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Part II

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Twenty-Seventh Report

ON

Food Products

AND

Fifteenth Report on Drug Products

Part II

By E. M. BAILEY.

CONNECTICUT AGRICULTURAL EXPERIMENT STATION

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March, 1923

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The Twenty-seventh Report on Food Products and the Fifteenth Report on Drug Products, 1922

Part II

By E. M. Bailey.

Twenty-five hundred and forty-six samples of foods and drugs have been examined in the past year, largely for the immediate purpose of food and drug control, as required by the Dairy and Food Commissioner.

Aside from the routine work of inspection, however, a special investigation of commercial vitamine preparations has been made, first to devise a plan for evaluating their potency and second, to show comparatively their powers to promote growth in experimental animals. A full account of this investigation has been published in Bulletin 240, which constitutes Part I of this report. Collaborative and other studies of methods of analysis have been made in which various members of the laboratory staff have participated.

Credit for the analytical work herein reported is due entirely to Messrs. Andrew, Shepard, Nolan, Fisher and Merwin. Mrs. Storrs has contributed largely to the work of compilation and preparation of results for publication.

I. FOODS.

CARBONATED BEVERAGES.

The use of saccharin in this class of products has greatly diminished since the passage, two years ago, of a law regulating the manufacture and bottling of non-alcoholic beverages, which makes the use of saccharin illegal. Of one hundred and twelve samples of bottled soda examined during the past year only six were found to contain this artificial sweetener. In 1920, 40.5 per cent. of the samples examined contained saccharin; in 1921 the percentage thus adulterated was 18.7; in the past year the proportion is 5.4 per cent.

Of the total number of samples examined, one hundred and four were submitted by the Dairy and Food Commissioner, five were collected by the Station agent and three were submitted by individuals.

Saccharin was found in the following samples:

D. C. No.	Brand.	City or Town.	Manufacturer or Dealer.
22121	Strawberry Soda	*New Britain*	Boston Bottling Works.
23100	Lemon Soda	*New Haven*	Samuel Weiner.
23112	Lemon Soda	*New Haven*	Oresto Balzano & Sons.
19890	Cream Soda	*Norwich*	Washington Club Bottling Works.
19891	Strawberry Soda	*Norwich*	Washington Club Bottling Works.
20049	Strawberry Soda	*Thomaston*	August Koegel.

CEREAL PRODUCTS.

Breakfast Foods.

19907. *Zep*, made by the Battle Creek Food Co., Battle Creek, Mich. This is a breakfast food said to be rich in food iron, food lime and vitamine.

20097. *Trufood*, made by the Farney Trufood Co., Morris Plains, N. J.

Analyses:

	19907	20097
Moisture	5.00%	5.65%
Ash	2.85	1.38
Protein (N x 6.25)	14.00	11.50
Fiber	1.34	1.80
Nitrogen-free extract	74.60	77.13
Fat	2.21[1]	2.54
Iron (Fe)	0.008[2]	

[1] Method as described in Conn. Exp. Sta. Bull. 200, p. 133.
[2] Iron was determined colorimetrically. Conn. Exp. Sta. Bull. 227, p. 254.

Wheat bran contains about the same amount of iron as we have found in Zep.

Corn Meal.

Three samples of corn meal were collected by the Station agent. They were **15686**, *Quaker*, yellow and **15703**, *Quaker*, white both made by the Quaker Oats Co., Chicago; also **15687**, yellow, made by the Great Atlantic and Pacific Tea Co.

All samples were normal in taste and odor, and neither moisture nor acidity was excessive. Acidity numbers (cc N alkali per kilo of meal), were 19.8, 21.8 and 23.2 respectively and percentages of

moisture 10.26, 10.30 and 9.93 were found. Acidity was determined by the Schindler method[1] by which figures above 30 are regarded as indicating meal unfit for consumption. The standard[2] for corn meal does not allow more than 14 per cent. of moisture.

CIDER.

Two samples of cider, submitted to the Dairy and Food Commissioner, not officially taken by his inspectors, were examined for alcohol. D. C. No. **19897** contained 2.40 per cent. and D. C. No. **22487** contained 0.90 per cent. alcohol by volume.

One sample, **19174**, was submitted by G. E. Norton of Bristol. It contained 0.57 per cent. alcohol, and was preserved with benzoate of soda.

CLAMS.

Eighteen samples of canned clams were examined, all collected by the Station agent.

Analyses are given in Table I.

The total solids in the drained meats varied from 20.8 per cent. to 23.1 per cent. in round clams, and from 21.8 per cent. to 24.1 per cent. in long clams. Long clams showed more protein and fat, and distinctly less carbohydrate (as glycogen), than round clams. The averages for carbohydrate contents of drained meats and of liquor in round clams were 1.81 per cent. and 3.37 per cent. respectively; the corresponding figures for long clams were 0.61 per cent. and 1.13 per cent., or about one-third as much in each case. Salt, as indicated by the chlorine content, was not very different in the two types of products.

The net weight of clams found was 90 per cent. or more of the weight declared (where statements of contents were made), except in one case where 5 ounces were declared and 4 ounces were found. In one case, **19840**, the net contents was indistinctly marked. The combined weight of meats and liquor equaled or exceeded 10 ounces in all cases. Clam meats packed in water of less salt content than their own liquor will yield some of their solids, notably salt, to the surrounding medium.

DIABETIC AND SPECIAL FOODS.

Under this group twenty samples have been examined for dietitians or others interested.

19519. *Casein flour,* submitted by Dr. J. R. Williams, Rochester, N. Y.

[1] Leach. *Food Inspection and Analysis,* p. 338.
[2] Circ. 136, U. S. Dept. Agr., Office of the Secretary.

TABLE I. ANALYSES OF

Station No.	Brand	Contents				Water	
		Declared		Found			
		Clams	Liq'r	Clams	Liq'r	Clams	Liq'r
	ROUND CLAMS.	Oz.	Oz.	Oz.	Oz.	%	%
19883	E. S. Burnham Packing Co., New York. *Tarpan Bay*	11.0		4.7	6.3	78.40	91.76
19824	J. H. Doxsee & Sons, New York *Doxsee's Little Neck*	5.0	5.0	4.7	6.8	79.03	91.61
19888	J. H. Doxsee & Sons, New York *Doxsee's Little Neck*	5.0	5.0	4.6	6.3	79.19	92.12
19836	J. H. Doxsee & Sons, New York. *Neptune*	5.0	5.0	4.9	6.3	76.94	88.20
19852	R. C. Williams & Co., New York. *Royal Scarlet*	5.0	.	4.6	6.7	77.98	92.42
	LONG CLAMS.						
19860	Farnsworth Packing Co., Brooklin, Me. *Blue Hill*	5.0	..	4.8	6.2	76.39	95.09
19882	L. E. Gardner & Co., Cutler, Me. *Atlantic*	5.0	..	4.7	6.7	76.38	95.34
19855	Hinkley, Stevens & Co., West Jonesport, Me. *Our Brand*	5.0	..	4.8	6.5	75.92	94.12
19847	Arthur L. Johnson Co., Boston. *Crusoe*	5.0	..	5.2	5.9	76.23	94.86
19877	A. L. Johnson Co., Boston. *Down East*	5.0	..	4.5	6.5	76.71	95.11
19844	H. S. Kane, Brooklin and Adison, Me. *Pleasant River*	5.0	..	4.8	5.7	77.71	96.22
19840	Andrew Kerr Co., Boston. *Kerr's Choice*	[1]	..	3.9	6.9	76.12	94.72
19835	Francis H. Leggett & Co., New York. *Premier*	5.0	..	4.9	6.4	77.83	94.20
19832	Palmer, McElwain & Cole, Inc., Boston. *Seamade*	5.0	..	4.0	6.7	77.70	95.82
19843	Portland Packing Co., Portland, Me. *Star*	5.0	6.0	5.1	4.9	77.92	92.43
19845	Thorndike & Hix, Rockland, Me. *Gold Coin*	5.0	4.0	5.6	5.1	78.00	95.03
19837	William Underwood Co., Boston.	10.0		4.2	6.0	76.56	93.54
19853	Joseph Wyman & Sons, Millbridge, Me. *Hunter*	5.0	..	4.6	5.9	78.24	95.26

[1] Declaration illegible.

CANNED CLAMS.

Ash		Protein (N x 6.25)		Fat		Carbohydr. (as glycogen)		Undetermined		Chlorine		Station No.
Clams	Liq'r	Clams	Liq'r	Clams	Liq'r	Clams	Liq'r	Clams	Liq'r	Clams	Liq'r	
%	%	%	%	%	%	%	%	%	%	%	%	
2.30	2.30	16.33	2.77	0.75	0.03	1.26	2.31	0.96	0.73	0.82	1.03	19883
2.17	1.76	15.19	2.38	0.91	0.04	2.03	3.62	0.67	0.59	0.64	0.76	19824
2.15	1.81	15.60	2.78	0.79	0.03	1.46	2.79	0.81	0.47	0.67	0.82	19888
2.22	1.77	15.31	3.25	1.35	0.07	3.20	5.88	0.98	0.83	0.60	0.74	19836
2.38	2.88	16.38	2.88	0.90	0.15	1.14	2.24	1.22	0.50	0.59	0.79	19852
3.26	2.58	17.06	2.31	2.03	0.02	0.55	1.02	0.71	0.02	0.70	1.27	19860
2.35	1.77	18.49	2.49	1.87	0.04	0.35	0.49	0.56	0.13	0.50	0.85	19882
2.19	1.65	18.95	3.31	1.99	0.03	0.55	1.13	0.40	0.24	0.38	0.68	19855
2.57	1.73	17.89	2.55	1.50	0.02	0.43	0.77	1.38	0.07	0.46	0.74	19847
2.25	1.76	17.28	1.91	1.76	0.03	0.64	1.13	1.26	0.06	0.44	0.78	19877
1.93	1.45	17.88	1.60	1.32	0.02	0.41	0.61	0.75	0.10	0.34	0.67	19844
2.98	1.91	17.92	2.16	1.59	0.07	0.59	1.22	0.80	0.09	0.51	0.88	19840
2.53	2.07	15.75	2.13	2.22	0.07	0.71	1.31	0.96	0.22	0.62	1.01	19835
1.89	1.05	16.56	1.75	1.69	0.04	0.77	1.40	1.59	0.06	0.18	0.46	19832
2.51	2.11	16.17	3.56	1.60	0.03	0.85	1.81	0.85	0.17	0.60	0.92	19843
2.56	2.28	16.75	1.89	1.33	0.03	0.50	0.79	0.86	0.02	0.65	0.94	19845
1.67	1.25	17.75	3.13	2.09	0.05	0.95	1.97	0.98	0.06	0.20	0.42	19837
2.59	1.54	16.42	2.16	1.42	0.09	0.58	1.10	0.75	0.15	0.45	0.73	19853

Diaprotein No. 2, made by the John Norton Co., Columbus, Ohio, was examined for the Council on Pharmacy and Chemistry, American Medical Association.

Analyses are as follows:

	19519 %	Diaprotein, No. 2. %
Moisture	7.44	11.23
Ash	3.49	6.75
Nitrogen	8.89	12.43
Protein (N x 6.38)	56.72	79.30
Lactose	7.52	0.88
Fat	19.76	1.55

19323. *Washed Gluten flour,* The Health Food Co., N. Y. This flour contained: Moisture 7.10 per cent.; nitrogen 14.05 per cent.; protein (factor 5.7), 80.09 per cent.; soluble carbohydrate (calculated as dextrose), 0.55 per cent.; starch, 2.81 per cent.

18806. *Strawberry extract;* **18807** *Raspberry extract;* **18808** *Pineapple extract;* **18809** *Peach extract;* **18810** *Onion extract.* These were submitted by R. J. Brazil, Rockville, and were examined for sugar only. On short hydrolysis with acid (10 minutes), the samples gave amounts of reducing sugar (calculated as invert sugar), of 0.5, 0.8, 6.5, 11.0 and 3.5 grams per 100 cc. in the order named.

18170. *Sugar Free Milk,* made by D. Whiting & Sons, Boston.

19135 and **19520.** *Whey mixtures,* submitted by Dr. A. S. Brockett, Bristol.

