NOTE ON THE TESTS FOR DISTINGUISHING BOILED FROM UNBOILED MILK.

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IN the ANALYST for August, 1897, p. 211, is a brief note taken from the *Jour. Pharm. et Chim.*, giving several tests for distinguishing between raw and boiled milk. I have repeated these tests under varying conditions, and also tried other analogous reagents. As noted in the original article, the most striking reaction is with 1 : 4 diamidobenzene. When a freshly prepared dilute solution of this substance is added to raw milk, and then a few drops of hydrogen dioxide solution, a deep blue colour at once appears. I have found that the colour is produced to a marked degree when the milk has been heated to 170° F. (76·5° C.), but after heating to 180° F. (82° C.) the property is lost. It seems possible, therefore, to distinguish between pasteurized and sterilized milk. Whole milk, ordinary skimmed and separator-skimmed milk, exhibit substantially the same colour. In addition to the reagents noted in the original report, I have found that the photographic developer, amidol, can be used,

but eikonogen and various amido-, hydroxy-, and carboxy-derivatives of benzene and naphthalene were found to be inactive.

Sour raw milk still shows the reaction, and even when more advanced decomposition has set in, but in the latter case it is less striking.

Some experiments were made with a view to determining what ingredient in the milk causes the reaction. The temperature—about 175° F.—which destroys the effect is about that at which enzymes lose their activity. Various commercial enzymes, malt-diastrase, taka-diastrase, peptenzyme, pancreatic extract, papaw ferment, pine-apple ferment, and rennet ferment were used without effect. Solutions of blood- and egg-albumin also gave negative results. A sample of raw milk was treated with excess of magnesium sulphate, and the precipitate filtered off. The filtrate gave a deep blue colour with the 1 : 4 diamidobenzene, and a red tint with amidol, but no effect with the other reagents.

A freshly-opened sample of Eagle condensed milk gave no colour. A piece of cheese rubbed up with water also failed to give the reaction.

A solution of the diamidobenzene, after standing an hour or more, gives a slight blue colour with milk, boiled as well as raw, without the addition of hydrogen dioxide, consequently the solution for the test must be freshly made.