

*Quantity of Acid.*—As illustrative of our results, using varying amounts of acid, the following data may be given: the strength of the sulphuric acid was 1.82-1.83 Sp. Gr.

Using 2 cc. acid: No clear or accurate reading could be obtained owing to foaming and partial charring of the fat. In every case the reading was too high, that is, greater than indicated by gravimetric analysis. The excess sometimes was as much as 2 per cent.

Using 1 cc. acid: With this quantity no difficulty was experienced in obtaining clear readings. If the acid is added slowly to the melted butter in the bottle, shaking meanwhile, there will be no foaming or charring of the fat. Subsequent experiments proved that 1 cc. acid was sufficient to completely separate all the fat in the butter.

*Temperature of Reading.*—The reliability of the results from this 'test bottle' depends largely upon the temperature of the contents of the bottle when the fat column is read. This will be apparent from the subjoined data:—

Fat in butter, by gravimetric analysis, 84.02 per cent.

Fat in Wagner's Bottle,  
using 1 cc. acid  
Per Cent.

\*Trial A—

When taken out of steam Babcock machine about 195° F. . . . 87

\*\*After standing in water for 10 minutes at 122° F. . . . 84

\*Trial B—

When taken out of Babcock machine about 195° F. . . . 87

After standing in water at 122° F. for 10 minutes. . . . 84

Left until temperature of water was 90° F. . . . . 82.4

Trial C—

When taken out of Babcock tester about 195° F. . . . . 87

After standing 5 minutes in water and read at 140° F. . . . 84.02

After standing 5 minutes in water and read at 135° F. . . . 84.15

After standing 5 minutes in water and read at 122° F. . . . 84.00

Trials were then made with other samples of butter, as follows:—

Trial D—

By Wagner. By Gravimetric  
Analysis.  
Per Cent. Per Cent.

When taken out of Babcock. . . . . 87.8

After standing in water 10 minutes at

122° F. . . . . 84.7

84.67

Trial E—

When taken out of Babcock. . . . . 88.0

After standing in water 10 minutes at

122° F. . . . . 85.0

85.09

Though several butters were tested by this method, the results are from one bottle only. Two had been obtained for test, but unfortunately one of them had broken in the Babcock tester at the beginning of this investigation. The bottle tested gave re-

\* Trials A. and B. were made previous to reception of the letter of the Wagner Glass Works already referred to. The original printed instructions make no mention of any particular temperature at which to read the fat column.

\*\*The bottle on being taken out of the machine was put in a vessel of water holding about three pints, at the temperature indicated, viz.: 122° F. At the end of 10 minutes the temperature of this water had fallen from 122° to 2° F.