Analyses were made as follows:

	18170 %	19135 %	19520 %
Solids, calculated (determined 16.29)	16.49	....	....
Ash	0.76	....	....
Protein (N x 6.38)	6.25	0.98	1.60
Lactose	0.55	....	....
Fat	8.56	2.60	2.20
Gelatin	0.37	....	....

The question was raised by a manufacturer of diabetic food products as to the possible loss of fat in foods during the baking process. The following series of trials was made using the same

recipe in all cases, except that the shortening material was varied to include (1) butter, (2) lard, (3) cottonseed oil, and (4) corn oil.

The recipe was as follows:

½ cup shortening
1 cup sugar
2 eggs
1 tablespoon milk
2 teaspoons baking powder
2½ cups flour
½ teaspoon vanilla
½ teaspoon nutmeg.

One-half of the dough was taken for analysis and the remainder baked. Analyses of both portions on the moisture-free basis are given in Table II.

TABLE II. PROXIMATE COMPOSITION OF DOUGH BEFORE AND AFTER BAKING (MOISTURE-FREE BASIS).

	Trial I Butter		Trial II Lard		Trial III Cottonseed Oil		Trial IV Corn Oil	
	Unbaked	Baked	Unbaked	Baked	Unbaked	Baked	Unbaked	Baked
	%	%	%	%	%	%	%	%
Ash	2.67	2.60	1.65	1.80	1.94	1.95	1.65	1.70
Nitrogen	1.13	1.17	1.11	1.15	1.08	1.10	1.16	1.15
Protein	7.09	7.32	6.93	7.17	6.78	6.85	7.27	7.21
Fiber	0.28	0.23	0.36	0.29	0.22	0.28	0.24	0.23
Carbohydrate	74.67	74.62	74.44	74.14	74.43	74.06	76.47	76.41
Fat	15.29	15.23	16.62	16.60	16.63	16.86	14.37	14.45

The results show no significant differences in composition between the doughs and the corresponding baked products. The variation in fat which was thought to have occurred was undoubtedly due to the unequal moisture content in the products compared and partly, also, to the greater difficulty in extracting the fat from baked materials.

18601. *Commercial Inulin.* A sample of commercial inulin was examined in comparison with inulin prepared in the laboratory from dahlia tubers.

The commercial sample contained: Moisture 9.53 per cent.; nitrogen 0.16 per cent.; ash 2.58 per cent.; insoluble in water trace; direct reducing sugar calculated as levulose 0.79 per cent.; monosaccharide present (Barfoed's test). Specific rotation at 20° C., corrected for moisture, ash and protein, —32.9°.

According to Browne[1] the specific rotation at 20° of inulin is —36.0° to —40.0°; of pseudoinulin —32.2 and for closely related compounds lower values.

The specific rotation of the inulin prepared in this laboratory from dahlia tubers was —36.5 corrected.

[1] Handbook of Sugar-Analysis, p. 614.

EGGS.

Twenty-two samples of eggs were submitted by the Dairy and Food Commissioner for examination. These were, in most cases, Western or New York State eggs, retailed as *fresh* or *fresh western*. A few were guaranteed to be fresh Connecticut eggs. Of the Western or New York State eggs there were fifteen samples comprising a total of 48 eggs of which, on examination, 3 were classified as fresh, 45 as not fresh; 47 were edible and 1 was non-edible. There were five samples of guaranteed fresh or fresh Connecticut eggs comprising a total of 18. Of these 16 were classified as fresh, 2 not fresh; 17 were edible and 1 was non-edible. Two samples labeled as recandled and repacked were not sold as fresh eggs.

The characteristics of a fresh egg have been defined by various authorities from which the following may be cited.[1]

CHARACTERISTICS OF A FRESH EGG.

Before the candle.	Out of shell.
Air space: Not enlarged; less than three-fourths inch in diameter.	*White:* Firm and thick; opalescent; reflects the light.
White: Firm and clear.	*Yolk:* Spherical and firm; chick spot small with no sign of hatching. Color is uniform for the entire yolk, but varies in color from light yellow to deep orange, and is occasionally olive green.
Yolk: Dimly seen through the white as a shadowy object indistinct in outline. The chick spot is not visible.	*Distinguishing characteristics:* General firm condition of white and yolk. White, opalescent.
Distinguishing characteristics: No shrinkage and general firm conditions of white and yolk. Edible.	

The characteristics of a fresh egg have been further defined in more general terms as follows:[2]

"Its white is capable of whipping well; in cooking it can be satisfactorily poached or soft boiled, it has not absorbed foreign disagreeable odors, its embryo shall not have developed appreciably. The yolk should be fairly stiff and well rounded, the white should not be watery and the chalaza should be well defined."

Opposed to eggs of this quality are those which are recognized as stale or shrunken, yet edible, the characteristics of which have been defined as follows:[3]

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[1] U. S. Dept. Agr., Bull. 565, p. 13 (1918).
[2] Penn. Dept. Agr., Bureau of Foods, 17, p. 44 (1919).
[3] U. S. Dept. Agr., Bull. 565, p. 13 (1918).

CHARACTERISTICS OF AN EGG WHICH IS NOT FRESH.

Before the Candle.	Out of Shell.
Air space: Enlarged; the lower wall may be movable in outline.	*White:* Thin, no opalescence, does not reflect the light as much as does a fresh egg.
White: Thin and clear.	*Yolk:* Flattened, and occasionally may have light, mottled areas.
Yolk: Definite in outline; sometimes weak, and may occasionally have dark mottled areas.	*Distinguishing characteristics:* Thin white and flattened yolk.
Distinguishing characteristics: Enlarged air cell and increased contrast between white and yolk as compared with a fresh egg. Edible.	

Other types of eggs which are not fresh, but still edible, are hatch-spot eggs, weak eggs and eggs with movable air space. The numerous types of inedible eggs need not be enumerated here.

Laws regulating the distribution and sale of eggs aim to insure that the consumer obtains good, edible eggs always, and fresh eggs if the extra price of such is paid. If, however, the consumer's understanding of a fresh egg be one that is but two or three days old then he seldom gets what he expects. If he accepts fresh eggs to be those possessing the characteristics here defined for fresh eggs he obtains such eggs much more frequently. Whatever his idea of fresh may be, it can be positively stated that the elapsed time since an egg was laid is not the determining factor in establishing its freshness; the conditions of holding are all-important. As to how old an egg may be and still retain the characteristics of a fresh egg it is pertinent to quote the following[1]:

"An egg laid in March or April and kept under proper conditions will retain the characteristics which distinguish a fresh egg for from three to four weeks. In warmer weather this time would necessarily have to be reduced, and an egg laid in very hot weather and possibly allowed to remain in the nest for twenty-four hours or more, has lost these characteristics to such an extent that it is not as good as an April egg kept for a month under favorable conditions, and it should not be offered for sale nor be permitted to be sold as and for a fresh egg.

"Nor can an egg which is allowed to remain exposed to ordinary atmospheric conditions in a retail store for several days or a week in warm weather be expected to retain the characteristics which are expected of a fresh egg."

Thus it would appear that when eggs are sold under the description fresh, they should conform to the characteristics of fresh eggs and our examinations have been made upon this hypothesis.

For many of the abuses which occur in connection with the sale of so-called fresh eggs the consumer himself is largely responsible

[1] Penn. Dept. Agr., Bureau of Foods, *17*, p. 44 (1919).

by reason of this prejudice against cold storage eggs. No matter what the season of the year may be he insists that the eggs he buys shall be fresh, and the retailer finds it necessary to incorporate the word *fresh* somewhere in the legend under which he offers eggs for sale in order to sell them at all. If he goes further and increases the price a few cents per dozen his sales are further facilitated, because the average purchaser is very suspicious of cheap eggs. We do not defend this practice on the part of the retailer, but the consumer's share in the responsibility for it is obvious.

In the last ten years great progress has been made in methods of production, handling, transportation and storage through the efforts of federal and state authorities in egg producing centers which furnish the bulk of eggs which are placed in cold storage. The object of all this study which has been given to the egg problem is to insure that good, edible eggs shall be obtained in the season of shortage. It is chiefly his traditional prejudice against this cold storage product which prevents the consumer from availing himself of the full benefit of these improved conditions.

ESKIMO PIE.

This relatively new confection consists of a small brick of ice cream coated with chocolate. The chocolate coating may or may not be reinforced with cocoa butter.

Three samples, all from New Haven manufacturers, collected by the Station agent were examined.

TABLE III. ANALYSES OF ESKIMO PIE.

Sta. No.	Manufacturer	Weight		Fat		Ash
		of Ice Cream	of Coating	in Ice Cream	in Coating	
		Oz.	Oz.	%	%	%
18073	Harris-Hart Co.	1.0	0.7	8.8	45.0	...
18072	New Haven Dairy Co.....	0.8	0.5	12.8	35.0	1.53
18071	Semon Ice Cream Co. ...	1.0	0.7	10.0	36.5	0.95

FATS AND OILS.

OLIVE OIL.

Forty-five samples of olive oil were examined, one of which was taken by the Station agent and the remainder by the Dairy and Food Commissioner. Thirty-three were passed, nine were found to be short weight, and three were adulterated with cottonseed oil.

The brands deficient in volume and adulterated are listed in Table IV.

TABLE IV. OLIVE OIL SAMPLES MISBRANDED OR ADULTERATED.

D.C. No.	Brand	Contents		Remarks
		Declared	Found	
		Ozs.	Ozs.	
21530	*A. & P.* Pure Olive Oil...	16.0	15.2	Short weight
20817	*A. & P.* Pure Olive Oil...	8.0	7.3	Short weight
21512	*Emeri Brand* Olive Oil....	16.0	15.2	Short weight
21544	*Kleckner's* Pure Olive Oil.	8.0	6.8	Short weight
21526	*Kleckner's* Pure Olive Oil.	8.0	7.5	Short weight
11378T	*Kleckner's* Pure Olive Oil.	8.0	6.8	Short weight
21473	*Nectar Cream.* Castel & Fils, Nice	8.0	7.1	Short weight
21531	*Nectar Cream.* Castel & Fils, Nice	8.0	7.4	Short weight
11377T	*Nectar Cream.* Castel & & Fils, Nice	8.0	7.6	Short weight
19831	*P. P. Brand,* Pure Virgin Olive Oil	...	...	Contained cottonseed oil
19844	*P. P. Brand,* Pure Virgin Olive Oil	...	...	Contained cottonseed oil
19845	*P. P. Brand,* Pure Virgin Olive Oil	...	...	Contained cottonseed oil

A second sample of Emeri Brand was passed. The weight was declared to be 16 ozs. and 15.9 ozs. were found.

COTTONSEED OIL.

One sample, **19875,** *Wesson oil,* was examined and passed.

BUTTER.

Two samples of butter were submitted by F. L. Davis, County Agent, Putnam. One sample, **19118,** contained 16.5 per cent. water and 79.2 per cent. of milk fat; the moisture was excessive and the fat deficient. The other sample, **19119,** contained 9.8 per cent. water and 86.3 per cent. fat.

FLAVORING EXTRACTS.

LEMON EXTRACT.

Lemon extract is the flavoring extract prepared from oil of lemon, or from lemon peel, or both, and contains not less than five per cent. (5%) by volume of oil of lemon.[1]

Seventeen samples were collected by the Station agent, of which sixteen were passed and one found to be below standard, contain-

[1] Circ. 136, U. S. Dept. Agr., Office of the Secretary.

ing but 4.3 per cent. of oil of lemon. The deficient sample was made by Chas. H. Baldwin & Son, West Stockbridge, Mass.

Analyses are given in Table V.

TABLE V. ANALYSES OF LEMON EXTRACT.

