

tion, at no time was there noticed any difference in the results obtained.

In applying the test it is important that the temperature of the cocaine solution be maintained at  $15^{\circ}$  C., the chromates of both pure cocaine and the amorphous alkaloids being influenced by rise and fall of temperature, heat increasing and cold diminishing their solubility. The test produces no turbidity when the acid is added to a solution of a pure specimen of cocaine, the temperature being  $15^{\circ}$  C. If, however, the solution be subjected to a considerably lower temperature, it becomes turbid, and if it be preserved at this reduced temperature for several hours, a crystalline deposit will be found, consisting of long needle-shaped crystals of cocaine chromate. A solution of impure cocaine rendered turbid by the reagent at  $15^{\circ}$  C., and exposed to a lower temperature remains turbid for several hours, then slowly deposits a yellowish-brown amorphous sediment. These reactions are characteristic and serve to distinguish between cocaine and the amorphous alkaloids, especially isotropylcocaine. If a stronger acid is used the alkaloids will separate out quicker.

In order to show the superiority of the chromate test over McLagan's test, I prepared a series of specimens of cocaine of different degrees of purity. These, as well as the various brands of cocaine in the market, I subjected to McLagan's and the chromate test. As a result, I found specimens which gave negative results with McLagan's test, to be impure by the chromate test, and those specimens which reacted with McLagan's test yielded a decided turbidity upon the addition of even less than five cc. of the ten per cent. hydrochloric acid.

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#### NOTES.

*On the Reichert Figure of Butter.*—During the last few years I have had occasion to examine a great many samples of butter, intended for exportation to Venezuela and other South American ports. As many of these samples were of very low grade, it occurred to me that a compilation of the Reichert figures obtained might be of interest to those engaged in this line of work, and I therefore take pleasure in submitting to the society the results of some 317 analyses, taken at random from my

laboratory books, and representing butter exported by five firms during the years 1897, 1898, and 1899.

The figures obtained are as follows :

15.2	14.7	13.1	15.3	16.6	12.5	15.6	12.5
15.2	13.9	13.6	14.7	15.8	13.6	16.0	12.2
13.8	14.0	13.4	14.9	17.0	15.1	15.0	12.3
14.8	13.3	17.0	14.3	16.1	16.6	16.2	13.4
13.0	13.9	17.8	13.6	17.0	15.2	16.6	13.6
13.8	14.3	13.7	13.7	17.0	14.6	14.8	13.7
13.8	14.2	13.2	15.3	15.3	13.5	17.0	16.2
13.7	14.3	13.2	16.3	16.1	16.2	14.6	17.5
14.4	13.9	15.8	15.9	13.6	13.9	14.2	15.9
14.0	14.9	14.7	15.1	15.4	13.9	13.8	14.6
16.6	13.1	12.6	16.4	13.6	14.7	15.3	13.9
14.3	15.6	16.2	14.7	15.6	15.8	16.4	15.7
15.4	14.0	16.2	15.2	14.2	13.6	15.8	14.7
14.0	14.2	14.2	12.0	14.3	16.7	14.0	18.2
14.2	12.6	12.0	13.8	14.7	16.9	14.0	15.5
15.4	15.0	15.1	13.2	15.0	14.5	15.0	14.0
16.5	15.2	14.5	13.2	13.9	16.0	15.1	13.0
13.2	15.3	12.5	16.0	14.8	16.2	15.0	14.0
12.6	15.6	12.8	13.6	13.5	15.0	15.9	17.2
14.4	13.8	11.2	17.2	12.4	13.8	13.0	11.7
14.2	14.0	12.8	15.3	14.0	14.2	12.8	15.0
13.6	14.0	13.5	15.7	14.1	17.6	14.7	15.4
14.7	16.2	12.7	15.5	14.0	15.8	15.6	13.8
14.8	15.9	13.0	16.6	16.0	13.7	14.8	16.0
14.7	17.0	13.1	15.5	13.8	13.9	15.0	14.3
13.4	15.5	14.6	15.5	13.6	14.9	14.8	14.9
14.8	14.2	15.5	13.4	15.0	15.5	15.0	13.5
15.2	13.8	16.6	13.8	15.4	13.4	16.2	13.8
16.6	15.2	16.0	14.2	13.6	14.8	16.6	13.5
14.9	13.4	16.2	15.8	12.5	14.5	16.0	16.3
14.8	11.4	16.0	13.0	14.3	12.8	17.4	16.5
13.8	13.4	15.7	15.0	15.1	14.2	17.7	16.2
16.9	13.8	14.7	14.0	14.3	15.6	15.8	15.7
14.6	13.6	14.0	13.6	16.4	14.0	16.9	13.6
16.2	13.5	13.5	12.8	13.4	13.3	15.4	12.8
16.1	13.8	14.1	14.9	15.8	14.7	14.7	14.5
15.4	14.0	14.5	14.1	15.4	15.6	15.7	16.1
16.6	14.5	15.0	15.6	14.1	15.6	13.6	
16.2	15.1	15.5	13.0	13.0	14.1	15.0	
15.6	14.7	15.3	14.6	12.8	16.4	12.0	

The average of these 317 tests is 14.7. The highest figure obtained was 18.2, and the lowest figures found were 11.2, 11.4, and 11.7.

The butters which gave these last three figures I at first blush suspected of being adulterated with some foreign fat, but subsequent tests showed this not to be the case. The three butters in question were all samples of winter butter, the one giving the figure 11.2 having been kept so long that it was on the verge of becoming tallowy, while the other two were decidedly rancid.

Although the above were samples of unadulterated butter, I, nevertheless, refused to pass them on the strength of the Reichert figure alone, as they were so far below the standard usually accepted by chemists.

Reichert found true butters to give numbers ranging from 13.55 to 14.55, with an average of 14, and declared any butter giving less than 12 must be adulterated.

Dr. G. C. Caldwell reported to the N. Y. State Board of Health estimations of twenty-seven samples of butter, yielding Reichert figures running from 12.7 to 15.5.

Waller and Martin (Report N. Y. State Dairy Commission, 1886) obtained from twenty-six samples of American butters Reichert figures of 12.2 to 16.3.

Prof. C. B. Cochran, West Chester, Pa., Food Inspector of the Pa. Board of Agriculture, has found the extreme minimum of the Reichert numbers of known genuine butters to be 12.5, and this chemist holds that the proper minimum is 11.5.

From the above it will be seen that there is a divergence of views as to what properly constitutes the lowest allowable Reichert figure for butters of known genuineness, but, from my own experience, I am in favor of placing the limit at 11.5.

I do not consider that it would be prudent to go much below this, so as to cover such extreme cases as I have just mentioned, as in cases of this kind it would not do to rely upon the Reichert number alone, the chemist only consenting to pass upon such products after satisfying himself as to their purity, by submitting them to a thorough examination. JAMES H. STEBBINS, JR.

*Analysis of Zinc for Cadmium and Lead.*—Place fifty grams zinc in a large beaker with 700–800 cc. water and 120 cc. hydrochloric acid (1.20 sp. gr.) and allow to stand over night. The greater portion of zinc is dissolved and removed by decantation. The lead and cadmium are precipitated on residual zinc.

After solution of the lead, cadmium, and residual zinc in dilute