted*³ Benedict's solution, to which a little powdered pumice has been added. About 14 cc. of the sugar solution are then rapidly added from a burette. Boiling is continued for at least one-half minute before the addition of more lactose solution.

When reduction is complete the supernatant liquid will have a slight yellowish tinge to which the blue color very slowly returns. If the end-point has been underestimated, it will have a blue or greenish tinge that rapidly becomes bluer. With a little practice, and by adding the last portion a drop at a time, and boiling one-half minute after each addition, the end-point can be determined to within one drop.

Twenty-five cc. of Benedict's quantitative solution are completely reduced by 0.0676 of a gram of anhydrous lactose. Since the milk has been ten-fold diluted, 0.0676 divided by the number of cc. of diluted lactose solution used, multiplied by ten, will give the percentage of lactose in the milk. If 16.1 cc. of lactose solution were required, then $16.1 : 0.0676 :: X : 10 = 4.20$ percent.

That very accurate results can be obtained by using this method may be seen from the following tables. Table I shows the comparison between duplicate samples of different milks. Table II shows the effect of the addition of the small quantities of lactose to the milk before analysis.

¹ S. R. Benedict, Jour. Am. Med. Assn., lvii, p. 1193, 1911. P. B. Hawk: Practical Physiological Chemistry, 4th edition, Philadelphia, 1912, p. 386.

² S. W. Cole: Practical Physiological Chemistry, St. Louis, 1914, p. 53.

³ I prefer to dilute 25 cc. of Benedict's solution to at least 50 cc., for I obtain a more accurate end-point with dilute than with concentrated solutions.

TABLE I.

Comparison between duplicate samples of different milks.

| Sample No. | Anhydrous Lactose in Milk 1 Percent | Lactose in Milk 2 Percent | Lactose in Milk 3 Percent |
|------------|-------------------------------------|---------------------------|---------------------------|
| 1 | 4.08 | 4.19 | 4.23 |
| 2 | 4.11 | 4.20 | 4.20 |
| 3 | 4.10 | 4.20 | 4.22 |

TABLE II.

Effect of the addition of lactose to 10 cc. samples of milk.

| Sample No. | Sample ten times diluted, required to reduce 25 cc. of Benedict's Quantitative Solution. cc. | Anhydrous Lactose in Sample gm. | Anhydrous Lactose Added gm. | Added Lactose Recovered Percent |
|------------|---|---------------------------------|-----------------------------|---------------------------------|
| Milk 4 | | | | |
| 1 | 16.7 | 0.405 | None | |
| 2 | 14.9 | 0.454 | 0.050 | 98 |
| 3 | 15.0 | 0.451 | 0.050 | 92 |
| Milk 5 | | | | |
| 1 | 16.1 | 0.420 | None | |
| 2 | 14.4 | 0.469 | 0.050 | 98 |
| Milk 6 | | | | |
| 1 | 16.4 | 0.413 | None | |
| 2 | 7.5 | 0.902 | 0.505 | 97 |
| 3 | 10.2 | 0.664 | 0.2525 | 99 |
| 4 | 10.1 | 0.670 | 0.2525 | 100.8 |

A FOLDING PAPER DEMONSTRATING CASE FOR BACTERIAL CULTURES—A PAPER INSET ANIMAL NECROPSY TRAY.

M. R. SMIRNOW, M D., NEW HAVEN, CONN., IN JOURNAL A. M. A.

A bacteriologist frequently finds occasion to demonstrate cultures of microorganisms, either to student classes within or near the laboratory or at meetings at some distance. In such circumstances it would be desirable to have not only some light and compact receptacle for such cultures, but also one in which the cultures could be shown to the best advantage.

It was for just such an occasion that, in looking about for a proper demonstrating case, I finally invented the form of folding paper display case shown in Fig. 1.

This case is easily made by using a No. 160 white card paper. The design is mapped out, cut and creased, as indicated in Fig. 2. The holes are punched out with a $\frac{5}{8}$ -inch die. The case is then folded, fastened and put away until it is to be used. When the cultures to be demonstrated are ready they are placed in proper order into the case, and any description desired may be written directly on the face of the case at both its upper and lower margins. All dimensions except