Station No.	Manufacturer and Brand	Lemon Oil %	Refraction of Oil at 25° C. (Butyro-refractm'r)
18348	Acker, Merrall & Condit Co., New York	6.30	70.0
18412	Armour & Co. *Veribest*	10.40	73.0
18305	Baker Extract Co., Springfield. *Baker's*	5.10	70.0
18419	Chas. H. Baldwin & Son, West Stockbridge, Mass. *Baldwin's*	4.30	73.8
18378	Direct Importing Co., Boston, Mass. *Benefit*	5.10	72.6
18358	Garrett & Co., Brooklyn, N. Y. *Virginia Dare*	9.70[1]	70.0
18403	Globe Grocery Stores, New York. *Pocono*	5.40	73.4
18295	Great Atlantic & Pacific Tea Co., Jersey City, N. J. *Red Front*	5.20	70.0
18323	Howland's, Bridgeport. *Howco*	5.30	70.0
18398	Loomis & Wilson Co., Hartford. *Phoenix*	5.00	72.7
18341	McCormick & Co., Baltimore, Md. *Bee*	7.40	72.0
18376	The Mohican Co., New York. *Mohican*	4.00	71.9
18430	C. F. Sauer Co., Richmond. *Sauer's*	5.80	72.1
18318	Temple Garden Co., Boston, Mass. *Temple Garden*	5.50	70.0
18354	James VanDyke Co., New York. *Ambassador*	5.30	70.0
15708	Williams & Carleton, Hartford. *Charter Oak*	6.50	70.0
18379	Williams & Carleton, Hartford. *Williams' Pure*	7.60	72.6

[1] Labeled double strength.

TERPENELESS EXTRACT OF LEMON.

Three samples of terpeneless extract of lemon were also collected by the Station agent, all of which were properly labeled. They contain no oil of lemon, but should contain 0.2 per cent. of citral derived from oil of lemon.

VANILLA EXTRACT.

Vanilla extract is the flavoring extract prepared from the vanilla bean, with or without sugar or glycerine, and contains, in one hundred cubic centimeters, the soluble matters from not less than ten grams of the vanilla bean[1].

Such an extract was found to contain from 0.07 to 0.22 per cent.

[1] Circ. 136, U. S. Dept. Agr., Office of the Secretary.

TABLE VI. ANALYSES OF VANILLA EXTRACT AND VANILLA SUBSTITUTE.

Station No.	Manufacturer and Brand	Net Contents		Vanillin	Coumarin
		Declared	Found		
		Ozs.	Ozs.	%	%
18347	Acker, Merrall & Condit Co., New York	2.0	2.0	0.21	...
18611	Armour & Co., Chicago, Ill. *Veribest*	1.0	1.0	0.25	...
18296	Great Atlantic & Pacific Tea Co., Jersey City, N. J. *Red Front*	2.0	1.9	0.21	...
18396	Baker Extract Co., Springfield, Mass.	1.0	1.0	0.17	...
18338	Andrew Davey, Inc., New York. *Atlas*	2.0	2.1	0.18	...
18328	Hallock - Denton, Newark, N. J.	2.0	2.0	0.18	...
18324	Howland's, Bridgeport. *Howco*	1.5	1.6	0.20	...
18357	Garrett & Co., Brooklyn, N. Y. *Virginia Dare*	1.25	1.3	0.31[1]	...
18402	Jones Bros. Tea Co., New York. *Pocono*	2.0	2.2	0.18	...
18316	Hartford Extract Co., Hartford. *Stuart*	1.5	1.6	0.66	0.06
18361	McCormick & Co., Baltimore, Md.	0.75	0.74	0.22	...
18321	The Mohican Co., New York	2.0	2.1	0.22	...
18340	Morrow & Co., New York. *Morrow's*	...	0.74	0.24	...
18319	The Newton Tea & Spice Co., Cincinnati, Ohio. *Red Seal*	2.0	1.9	0.18	...
15710	C. F. Sauer Co., Richmond, Va.	1.5	1.7	0.26	...
18422	St. John & Co., Inc., New York	1.5	1.5	0.58	0.08
18418	Schlotterbeck & Foss Co., Portland. Me. *Foss*	2.0	2.0	0.16	...
18355	James Van Dyke Co., New York. *Ambassador*	1.0	1.1	0.20	...
15704	Williams & Carleton Co., Hartford	2.0	1.9	0.24	...
18420	Chas. H. Baldwin & Sons, West Stockbridge, Mass. *Baldwin's*	2.0	1.9	0.09	...

[1] Labeled 150% strength.

of vanillin according to old data[1] obtained in this laboratory upon extracts prepared according to the formula given in the U. S. Pharmacopoeia (1890). More recent figures[2] obtained upon extracts made by the same formula show a range from 0.11 to 0.31 per cent.

Eighteen samples were collected by the Station agent. Seventeen were passed; one bore no statement of net contents. Vanillin content ranged from 0.09 to 0.26 per cent., excluding one sample labeled 50 per cent. over strength. Analyses are given in Table VI.

Vanilla Substitutes.

Two samples labeled Vanilla Substitute were examined, which contained vanallin and coumarin. These contained high percentages, 0.57 to 0.67 per cent. of vanillin, probably synthetic, together with 0.08 and 0.06 per cent. respectively of coumarin.

FLOUR.

Bread and Pastry Flours.

Fifteen samples of flour, representing bread and pastry flours and flours for general family use, were collected by the Station agent and have been analyzed. Moisture was determined by drying in an electric oven at 105°C. and, for comparison, many of the samples were also dried at the temperature of boiling water in an atmosphere of hydrogen. The figures obtained by drying at 105°C. were generally higher than those obtained by drying in hydrogen at 100°C. The comparison was made in eight cases and the differences, referred to the temperature of 105°C., ranged from —0.06 to +0.25 per cent. All differences were + except the one just mentioned, and one other which was ±0. The average difference was +0.11 per cent.

Similarly, a comparison was made in the fat content as determined by the official sixteen-hour continuous extraction, and by the method recommended for baked products.[3] The differences, referred to the modified method, ranged from +0.18 to +0.38 per cent.; the average was +0.25 per cent. based on eleven samples in which the comparison was made.

Ash was determined by slow ignition over night in an electric furnace. The results varied within the narrow limits of 0.36 to 0.48 per cent.

Analyses are given in Table VII.

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[1] Conn. Exp. Station Report 1901, p. 150.
[2] Leach, *Food Inspection and Analysis*, p. 915.
[3] Conn. Exp. Sta. Bull. 200, p. 133 (1917).

TABLE VII. ANALYSES OF FLOUR.

No.	Manufacturer	Moisture	Ash	Protein (N x 5.7)	Fat		Acidity (as lactic acid)
					Official	Modified	
		%	%	%	%	%	%
20181	Austin, Nichols & Co. *Palo*	11.69	0.45	9.69	...	1.41	...
19901	Austin, Nichols & Co. *Snow Flake*	11.85	0.43	9.01	1.09	1.30	0.13
20182	Duluth-Superior Mill. Co. *Imperial*	11.72	0.46	11.97	...	1.67	...
19902	Eagle Roller Mill. Co. *Daniel Webster*	11.65	0.45	10.89	1.14	1.43	0.06
19906	Farwell & Rhines, Inc. *Pansy* (pastry flour)	12.43	0.48	8.27	1.18	1.37	0.13
20178	Jas. Frazee Mill. Co. *Cremo* (winter patent)	13.48	0.37	7.58	0.98	1.29	0.09
19903	Great Atlantic & Pacific Tea Co. *A. & P. Family Flour*	11.33	0.45	11.06	1.03	1.28	0.07
19905	Hecker-Jones-Jewell Mill. Co. *Superlative*	11.18	0.43	10.43	1.19	1.44	0.10
19909	Iglehart Bros. *Swans Down* (cake flour))	11.78	0.36	7.03	0.85	1.03	0.09
20179	Niagara Falls Mill. Co. *Bridal Veil*	12.58	0.38	10.94	1.01	1.39	0.10
19900	Pillsbury Flour Mills Co. *Best XXXX*	11.78	0.42	10.83	1.29	1.48	0.08
20184	Poter-Wrightington, Inc. (cake and pastry flour)	13.63	0.39	8.78	...	1.19	...
20183	Russell-Miller Mill. Co. *Occident*	13.20	0.43	11.39	...	1.67	...
20180	Van Vechten Mill. Co. *Van Vex*	13.09	0.47	8.55	1.16	1.46	0.13
19904	Washburn-Crosby Co. *Gold Medal*	11.83	0.43	10.43	1.05	1.28	0.08

TABLE VIII. ANALYSES OF SELF-RAISING FLOUR.

No.	Manufacturer	Moisture	Ash	Protein (N x 6.25)	Fat		Carbon Dioxide			Salt, (NaCl)
					Official	Modified	Avail.	Residual	Total	
		%	%	%	%	%	%	%	%	%
19821	The D. & C. Co., Inc. *D. & C.* (Mixture of wheat flours)	11.75	1.48	10.31	0.67	0.97	0.30	none	0.30	1.20
20185	France Mill. Co. *Gold Medal.* (Wheat and corn flours)	11.39	6.45	13.38	...	3.27	0.35	none	0.35	...
19897	The Great Atlantic & Pacific Tea Co. *A. & P.* (Flour with powdered skim milk)	10.53	4.61	13.88	2.65	2.81	0.15	0.15	0.30	1.80
19846	Hecker Cereal Co. *Cream* (Wheat flour)	11.44	3.09	10.00	0.75	1.03	0.43	0.15	0.58	0.90
19842	Hecker Cereal Co. *Grandma's* (Wheat, corn and rice flours)	10.83	3.91	8.75	1.18	1.37	0.12	0.08	0.20	1.49
19916	Jersey Cereal Food Co. *Jersey* (Whole wheat and corn flours)	10.23	6.01	10.50	1.01	1.05	0.18	0.36	0.54	2.26
19908	Pillsbury's Flour Mills Co. (Wheat, corn, rice and rye flours).....	10.68	3.85	9.38	1.13	1.18	0.20	none	0.20	1.49
19874	The Quaker Oats Co. *Quaker*.....	11.72	4.35	10.13	0.58	0.83	none	none	none	1.74
19818	Reliable Flour Co. (Wheat flour)...	11.48	2.43	10.00	0.76	1.02	0.59	none	0.59	0.76

Self-Raising Flour Mixtures.

Nine samples of pancake and other flour mixtures were examined, all collected by the Station agent.

Moisture and fat were determined by two methods in each case, as already noted in the discussion of flour, and the differences observed were of about the same order of magnitude as was noted for flour. No carbon dioxide was found in **19874**. Salt content ranged from about 0.8 to 2.3 per cent. calculated as sodium chloride from chlorine.

The analyses are given in Table VIII.

Five samples said to be entire wheat flour submitted by individuals require no particular comment.

ICE CREAM.

In connection with an inspection of ice cream during the past year complete analyses[1] of a number of typical samples were made. These were given in Table IX.

The milk solids, taken as the sum of the percentages of protein, fat, ash and lactose, are in reasonably close agreement with the estimated milk solids taken as the difference between the percentages of total solids and sucrose. The values by the first named plan, vary from 18.3 to 28.1 per cent. and the average of the ten analyses is 22.4 per cent. It is recognized that fat derived from chocolate is included in the milk solids and that nitrogen derived from gelatin is evaluated as milk protein.

Three hundred and thirty-two samples were submitted by the Dairy and Food Commissioner. The classification of these by towns, together with the range in fat content and the average per cent. of fat, is given in Table X.

Samples found to be below the State standard of 8 per cent. for plain ice cream and 6 per cent. for fruit and nut ice cream are given in Table XI.

Classification of samples on the basis of fat content (Table XII), shows that from 50 to 60 per cent. of the samples examined in the last four years were within the range of 8 to 12 per cent. fat. There was also a substantial percentage above 12 per cent. However, as we have stated in previous reports the true average fat content of ice cream produced in the State cannot be deduced from these tables since they cannot take into account the gross production of creams of the several divisions. Products testing above 12 per cent. are not made by the larger manufacturers.

[1] Lactose and sucrose were determined by methods as described in *Methods of Analysis A. O. A. C.*, p. 231.

TABLE IX. ANALYSES OF ICE CREAM.

Sample No.	Flavor	Protein (N x 6.38)	Fat	Ash	Lactose	Sucrose	Total Solids (determined)	Milk Solids		Refraction of Fat at 25° C. (butyro-refractm'r)
								Protein+Fat+Ash+Lactose	Total Solids—Sucrose	
		%	%	%	%	%	%	%	%	
23757	Vanilla	4.33	11.00	0.78	5.05	14.76	36.06	21.16	21.30	49.2
23758	Vanilla	4.38	10.00	0.85	5.36	13.29	35.18	20.59	21.89	49.5
23761	Vanilla	3.00	15.40	0.52	3.38	12.36	34.12	22.30	21.76	49.3
23829	Coffee	5.17	11.20	1.03	6.46	12.08	37.13	23.86	25.05	52.3
23833	Vanilla	2.45	13.60	0.54	3.66	14.43	34.44	20.25	20.01	51.5
23836	Vanilla	3.17	13.60	0.63	3.48	19.86	38.85	20.88	18.99	50.7
23839	Vanilla	2.14	22.80	0.42	2.76	17.93	45.11	28.12	27.18	51.7
23840	Vanilla	3.72	10.80	0.58	3.19	16.73	38.85	18.29	17.12	51.0
23841	Chocolate	5.54	11.00	1.10	6.22	14.10	38.68	23.86	24.58	51.5
23844	Strawberry	4.58	12.40	1.03	6.58	14.55	38.50	24.59	23.95	51.8

TABLE X. INSPECTION OF ICE CREAM.

Town	No. of Samples	Fat Content		
		Range		Average
		%	%	%
Ansonia	5	3.2	16.4	11.1
Bantam	1	...	...	10.2
Branford	1	...	...	9.0
Bridgeport	32	4.2	23.2	10.5
Bristol	5	11.6	12.8	12.3
Brooklyn	1	...	...	11.2
Cheshire	1	...	...	18.0
Danbury	7	8.4	11.6	9.9
Danielson	4	6.6	14.4	10.4
Derby	4	8.0	9.6	8.8
East Portchester	5	7.0	11.2	9.8
Forestville	4	8.6	12.6	9.9
Glastonbury	1	...	...	11.0
Gildersleeve	1	...	...	10.0
Greenwich	4	8.4	24.4	14.3
Groton	1	...	...	18.6
Hartford	28	3.4	20.4	13.5
Hazardville	1	...	...	11.2
Jewett City	1	...	...	10.2
Manchester	6	8.0	14.6	13.2
Marbledale	1	...	...	8.2
Meriden	6	8.0	16.8	13.9
Middletown	8	12.2	18.0	14.5
Montville	1	...	...	11.0
Moosup	2	9.6	22.8	16.2
Mystic	3	15.0	20.0	15.9
Naugatuck	7	6.8	12.2	10.1
New Britain	7	10.0	18.4	12.8
New Hartford	1	...	...	15.2
New Haven	23	7.8	17.4	11.3
New London	13	8.6	17.8	13.7
New Milford	5	7.8	20.3	12.1
North Grosvenordale	2	12.0	16.2	14.1
Norwalk	4	8.8	14.6	11.8
Norwich	17	6.8	20.4	13.7
Pawcatuck	2	9.4	11.1	10.2
Plainfield	3	10.1	13.6	12.2
Plainville	2	7.6	11.8	9.7
Pomfret	3	12.4	28.0	22.5
Portland	1	...	...	15.2
Putnam	6	10.4	13.2	12.3
Quinebaug	1	...	...	12.4
Rockville	5	8.6	14.8	12.9
Seymour	3	6.6	8.4	7.5
Shelton	1	...	...	10.6
Somers	1	...	...	15.4
Somerville	1	...	...	10.0
Southington	3	9.8	14.2	12.3

TABLE X. INSPECTION OF ICE CREAM—*Concluded.*

Town	No. of Samples	Fat Content		
		Range		Average
		%	%	%
South Norwalk	6	8.0	11.8	10.3
Stafford Springs	15	12.2	18.0	13.3
Stamford	13	3.9	15.0	9.6
Stratford	2	8.6	8.6	8.6
Stonington	4	10.2	17.3	13.4
Suffield	1	...	...	9.2
Terryville	1	...	...	10.3
Thomaston	2	15.2	15.2	15.2
Thompsonville	4	11.4	15.0	13.7
Torrington	11	8.1	16.2	11.2
Unionville	2	8.4	11.4	9.9
Wallingford	6	10.8	15.6	13.7
Waterbury	12	6.5	17.4	10.6
Waterville	1	...	...	9.6
West Wauregan	2	10.8	11.0	10.9
Winsted	6	8.0	14.0	11.2
Willimantic	4	13.4	20.6	17.0
Windsor Locks	6	8.2	12.4	10.0

INFANT FOODS.

In a previous[1] examination of these special preparations for infant feeding, particular attention was given to the composition of the product when prepared for feeding according to the directions. The examination of some of these products made during the past year has been of the material as sold, and the analyses include determinations of certain mineral constituents (calcium phosphorus and iron), of the ash.

Twenty-three samples have been analyzed and the results are given in Table XIII.

Accepting the analysis of milk ash as stated by Leach[2], the quantities of calcium, phosphorus and iron in whole milk are CaO 0.14, P_2O_5 0.17 and Fe_2O_3 0.0009 per cent. Substantially the same figures, except for iron, are obtained on the basis of the figures given by Sherman[3], viz., CaO 0.17, P_2O_5 0.21 and Fe_2O_3 0.0003 per cent. There is a considerable difference in iron content of milk as stated by different authorities[4]. Assuming 88 per cent. water in milk and 4 per cent. moisture in milk powder, the last named series of ash constituents becomes CaO 1.36, P_2O_5 1.71 and Fe_2O_3 0.003 per cent. for whole milk powder.

[1] Conn. Exp. Sta., Report on Foods and Drugs, 1915.
[2] Leach, *Food Inspection and Analysis*, p. 113.
[3] Sherman, *Chemistry of Food and Nutrition*, p. 424.
[4] Lane-Claypon, *Milk and Its Hygienic Relations*, p. 50.

TABLE XI. ICE CREAM BELOW STANDARD.

No.	Dealer	Manufacturer	Flavor	Fat
	Ansonia			%
23021	A. Romano	Own make	Strawberry	3.2
	Bridgeport			
23170	Frank Cuneo	Own make	Vanilla	7.8
23930	Frank Cuneo	Own make	Vanilla	7.6
23171	George Costeintis	Own make	Vanilla	4.2
23920	A. DeBarbieri	Own make	Vanilla	6.2
23922	A. Musante	Own make	Vanilla	7.0
23165	Bella Napoli	Reichert's	Vanilla	7.3
23174	Paris Conf. Co.	Own make	Vanilla	7.8
	Danielson			
23830	Mattie O'Brien	Own make	Vanilla	6.6
23832	Mary Sallotti	Own make	Vanilla	7.2
	East Portchester			
23068	Andre Esposito	Sup'r Ice Cream Co.	Chocolate	7.0
23066	Frank Port	Huber	Vanilla	7.2
	Hartford			
23769	Rosario Cipolla	Own make	Vanilla	3.4
	New Milford			
23091	Park Pharmacy	Int'l Ice Cream Co	Vanilla	7.8
	Norwich			
23806	Marathon Ice Cream Co.	Own make	Vanilla	7.5
23816	Olympia Ice Cream Co.	Own make	Vanilla	6.8
	Plainville			
23933	Soda Shop	Own make	Vanilla	7.6
	Seymour			
23011	J. Casagrande	Own make	Vanilla	6.6
	Stamford			
23084	Alfonso Esposito	Own make	Vanilla	3.9
23074	Rocco Sessa	Star Conf. Co.	Vanilla	6.5
23082	Star Conf. & Ice Coream Co.	Own make	Vanilla	6.3
	Waterbury			
23945	Charles Musante	Own make	Vanilla	6.5
23942	Michael Whalen	Own make	Vanilla	7.6

Dryco and Mammala, both derived from milk which is in part skimmed, approximate these figures. The milk preparations are higher in phosphorus, and particularly in calcium, than those products intended for use as amendments to milk.

TABLE XII. CLASSIFICATION OF ICE CREAM ON THE BASIS OF FAT CONTENT.

	1919		1920		1921		1922	
Range of Fat, Per Cent	Samples	Per Cent	Samples	Per Cent	Samples	Per Cent	Samples	Per Cent
8.0 to 9.9	25	30.5	134	33.5	94	28.5	80	24.1
10.0 to 11.9	26	31.7	83	20.8	71	21.6	73	22.0
12.0 and above	28	34.1	125	31.2	123	37.4	151	45.5
Below 8.0	3	3.7	58[1]	14.5	41[2]	12.5	28[3]	8.4
Total	82	100.0	400	100.0	329	100.0	332	100.0

[1] Includes 11 fruit ice creams of legal standard, viz., 6 per cent.
[2] Includes 14 fruit ice creams of legal standard, viz., 6 per cent.
[3] Includes 5 fruit ice creams of legal standard, viz., 6 per cent.

TABLE XIII. ANALYSES OF

No.	Brand	Calcium, CaO	Phosphorus, P_2O_5	Iron, Fe_2O_3
	MILK PREPARATIONS.	%	%	%
15693	Allenbury's Milk Food No. 1	0.58	0.89	0.003
15661	Allenbury's Milk Food No. 2	0.40	0.80	0.003
15685	Borden's Malted Milk	0.46	0.87	0.003
15690	Borden's Malted Milk with Cocoa	0.84	1.34	0.007
15683	Dryco	1.57	2.00	0.003
15684	Horlick's Malted Milk	0.50	0.79	0.003
15662	Mammala	1.29	1.59	0.001
15660	Nestle's Milk Food	0.25	0.49	0.004
15699	Thompson's Hemo	0.40	0.89	0.004
15692	Thompson's Malted Milk	0.41	0.84	0.003
15688	Thompson's Peptonized Food	0.48	0.87	0.001
	USED WITH MILK.			
15697	Brooks' Baby Barley	0.04	0.83	0.006
15663	Eskay's Food	0.01	0.32	0.003
15695	Imperial Granum	0.01	0.27	0.003
15701	Johnson's Barley Flour	0.03	0.46	0.004
15696	Justfood	none	0.05	0.004
15691	Mead's Dextri-maltose No. 1	0.04	0.07	0.021
15689	Mead's Dextri-maltose No. 2	0.01	0.05	0.011
15698	Mead's Dextri-maltose No. 3	0.01	0.05	0.009
15694	Mellin's Food	0.03	0.72	0.009
15702	Peptogenic Powder (Fairchild Bros. & Foster)	0.05	0.07	0.001
15659	Ridge's Infant Food	0.03	0.24	0.001
15700	Robinson's Patent Barley	0.01	0.44	0.003

MEAT PRODUCTS.

Hamburg Steak.

Eight samples were examined for the Dairy and Food Commissioner, of which five were illegally preserved with sulphites or sulphite-containing substances and three were passed. State regulation 7 provides that no objection will be raised to foods which contain ordinary amounts of sulphur dioxide, provided the fact is declared. This is to exempt certain products such as molasses, dried fruits and wines which have been subjected, directly or indirectly, to the process known as sulphuring. Sulphites are used in meat chiefly to preserve its fresh appearance and to act as a deodorant, and is not contemplated by the regulation just quoted.

Samples containing sulphurous acid in amounts ranging from

Infant Foods.

Water	Ash	Protein (N x 6.25)	Fiber	Fat	Carbohydrate (other than fiber)	No.
%	%	%	%	%	%	
3.72	4.10	10.50	none	14.09	67.59	15693
4.23	3.67	9.13	none	15.15	67.82	15661
2.68	3.29	16.38	0.28	8.83	68.54	15685
4.47	4.67	20.00	0.43	4.27	66.16	15690
3.14	7.58	30.63	none	11.70	46.95	15683
2.83	4.19	15.31	0.26	8.00	69.41	15684
5.13	6.11	23.38	none	12.96	52.42	15662
2.98	1.56	12.00	0.27	6.13	77.06	15660
2.03	4.71	11.56	0.16	6.56	74.98	15699
0.93	4.21	10.56	none	8.10	76.20	15692
1.53	4.36	12.44	0.12	6.61	74.94	15688
8.87	1.62	11.50	1.13	1.40	75.48	15697
2.57	1.45	6.50	0.37	1.33	87.78	15663
6.79	0.50	12.88	0.26	0.52	79.05	15695
9.60	0.89	8.56	0.50	1.31	79.14	15701
7.39	0.27	0.75	none	none	91.59	15696
3.33	2.23	0.63	none	0.01	93.80	15691
2.68	1.04	0.63	none	0.09	95.56	15689
3.42	2.12	0.50	none	0.01	93.95	15698
3.65	3.24	11.19	0.32	1.58	80.02	15694
1.59	1.12	0.63	none	0.14	96.52	15702
9.59	0.57	10.13	0.20	0.25	79.26	15659
9.84	0.82	7.38	0.50	1.37	80.09	15700

260 mgs. to over 3300 mgs. per kilo were purchased at the following places:

D. C. No.	City.	Dealer.
21880	*Bridgeport*	M. Mishalke.
21884	*Bridgeport*	Aurora Market.
22112	*New Haven*	Broadway Market.
22109	*New Haven*	Liberty Market.
22108	*New Haven*	New Haven Public Market.

SAUSAGE.

Eighty samples of sausage submitted by the Dairy and Food Commissioner were examined for excess starch and for sulphites. Twelve contained excessive amounts of starch, indicating added cereal, two contained sulphites (SO_2) and sixty-six were passed. The meat ordinarily used in the manufacture of sausage contains sufficient water to make the packing in thin casings readily possible. With inferior cuts of meat stock a further absorbent is necessary to facilitate this process and to prevent shrinkage of the product on cooking. For this purpose starchy material, such as bread or cracker crumbs, is used. The U. S. Bureau of Animal Industry regulations allow cereal in sausage not exceeding 2 per cent., which must be declared in all cases. The products which we have examined have been judged on that basis although there are no specific regulations on this point in this State.

The status of sulphites has already been discussed in connection with the subject of hamburg steak.

Samples in which more than 2 per cent. of cereal was indicated or which contained sulphites are given in the following list. Starch ranged from 1.07 to 3.15 per cent. indicating cereal contents of from 2.1 to 6.3 per cent.

No.	City or Town.	Dealer.	Manufacturer.
21870	*Bridgeport*	Washington Market	Own make.
21874	*Bridgeport*	John Colonness	Own make.
21875	*Bridgeport*	Erle's Market	Own make.
21879	*Bridgeport*	M. Michalke	Own make.
21210	*Hartford*	Chicago Market	Own make.
21215	*Hartford*	A. Loffmin	Hartford Provision Co.
21217	*Hartford*	L. Landers	Own make.
21200	*Hartford*	Eastern Provision Co.	Own make.
21246	*Middletown*	Public Market	Scofield Sausage Co.
22105	*New Haven*	Enterprise Market	Own make.
21239	*New Haven*	Palace Market	Own make.
21854	*Waterbury*	Mohican Market	Swift & Co.
21856	*Waterbury*	Rogers Market	Own make.
21859	*Waterbury*	E. O. Hearne	Swift & Co.

MILK AND MILK PRODUCTS.

CRYOSCOPY OF MILK[1].

INFLUENCE OF ACIDITY UPON FREEZING POINT DEPRESSION OF MILK.

The cause of the acidity which fresh milk shows toward phenolphthalein has been the subject of much investigation. Carbon dioxide, acid salts and casein, separately or in various combinations, generally have been regarded as responsible for the so-called apparent acidity of normal milk in a fresh condition. To accept the careful studies of Van Slyke and his co-workers, however, the acidity of fresh milk is due chiefly to the presence of acid phosphates[2]; the acidity decreases with increasing CO_2 content[3]; and casein is combined with calcium as calcium caseinate which is neutral to phenolphthalein. As milk ages another type of acidity appears due chiefly to bacterial decomposition of lactose with the formation of lactic acid. Examination of samples of milk, under induced souring, taken at intervals up to ninety-six hours showed that the figures representing the acidity increases in the milk are almost identical with those representing the determined amounts of lactic acid[4]. In their experiments the degree of acidity was determined by titration with N/10 alkali, using phenolphthalein as an indicator but first removing calcium by means of neutral potassium oxalate to avoid the error otherwise introduced by the hydrolysis of dicalcium phosphate during titration. The results obtained in this way are about one-half as great as those obtained by the usual method of titration.

In applying the freezing point test as a means of detecting added water in milk the question of the influence of acidity has been raised. Without other complicating factors it would be expected that the mere increase in amount of lactic acid would result in a corresponding increase in freezing point depression. Kiester[5] has studied this point and additional data have been obtained in this laboratory during the past year. The combined data are given in Table XIV. Acidity is the result of spontaneous souring in these trials, and it has been determined by titration without removal of calcium according to the uniform plan followed in work carried on last year.

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[1] Taken from the report of the writer as associate referee to the Association of Official Agricultural Chemists at the meeting at Washington in November, 1922.

[2] Van Slyke, L.L., and Bosworth, A. W. N. Y. Agr. Exp. Sta., Tech. Bull. 37, 1914.

[3] Van Slyke, L. L., and Baker, J. C. Jour. Biol. Chem. *40*, 345.

[4] Van Slyke, L. L., and Bosworth, A. W. N. Y. Agr. Exp. Sta., Tech. Bull. 48, 1916.

[5] Kiester, J. T. Jour. Ind. Eng. Chem., 9 864, 1917.

TABLE XIV. INFLUENCE OF ACIDITY UPON THE FREEZING POINT DEPRESSION OF MILK.

No.	Description of Sample	Date, 1922	Acidity, %	Freezing Point, —° C.	Increase in Acidity, ° C.	Increase in in F. P. Depression, ° C.	Increase in F. P. Depression per .01% Increase in Acidity
18169	Pasteurized	11/16	0.130	.530	....	....	....
		11/17	0.130	.530	....	....	....
		11/18	0.460	.627	0.330	0.097	.0029
	Average based on total increases				0.330	0.097	.0029
21667	Market	2/3	0.215	.560	....	....	....
		2/4	0.335	.600	0.120	.040	.0033
		2/5	0.405	.623	0.070	.023	.0033
		2/6	0.510	.653	0.105	.030	.0029
		2/7	0.580	.672	0.070	.019	.0027
	Average				0.365	.112	.0031
21668	Market	2/3	0.205	.550	....	....	....
		2/4	0.300	.584	0.095	.034	.0036
		2/5	0.400	.620	0.100	.036	.0036
		2/6	0.535	.656	0.135	.036	.0027
		2/7	0.600	.673	0.065	.017	.0026
	Average				0.395	.123	.0031
18706	Raw	2/6	0.140	.539	....	....	....
		2/7	0.140	.539	....	....	....
18707	Raw	2/7	0.150	.540	....	....	....
		2/11	0.250	.570	0.100	.030	.0030
		2/14	0.550	.660	0.300	.090	.0030
	Average				0.400	.120	.0030
18708	Raw	2/8	0.150	.541	....	....	....
		2/11	0.220	.567	0.070	.026	.0037
18733	Raw	2/15	0.145	.530	....	....	....
		2/16	0.150	.530	0.005	.000	....
		2/17	0.225	.555	0.075	.025	.0033
		2/18	0.415	.613	0.190	.058	.0031
	Average				0.270	.083	.0031
18734	Raw	2/16	0.150	.541	....	....	....
		2/18	0.310	.590	0.160	.049	.0031
	(From Kiester's Table III).						
1	Pasteurized	....	0.15	.545	....	....	....
			0.18	.548	0.03	.003	.0010
			0.42	.637	0.24	.089	.0037
	Average				0.27	.092	.0034
2	Pasteurized	....	0.15	.509	....	....	....
			0.18	.548	0.03	.009	.0030
			0.34	.602	0.16	.054	.0034
	Average				0.19	.063	.0033

TABLE XIV—*Concluded.*

No.	Description of Sample	Date, 1922	Acidity, %	Freezing Point, —° C.	Increase in Acidity, ° C.	Increase in F. P. Depression ° C.	Increase in F. P. Depression per .01% Increase in Acidity
3	Pasteurized	....	0.18	.496	...	....	....
			0.21	.515	0.03	.019	.0063
			0.24	.522	0.03	.007	.0023
			0.27	.536	0.03	.014	.0047
	Average				0.09	.040	.0044
4	Pasteurized	....	0.15	.552	...	....	....
			0.17	.555	0.02	.003	.0015
			0.20	.558	0.03	.003	.0010
			0.46	.636	0.26	.078	.0030
	Average				0.31	.084	.0027
5	Pasteurized	....	0.16	.541	...	....	....
			0.18	.546	0.02	.005	.0025
			0.22	.564	0.04	.018	.0045
	Average				0.06	.023	.0027

A study of the results in Table XIV shows that the effect of increased acidity upon freezing point depression is an additive factor, and that the magnitude of the increased depression closely approximates 0.003° C. for each 0.01 per cent. increase in acidity. If we may broadly assume acidities less than 0.25 per cent. due to normal variations in fresh milk and figures in excess of that amount due to lactic acid, then, with this distinction in mind, closer examination of the results shows that there is greater uniformity in depression increments per unit of acidity in the lactic acid stage than obtains in the stage of apparent acidity. The data on acidity intervals within the range of apparent or normal acidity are chiefly furnished by figures quoted from Kiester's tabulation; but, in any case, it is recognized that measurements within this restricted range, especially when acidity determinations are made by means of titration, are necessarily attended with greater chances of experimental error. The practical deduction to be drawn from these data is that a correction for acidity ought to be made in the observed freezing point depression of milk which is sensibly sour. The numerical definition of this point in terms of acidity will obviously vary in different samples. Steuart[1] observed that the acidity of fresh milk from individual cows varied from 0.10 to 0.21 per cent. and that of commercial mixed milk varied from 0.16 to 0.20 per cent. McNerney[2] noted practically the same limits and they are further substantiated by the figures contained in the report made on this subject last year[3]. Sommer and Hart[4], however,

[1] Steuart, D. W. Jour. Dairy Sci., *3*, 52, 1920.
[2] McNerney, T. J. Ibid. *3*, 227, 1920.
[3] Bailey, E. M. Jour. A. O. A. C., *5*, 4, 484.
[4] Sommer, H. H., and Hart, E. B. Jour. Dairy Sci., *4*, 7, 1921.

cite an instance of fresh herd milk with an acidity of 0.257 per cent. which was not sour as judged by the evidence of smell and taste. In general, it would appear that acidities in excess of 0.20 or 0.25 per cent. result from fermentation, and will represent milk which is sour or near the "turning" point. No correction of freezing point is recommended for acidity within the range normal for fresh milk, i.e., milk showing an acidity not exceeding 0.20 per cent.

FREEZING POINT OF MILK FROM TUBERCULAR COWS.

Milk from individuals in a herd consisting of six Jersey cows was examined. The first series of samples was taken three days after all the animals had been subjected to the tuberculin test. The second series of samples was taken about one week after the first series.

TABLE XV. FREEZING POINT OF MILK FROM TUBERCULAR COWS.

Herd	Cow No.	Date, 1922	Sp. Gr.	Solids	Fat	S-N-F.	Acidity	Freezing Point
				%	%	%	%	—° C.
M	1 Non-reactor	3/21 A.M.	1.0325	13.54	4.5	9.04	0.14	0.544
		P.M.	1.0323	13.40	4.5	8.99	0.13	0.549
		3/27 A.M.	1.0309	13.02	4.4	8.62	0.13	0.539
		P.M.	1.0317	13.12	4.3	8.82	0.12	0.546
	2 Reactor	3/21 A.M.	1.0333	13.62	4.4	9.22	0.14	0.543
		P.M.	1.0323	13.57	4.4	8.97	0.14	0.539
		3/27 A.M.	1.0323	13.22	4.3	8.92	0.13	0.546
		P.M.	1.0326	13.57	4.5	9.07	0.13	0.539
	3 Reactor	3/21 A.M.	1.0338	13.63	4.3	9.33	0.15	0.550
		P.M.	1.0333	14.10	4.8	9.30	0.14	0.549
		3/27 A.M.	1.0327	13.47	4.4	9.07	0.13	0.544
		P.M.	1.0327	13.47	4.4	9.07	0.13	0.540
	4 Reactor	3/21 A.M.	1.0343	15.08	5.4	9.68	0.14	0.550
		P.M.	1.0345	15.00	5.3	9.70	0.15	0.549
		3/27 A.M.	1.0323	14.08	5.0	9.08	0.13	0.540
		P.M.	1.0336	14.66	5.2	9.46	0.14	0.544
	5 Non-reactor	3/21 A.M.	1.0333	14.46	5.1	9.36	0.17	0.548
		P.M.	1.0335	15.00	5.5	9.50	0.16	0.549
		3/27 A.M.	1.0330	14.76	5.4	9.36	0.17	0.559
		P.M.	1.0331	15.02	5.6	9.42	0.17	0.545
	6 Reactor	3/21 A.M.	1.0335	14.27	4.9	9.37	0.17	0.562
		P.M.	1.0326	14.05	4.9	9.15	0.16	0.553
		3/27 A.M.	1.0318	14.09	5.1	8.99	0.16	0.554
		P.M.	1.0332	13.84	4.6	9.24	0.16	0.549

The data presented last year showed that freezing points of milk from tubercular reactors, or cows otherwise abnormal physically, were generally within the limits for normal milk. The few exceptions there noted were in the direction of decreased depressions.

In the case of the herd examined this year no figures outside the limits suggested a year ago for normal milk were obtained.

It is further noted in the work of Van Slyke and Baker[1] that a number of instances of garget did not cause the milk to show abormal freezing point depressions.

ABNORMAL MILK.

In the work reported last year a few samples of milk were examined which showed freezing point depressions which were outside the limits tentatively suggested for normal milk.[2] Since all of these samples were from one herd a further study of this herd was made. Forty samples from nineteen individual cows of the herd and two samples of the mixed milk were examined, with the result that only one instance of a freezing point depression outside the limits —0.530 to —0.566°C. was noted. The summaries for acidity and freezing point are as follows:

	Acidity %	Freezing point -0°C
Individual Cows.		
Maximum	0.15	0.568
Minimum	0.10	0.532
Average	0.13	0.547
Herd.		
A. M.	0.13	0.557
P. M.	0.14	0.550

The value of the cryoscopic method as an adjunct to present methods for detecting water is fully demonstrated by data covering a period of more than two years. Its use is unnecessary when present methods furnish conclusive evidence; but, in the opinion of the majority of experienced workers, its unique value is shown in those cases where the evidence of present methods is conflicting or inconclusive. The tentative limits for normal milk may have to be modified; but since the value of this, or any similar method, is lessened as the limits of normal variation are widened, it is believed that the limiting values as already defined should remain until they can be modified more advisedly.

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[1] New York Exp. Sta., Tech. Bull. 71 (1919).
[2] Conn. Exp. Sta., Bull. 236, p. 259.

TABLE XVI. ADULTERATED MILK.

No.	Dealer	Solids	Fat
	CONTAINING ADDED WATER		
	Ansonia.	%	%
21612	Jacob Gabok	10.48	3.4
	Beckley.		
22462	John Tonar	11.63	4.0
	Berlin.		
21665	Joseph Kannuski	10.85	3.5
21993	Argis Mileo	11.07	3.4
	Bridgeport.		
14506	Frank H. Edwards....	10.38	3.0
14507	John Flynn	9.57	2.7
	Bridgewater.		
22262	William Dickinson ...	10.86	3.2
21968	C. C. Shannon	11.15	3.5
	Clintonville.		
21607	Ernest Armstead	11.67	3.8
21608	Ernest Armstead	11.03	3.3
21609	Ernest Armstead	11.50	3.7
21610	Ernest Armstead	11.60	3.7
	Colchester.		
23287	F. J. Sullavan	10.30	2.9
	Danbury.		
19910	P. Spoonheimer	8.42	2.9
19919	C. J. Wildman	12.63	5.1
	Goshen.		
23550	Morris Perregaux	9.38	2.9
23551	Morris Perregaux	8.73	2.9
23552	Morris Perregaux	8.94	2.8
	Hawleyville.		
21698	Frank Piskura	11.20	3.3
	Hebron.		
23294	J. T. Karas	10.60	3.5
	Jewett City.		
24137	Paul Geist	11.36	3.5
	Kensington.		
23591	Theo. Benjamin	9.41	3.0
	CONTAINING ADDED WATER—*Continued.*		
	Litchfield.	%	%
23555	W. L. Gray	11.00	3.5
23556	W. L. Gray	11.12	3.5
	Long Hill.		
14508	John Zabel	10.62	3.1
14509	John Zabel	10.36	3.3
14510	John Zabel	11.81	4.3
14511	John Zabel	9.25	2.6
	Manchester.		
18347	Manchester Lumber Co.	10.63	3.3
	Milford.		
22576	Schemerhorn Home ..	10.88	3.2
22577	Schemerhorn Home ..	10.99	3.3
22580	Schemerhorn Home ..	10.53	2.9
	New Britain.		
21590	James Portigo	10.11	3.2
21591	James Portigo	9.86	3.2
	New Haven.		
23396	Henry's Restaurant ..	10.84	3.7
23383	Italian American Restaurant	11.73	4.7
	Newington.		
23891	W. Bishupiak	10.83	3.7
23893	W. Bishupiak	8.27	2.5
	New London.		
23618	J. Josephson	11.93	4.1
23619	J. Josephson	10.90	3.4
23620	Wolf Rich	10.95	3.6
	New Milford.		
23529	Geo. Erickson	10.96	3.3
22009	Harry Kinney	9.53	3.4
22067	Daniel Canfield	10.25	2.5
	Niantic.		
21663	H. Solowitz	10.56	3.4
21664	H. Solowitz	10.55	3.5

TABLE XVI. ADULTERATED MILK—*Continued.*

No.	Dealer	Solids	Fat
	CONTAINING ADDED WATER—*Continued.*		
	Northford.	%	%
23363	Mike Dwzdz	10.47	3.2
	North Franklin.		
22544	T. Newmann	11.61	4.2
	Norwich.		
21674	Samuel Cisco	10.23	3.3
21675	L. E. Holden	11.33	4.3
	Orange.		
21394	E. S. Clark	10.65	3.0
	Rockville.		
22368	Louis Pestillo	9.87	3.0
24455	Louis Pestillo	9.92	3.6
24456	Louis Pestillo	9.95	3.5
	Seymour.		
21602	G. Wallace	5.04	1.7
21603	G. Wallace	6.50	2.4
	Southbury.		
21342	Robt. Dougal	10.94	3.2
	South Manchester.		
21538	Soda Shop	11.79	4.8
	Thompsonville.		
22359	Thomas Bostick	9.23	2.4
22360	Thomas Bostick	9.59	2.7
22361	Thomas Bostick	9.61	2.8
22362	Thomas Bostick	10.09	3.1
22663	Paul Russo	9.76	2.8
22363	Geo. Rutherford	9.38	2.8
22364	Geo. Rutherford	9.38	2.8
22365	Geo. Rutherford	9.38	2.8
	Washington.		
20878	E. J. Kriksci	9.90	2.9
20879	E. J. Kriksci	9.83	2.9
	West Cheshire.		
21630	J. Cutermash	8.85	2.9
	CONTAINING ADDED WATER—*Concluded.*		
	Westville.	%	%
21491	R. Edwards	10.72	3.0
	Wethersfield.		
22832	O. A. Davis	10.38	3.3
	Winsted.		
24042	Thomas Kavanough ..	10.55	3.4
	SKIMMED MILK		
	Amston.		
23265	J. Parelsky	9.35	1.4
	Barkhamsted.		
23652	H. Galpin	10.62	2.2
	Bethany.		
21396	Elbert S. Down	10.92	2.5
	Bloomfield.		
21800	Martin Larensen	11.92	3.2
21833	J. H. Francis	12.34	3.0
	Branford.		
22569	M. E. Taylor	11.20	2.6
	Canton.		
23307	S. W. Bristol	10.70	2.0
23308	S. W. Bristol	10.60	2.7
	Danbury.		
21911	Atlantic Lunch	10.99	2.6
21912	Bridge Lunch	10.18	2.3
21910	Sears Lunch	11.39	2.8
	Danielson.		
24133	S. Gingras	11.64	2.9
	East Granby.		
23579	W. C. Griffin	10.35	2.0

TABLE XVI. ADULTERATED MILK—*Continued.*

No.	Dealer	Solids	Fat
	SKIMMED MILK—*Continued.*		
	East Hartford.	%	%
23585	Salvadore Domfrino..	10.24	1.8
22356	Salvadore Domfrino ..	10.03	1.5
23589	H. L. Lee	11.17	2.7
22355	Mike McNeil	9.79	1.2
22655	J. Richards	10.06	1.8
	Kensington.		
23590	Theo. Benjamin	12.24	2.7
	Manchester.		
24458	**Manchester Lumber** Co.	11.65	3.0
	New Haven.		
24439	The Avenue Lunch...	11.47	2.7
23381	B. & L. Lunch	11.18	2.6
24301	Capitol Lunch	10.84	2.3
24355	Childs' Lunch	11.66	3.0
21357	Chilis Restaurant	10.46	2.3
24354	Coleman's Lunch	9.96	1.4
23369	Diamond Lunch	10.40	1.9
24352	Eli Lunch and Restaurant	11.31	2.9
21358	Eli Restaurant	10.99	2.6
24351	Far East Restaurant..	10.97	2.6
23136	Wm. Fortidos	11.54	3.0
24428	Gara Bros. Restaurant	11.88	3.1
23377	Gilbert Restaurant ...	11.24	2.7
24434	Grand Restaurant	10.55	1.9
23382	Hill Lunch	11.34	2.8
23147	Holcomb Lunch	11.15	2.5
23393	Home System	11.10	2.3
23384	Italian American Restaurant	10.98	2.3
23143	Italian Restaurant	11.26	2.5
23373	Kresge's 5 & 10 cent Store	12.23	3.1
24418	Lafayette Lunch.....	11.27	2.6
24357	M. & K. Restaurant...	11.88	3.1
23379	Mac's Restaurant	11.12	2.6
23142	Murray's Restaurant..	10.09	2.3
24412	New Idea Lunch	10.89	2.3
24356	Old English Coffee House	10.98	2.1
24423	Old Windsor Chop House	11.41	.29
	SKIMMED MILK—*Continued.*		
		%	%
21360	Presto Lunch	9.82	1.6
23389	Princeton Lunch	11.20	2.6
24446	R. R. Lunch	11.54	2.9
24444	Red Cross Candy Kitchen	9.74	1.2
24302	Speh Restaurant	11.37	2.7
24303	Volk Lunch	10.68	1.9
24361	Waldorf Lunch	10.23	1.5
24425	Waldorf Lunch	10.77	2.2
	Northford.		
23362	J. Jakubiszazn	11.11	2.7
	Norwich.		
24234	Louis Libo	11.10	2.2
22299	Udel Libo	11.38	2.5
21672	Vincent Micar	11.28	2.7
	Plainville.		
22315	Henry S. Tyler	11.39	2.7
	Plainfield.		
24131	Pete Raymond	11.34	2.8
	Putnam.		
22918	Harry Callas	11.14	2.7
22917	Louis Girard	11.07	2.6
22915	Frederick Krouer	11.20	2.6
	Quinebaug.		
22902	Arthur Piette	11.88	3.1
	Seymour.		
21371	Joe Scavone	12.14	2.9
	South Britain.		
19932	E. A. Scoville	11.90	3.1
	Southbury.		
21136	E. H. Pratt	11.49	2.9
	South Coventry.		
22942	Frank O. Boynton....	11.49	2.9

TABLE XVI. ADULTERATED MILK—*Concluded.*

No.	Dealer	Solids	Fat	No.	Dealer	Solids	Fat
	SKIMMED MILK —*Continued.*				SKIMMED MILK —*Concluded.*		
	South Manchester.	%	%		*Watertown.*	%	%
23879	J. Kalamonski	11.57	2.8	21533	S. Bachararhaig	9.44	1.1
23880	J. Kalamonski	11.58	2.6		*West Goshen.*		
	Thompsonville.			23576	Harrison H. Ives	10.02	2.4
22493	K. Balambams	11.31	2.4				
23580	K. Balambams	10.93	2.5		*Wethersfield.*		
22496	John Kallar	10.81	2.3	23858	A. H. Griswold	11.59	2.9
22660	David Stillson	11.93	3.0				
	Torrington.				*Willimantic.*		
23616	Daniel M. Ryan	10.95	2.5	22926	Hyman Brettscheider.	9.20	1.5
	Warehouse Point.				*Unknown.*		
22675	A. Rerser	11.61	2.9	23661	J. H. LeGeyt	11.76	3.0

MARKET MILK.

Ten hundred and thirty-seven samples of milk were examined in the past year for the Dairy and Food Commissioner. On the results of examination they may be grouped as follows:

Not found adulterated.....	597	57.6%
Adulterated by dilution with water.....	72	6.9
Adulterated by skimming.....	82	7.9
Adulterated by reason of being		
below standard in solids and solids-not-fat.....	112	10.8
below standard in solids and fat.....	24	2.3
below standard in solids, fat and solids-not-fat.....	150	14.5
Total	1037	100.0

The samples of skimmed milk were chiefly obtained from restaurants where the dipping of milk is practiced.

Samples adulterated by dilution with water or by skimming are given in Table XVI.

Forty-three samples were submitted by individual producers or consumers and require no comment.

TESTER'S LICENSE.

Eleven samples of milk and ten samples of cream were tested for milk fat to check candidates for license to test milk and cream as required by Section 2, Chapter 221, Public Acts of 1917.

Cream.

One sample of cream was submitted by the Dairy and Food Commissioner, six were examined for individuals and two were collected by the Station agent. Complete analyses of the two last were made as follows:

Table XVII. Analyses of Cream.

No.		Solids	Protein	Fat	Sugar	Ash
		%	%	%	%	%
20063	Heavy (40%)	45.13	2.13	41.00	1.53	0.47
20064	Light (20%)	28.14	2.82	22.00	2.73	0.59

Skim Milk Powder.

One sample of so-called milk powder from skimmed milk was found to contain 9.15 per cent. of fat. The milk was evidently imperfectly skimmed before drying.

Human Milk.

Twenty-one samples of breast milk have been submitted by physicians or nurses, and the results of analyses are given in Table XVIII. As noted in previous reports, the value of conclusions based upon these analyses depend upon whether or not the samples examined were representative. Fat varies widely in

Table XIX. Analyses of

Station No.	Manufacturer and Brand	Net Weight	
		Declared	Found
		Ozs.	Ozs.
18349	Acker, Merrall & Condit Co., New York..	4.00	3.95
18393	A. Colburn Co., Philadelphia, Pa.	2.00	2.15
18314	E. R. Durkee & Co., Elmhurst, N. Y. *Gauntlet*	4.00	3.95
18303	B. Fisher Co.	2.00	2.04
18374	R. T. French Co., Rochester, N. Y.....	2.00	2.08
18408	Globe Grocery Stores, Inc., New York *Pocono*	4.00	3.77
18370	Grand Union Tea Co., Brooklyn, N. Y.....	2.75	2.79
18298	Great Atlantic & Pacific Tea Co., Jersey City, N. J. *Red Front*	4.00	4.09
18384	Francis H. Leggett & Co., New York *Premier*	3.00	3.35
15714	Chas. G. Lincoln & Co. *Capitol Mills*	2.00	2.15
18335	McCormick & Co., Baltimore, Md. *Bee*....	1.75	1.44
18416	Stickney & Poor Spice Co., Boston	2.00	1.97

the different portions of the milk, and unless the entire secretion of the gland is drawn and well mixed before sampling the fat content may be very misleading.

TABLE XVIII. ANALYSES OF HUMAN MILK.

No.	Solids	Protein	Fat	Sugar	Ash
	%	%	%	%	%
18177	....	1.02	1.2	...	...
18178	....	1.34	1.8	...	...
18461	13.23	1.21	4.8	7.00	0.22
18525	13.80	1.60	5.0	7.01	0.19
18526	12.21	1.15	3.8	7.07	0.19
18528	....	...	5.8	...	...
18549	....	1.34	2.2	...	...
18620	....	1.28	3.0	...	...
18667	9.76	1.21	1.4	6.93	0.22
20002	....	1.40	4.5	...	...
19132	....	1.28	3.8	...	...
19139	....	...	3.4	...	...
19203	....	3.20	1.4	...	...
19225	12.40	1.28	3.6	7.29	0.23
19272	....	1.79	3.6	...	...
19585	....	1.53	2.0	...	...
19636	....	1.60	2.4	...	...
19637	....	1.98	6.4	...	...
19687	....	1.40	2.6	...	...
19733	....	1.15	4.0	...	...
19741	....	1.40	2.8	...	...

ALLSPICE.

Moisture	Ash					Nitrogen	Crude Fiber	Ether Extract		Station No.
	Total	Insol. in HCL	P_2O_5 in Insol.	Alk. of Sol.	Alk. of Insol.			Volatile	Non-Volatile	
%	%	%	%	%	%	%	%	%	%	
8.40	4.80	0.08	0.28	2.50	4.85	0.92	23.66	2.03	6.04	18349
8.10	4.33	0.03	0.23	2.60	4.40	0.98	23.00	1.30	5.89	18393
7.08	4.93	0.18	0.23	2.85	4.25	0.94	23.27	1.40	6.35	18314
8.13	4.73	0.08	0.27	2.50	4.75	0.90	23.20	0.79	6.65	18303
8.68	4.33	0.08	0.23	2.40	4.45	0.90	21.95	2.05	6.65	18374
5.73	4.75	0.15	0.22	2.75	4.50	0.92	22.78	2.45	6.43	18408
7.90	4.75	0.13	0.27	2.55	4.80	0.94	23.91	2.48	7.29	18370
7.15	4.88	0.05	0.27	2.50	5.25	1.05	27.17	1.68	5.23	18298
8.30	4.58	0.10	0.24	2.70	4.20	0.90	23.86	1.43	5.79	18384
7.53	4.40	0.05	0.23	2.50	4.25	0.89	22.12	1.65	6.28	15714
7.33	4.75	0.13	0.24	3.00	4.30	0.89	22.71	2.15	6.63	18335
5.58	4.48	0.08	0.24	2.50	3.95	0.90	23.49	2.25	6.98	18416

SPICES.

ALLSPICE.

Allspice, pimento, is the dried, nearly ripe fruit of *Pimenta officinalis* (L.) Karst. It contains not less than eight (8%) of quercitannic acid (calculated from the total oxygen absorbed by the aqueous extract), not more than twenty-five per cent. (25%) of crude fiber, not more than six per cent. (6%) of total ash, nor more than four-tenths per cent. (0.4%) of ash insoluble in hydrochloric acid[1].

Twelve samples, collected by the Station agent were examined with respect to the essential requirements of the standard and to other details. Analyses are given in Table XIX.

All samples conformed to the requirements of composition set by the standard so far as determined except **18298**, which somewhat exceeded the limit of fiber. Sample **18335** was considerably short weight.

TABLE XX. ANALYSES OF GROUND CINNAMON.

No.	Manufacturer and Brand	Net Weight		Ash	
		Declared	Found	Total	Insol. in HCL
		Ozs.	Ozs.	%	%
18432	Joseph Burnette Co., Boston	4.0	4.1	5.34	0.18
18330	James Butler, Inc., New York. *Peerless*	3.0	3.2	2.53	0.74
15712	E. R. Durkee & Co., Elmhurst, N. Y. *Gauntlet*	2.0	2.0	3.21	0.27
15706	R. T. French, Rochester, N. Y.....	2.0	2.2	3.97	0.35
18407	Globe Grocery Stores, New York. *Pocono*	4.0	3.8	2.97	0.08
18372	Grand Union Tea Co., Brooklyn, N.Y.	2.8	2.6	3.10	0.14
18299	Great Atlantic & Pacific Tea Co., Jersey City, N. J.	4.0	3.9	2.91	0.51
18385	Francis H. Leggett & Co., New York. *Premier*	3.0	3.4	3.18	0.12
15716	Chas. G. Lincoln & Co., Hartford. *Capitol*	2.0	2.1	3.67	0.04
18334	McCormick & Co., Baltimore, Md. *Bee*	2.0	..	3.18	0.45
18436	Miner, Read & Tullock, New Haven. *Sunrise*	4.0	3.5	4.63	1.70
18310	The Mohican Co., New York	3.2	3.3	3.56	0.83
18302	D. & L. Slade Co., Boston	2.0	2.2	3.63	0.10
18345	James P. Smith & Co., New York ..	4.0	4.0	4.07	0.14
18292	Stickney & Poor Spice Co., Boston..	2.0	1.8	3.37	0.38
18390	Ross W. Weir & Co., Inc., New York. *Tiger Head*	4.0	3.9	3.60	0.20

[1] Circ. 136, U. S. Dept. Agr., Office of the Secretary.

CINNAMON.

Ground cinnamon, ground cassia, is the powder made from cinnamon. It contains not more than five per cent. of total ash nor more than 2 per cent. of ash insoluble in hydrochloric acid.[1]

Sixteen samples collected by the Station agent have been examined and the results are given in Table XX. One sample, **18432,** exceeded the limit for ash and **18436** was considerably short in weight.

CLOVES.

Cloves are the dried flower buds of *Caryophyllus aromaticus L.* Among other specifications they contain not less than fifteen per cent. of volatile ether extract, not more than ten per cent. of crude fiber, not more than seven per cent. of total ash and not more than five-tenths per cent. of ash insoluble in hydrochloric acid.[2]

Fifteen samples collected by the Station agent have been examined and the results are given in Table XXI. Three samples exceeded the limit for ash, one of these, **18309,** by a substantial amount. Excess fiber was found in **18366** and **18309** was short weight. No statement of net contents was made for **18389.**

GINGER.

Ginger is the washed and dried, or decorticated and dried, rhizome of *Zingiber officinale* Roscoe. Among other specifications it contains not more than eight per cent. of crude fiber, not more than seven per cent. of total ash, not more than two per cent. of ash insoluble in hydrochloric acid and not less than two per cent. of ash soluble in cold water.[3]

Eleven samples were collected by the Station agent and examined with reference to these requirements. The results are given in Table XXII. All samples conformed substantially to the limits of composition stated above, and there were no serious deficiencies in net weight; the weight found exceeded the weight declared in many cases.

MUSTARD.

Mustard flour, known to the trade generally as ground mustard, is the powder made from mustard seed with hulls largely removed and with or without the removal of a portion of the fixed oil.[4]

It contains not more than one and five-tenths per cent. of starch nor more than six per cent. of total ash.

Four samples, submitted by the Dairy and Food Commissioner, were examined and the results are given in Table XXIII. All conformed to the requirements of the standard.

[1] Circ. 136, U. S. Dept. Agr., Office of the Secretary
[2] Ibid.
[3] Ibid.
[4] Ibid.

TABLE XXI. ANALYSES OF CLOVES.

No.	Manufacturer and Brand	Net Weight		Ash		Fiber	Volatile Ether Extract
		Declared	Found	Total	Insol. in HCl		
		Ozs.	Ozs.	%	%	%	%
18351	Acker, Merrall & Condit Co., New York	4.00	4.16	6.45	0.50	9.30	17.66
18394	Joseph Burnett Co., Boston	4.00	4.05	6.92	0.10	10.11	17.38
18329	James Butler, Inc., New York. *Peerless*	4.00	3.98	6.52	0.29	9.62	18.99
18366	Direct Importing Co., Inc., Boston. *Benefit*	2.00	1.94	5.95	0.20	11.58	16.85
15707	R. T. French Co., Rochester, N. Y.	1.50	1.80	6.56	0.53	10.15	19.58
18301	B. Fischer Co., Inc., New York	2.00	2.20	6.71	0.52	8.65	19.66
18333	Great Atlantic & Pacific Tea Co., Jersey City, N. J.	2.00	2.01	6.46	0.42	9.20	15.09
18399	Knickerbocker Mills Co., New York	2.00	1.90	6.54	0.52	9.25	15.31
18429	Chas. G. Lincoln & Co., Hartford. *Capitol*	2.00	2.11	7.12	0.74	9.16	15.41
18337	McCormick & Co., Baltimore, Md. *Bee*	1.50	1.37	6.63	0.48	10.07	16.72
18437	Miner, Read & Tullock, New Haven. *Sunrise*	4.00	4.49	7.31	0.74	9.70	15.83
18309	The Mohican Co., New York	3.20	2.80	7.71	1.44	10.27	18.04
18343	James P. Smith Co., New York	4.00	3.98	6.89	0.72	9.19	15.20
18293	Stickney & Poor Spice Co., Boston	1.50	1.50	6.64	0.41	7.28	19.57
18389	Ross W. Weir & Co., New York. *Tiger Head*	...	3.88	6.91	0.51	9.75	15.74

TABLE XXII. ANALYSES OF GINGER.

No.	Manufacturer and Brand	Net Weight		Ash			Fiber
		Declared	Found	Total	Soluble in Cold Water	Insoluble in HCl	
		Ozs.	Ozs.	%	%	%	%
18352	Acker Merrall & Condit Co., New York.....	4.00	3.98	7.03	2.73	1.15	6.17
18388	A. Colburn Co., Philadelphia, Pa.	2.00	1.81	7.30	2.08	1.70	3.21
18365	Direct Importing Co., Inc., Boston. *Benefit*.....	3.00	2.92	5.81	2.45	0.74	5.73
18326	E. R. Durkee & Co., Elmhurst, N. Y. *Gauntlet*..	2.00	2.15	6.15	2.06	1.43	5.94
18360	B. Fischer & Co., Inc., New York	2.00	1.90	6.46	2.07	0.88	5.02
18371	Grand Union Tea Co., Brooklyn	2.75	2.71	6.38	2.29	1.43	5.79
18353	Great Atlantic & Pacific Tea Co., Jersey City, N. J. *Red Front*	4.00	4.09	6.60	2.64	0.42	4.05
18406	Jones Bros. Tea Co., New York. *Pocono*	4.00	3.73	6.71	2.47	1.56	4.97
18325	McCormick & Co., Baltimore, Md. *Bee*	1.50	1.69	6.24	1.90	0.68	4.42
18377	The Mohican Co., New York	3.20	3.31	6.76	2.50	1.49	5.74
18424	*L. B. C.*	2.00	2.08	5.81	2.39	1.00	5.00

TABLE XXIII. ANALYSES OF GROUND MUSTARD.

No.	Brand	Moisture	Ash		Nitrogen	Starch	Oil (Ether Extract)
			Total	Insol in HCl			
		%	%	%	%	%	%
21501	Colburn's	4.71	4.68	0.88	4.10	0.56	45.85
21503	Durkee's	3.38	5.23	1.15	4.64	0.68	41.14
21515	Stickney & Poor's	5.10	4.15	0.38	5.04	0.39	37.10
21502	Stickney & Poor's	4.99	5.79	1.28	5.70	0.96	22.74

TABLE XXIV. ANALYSES OF BLACK PEPPER.

Station No. or D. C. No.	Manufacturer or Dealer and Brand	Net Weight		Ash		Non-volatile Ether Extract
		Declared	Found	Total	Insol. in HCl	
		Ozs.	Ozs.	%	%	%
18350	Acker, Merrall & Condit Co., New York	4.00	3.80	7.35	1.80	7.52
18410	Austin, Nichols & Co., Inc., New York. *Sunbeam*	3.20	3.17	6.43	1.21	7.76
18431	Joseph Burnett Co., Boston	4.00	4.19	4.48	0.16	6.20
18392	A. Colburn Co., Philadelphia, Pa. *Natuna*	2.00	...	6.06	0.95	7.74
18363	Direct Importing Co., Boston. *Dico*	3.00	2.89	6.98	1.60	7.04
18313	E. R. Durkee & Co., Elmhurst, N. Y. *Gauntlet*	4.00	3.80	6.69	1.49	8.15
DC 21226	Hartford Market, Hartford (in bulk)	...	...	4.52	0.23	6.87
DC 21229	Boston Branch Co., Hartford (in bulk)	...	...	5.05	0.09	3.43
18297	Great Atlantic & Pacific Tea Co., Jersey City, N. J. *Red Front*	4.00	3.85	5.68	1.36	8.43
15713	Hanley & Kinsella, St. Louis, Mo.	4.00	3.77	5.61	0.82	9.81
18401	Knickerbocker Mills Co., New York	2.00	...	7.00	1.40	7.83
DC 21244	A. La Racca, Middletown (in bulk)	...	...	4.17	0.18	5.73
15715	Chas. G. Lincoln & Co., Hartford. *Capitol*	2.00	2.36	7.58	2.01	9.16
18308	The Mohican Co., New York	3.20	3.40	5.38	0.74	8.74
18417	Seeman Bros., New York. *White Rose*	2.00	1.94	6.94	1.65	8.83
18300	D. & L. Slade Co., Boston	2.00	1.94	4.10	0.07	9.48
18346	James P. Smith, New York	4.00	3.98	6.96	2.67	6.82
18391	Ross W. Weir & Co., New York. *Tiger Head*	4.00	3.70	5.43	0.44	6.54
18380	Williams & Carleton Co., Hartford	3.00	2.89	5.12	0.76	8.11

Black Pepper.

Black Pepper is the dried immature berry of *Piper nigrum* L. Ground black pepper is made by grinding the entire berry. It contains not less than six and seventy-five hundredths per cent. of non-volatile ether extract, not more than seven per cent. of total ash and not more than one and five-tenths per cent. of ash insoluble in hydrochloric acid[1].

Sixteen samples were collected by the Station agent and three were submitted by the Dairy and Food Commissioner. Analyses are given in Table XXIV. Samples **18350** and **18715** contained excesses of ash and of insoluble ash. Two of the bulk samples were notably deficient in non-volatile ether extract.

White Pepper.

White pepper is the dried mature berry of *Piper nigrum* L. from which the outer coating, or the outer and inner coatings have been removed. It contains not less than seven per cent. of non-volatile ether extract, not more than five per cent. of crude fiber, not more than three and five-tenths per cent. of total ash, nor more than three-tenths per cent. of ash insoluble in hydrochloric acid.[2]

Nine samples, eight of which were collected by the Station agent, were examined and analyses are given in Table XXV. All samples conformed to the requirements except for non-volatile ether extract. Sample **18423** was the only one notably deficient in this respect. Three samples were found to be short weight.

Cayenne Pepper and Red Pepper.

Cayenne pepper, cayenne, is the dried ripe fruit of *Capsicum frutescens* L., *Capsicum baccatum* L., or some other small fruited species of *Capsicum*. It contains not less than fifteen per cent. of non-volatile ether extract, not more than twenty-eight per cent. of crude fiber, not more than seven per cent. of total ash, nor more than one per cent. of ash insoluble in hydrochloric acid.

Red pepper is the red, dried, ripe fruit of any species of *Capsicum*. It contains not more than eight per cent. of total ash nor more than one per cent. of ash insoluble in hydrochloric acid.[3]

Ten samples of cayenne and red pepper, nine of which were collected by the Station agent, were examined. One sample of cayenne was slightly deficient in non-volatile ether extract, while the

[1] Circ. 136, U. S. Dept. Agr., Office of the Secretary.
[2] Ibid.
[3] Ibid.

TABLE XXV. ANALYSES OF WHITE PEPPER.

No.	Manufacturer or Dealer and Brand.	Net Weight		Ash		Fiber	Non-volatile Ether Extract
		Declared	Found	Total	Insol. in HCl		
		Ozs.	Ozs.	%	%	%	%
18331	James Butler, Inc., New York. *Peerless*.....	4.00	4.23	1.66	0.07	4.89	6.90
18362	Direct Importing Co., Inc., Boston. *Benefit*.....	3.00	2.60	1.20	0.16	4.06	7.00
18306	E. R. Durkee & Co., Elmhurst, N. Y. *Gauntlet*....	3.00	2.99	1.09	0.05	4.24	6.95
21228	Hartford Market, Hartford (in bulk)	...	...	1.39	0.09	4.91	7.47
18404	Globe Grocery Stores, Inc., New York. *Pocona*..	4.00	3.35	1.11	0.07	3.99	6.84
18427	Chas. G. Lincoln & Co., Hartford. *Capitol*.....	2.00	1.94	1.41	0.29	3.00	7.49
18336	McCormick & Co., Baltimore, Md. *Bee*.....	2.00	1.86	1.02	0.07	3.75	6.93
18291	Stickney & Poor Spice Co., Boston	4.00	3.31	1.04	0.07	3.95	7.23
19423	*L. B. C.*	2.00	2.00	0.88	0.01	2.08	6.25

TABLE XXVI. ANALYSES OF CAYENNE AND RED PEPPER.

No.	Manufacturer and Brand	Net Weight		Ash		Fiber	Non-volatile Ether Extract
		Declared	Found	Total	Insol. in HCl		
	CAYENNE	Ozs.	Ozs.	%	%	%	%
18307	E. R. Durkee & Co. New York	3.00	3.06	5.93	0.46	25.86	14.56
18344	James P. Smith & Co., New York	4.00	3.88	7.19	1.52	27.17	12.37
	RED PEPPER						
18364	Direct Importing Co., Inc., Boston. *Benefit*.....	3.00	2.99	7.18	0.96	...	....
21227	E. R. Durkee & Co., Elmhurst, N. Y.....	...	...	7.30	0.53	...	....
18373	R. T. French Co., Rochester, N. Y.	2.00	2.15	6.17	0.72	...	....
18400	Knickerbocker Mills Co., New York	2.00	2.08	7.70	0.94	...	....
18383	Francis H. Leggett & Co., New York. *Premier*..	4.00	4.00	6.76	0.35	...	....
18428	Chas. G. Lincoln & Co., Hartford. *Capitol*.....	2.00	2.00	7.65	0.83	...	....
18311	The Mohican Co., New York	3.20	3.20	6.40	0.82	...	....
18425	*L. B. C.* Logan Bros. Co.	2.00	2.00	6.40	0.27	...	....

other, **18344,** was considerably deficient in this respect, and contained excesses of ash and acid insoluble ash. All samples of red pepper conformed to the standards.

Analyses are given in Table XXVI.

SAGE, ETC.

Sage is the dried leaf of *Salvia officinalis* L. It contains not less than one per cent. volatile ether extract, not more than twenty-five per cent. of crude fiber, not more than ten per cent. of total ash, nor more than one per cent. of ash insoluble in hydrochloric acid.[1]

Seven samples were collected by the Station agent, only one of which was labeled pure sage; the others were sold as poultry seasoning, for which there are no standards of composition. These consist largely or in part of sage.

The sample of sage contained an excess of total ash and a slight excess of acid-insoluble ash; fiber and volatile ether extract conformed to the standard.

The results of analyses are given in Table XXVII.

SYRUPS.

MAPLE SYRUP.

Maple syrup is syrup made by the evaporation of maple sap or by the solution of maple concrete, and contains not more than thirty-five per cent. of water.[2]

Six samples declared to be pure maple syrup were collected by the Station agent, and all were found to conform to the moisture standard just defined and to other limits of composition characteristic of the pure article. Analyses are given in Table XXVIII.

TABLE SYRUPS, ETC.

Table syrups may be one or mixtures of two or more of the following syrups: cane sugar, corn, refiners' and malt, with or without an admixture of maple syrup. There are no standards for such mixtures, but, in general, they should not exceed the moisture limit for sugar syrups, viz., thirty-five per cent.

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[1] Circ. 136, U. S. Dept. Agr., Office of the Secretary.
[2] Ibid.

TABLE XXVII. ANALYSES OF SAGE, ETC.

No.	Manufacturer and Brand	Net Weight		Ash		Volatile Ether Extract	Fiber
		Declared	Found	Total	Insol. in HCl.		
	SAGE						
15705	E. S. Kibbe Co., Hartford	4.00	3.98	12.71	1.16	1.33	18.89
	POULTRY SEASONING						
15717	Wm. G. Bell Co., Boston	1.00	0.98	8.15	0.66	....	16.29
18387	A. Colburn Co., Philadelphia, Pa.	1.50	1.02	17.06	1.56	....	14.17
18315	E. R. Durkee & Co., Elmhurst, N. Y.	2.00	2.20	11.52	2.28	....	14.59
18304	B. Fischer & Co., Inc., New York	2.00	2.10	13.91	1.66	....	16.93
18405	Globe Grocery Stores, Inc., New York. *Pocona*	2.50	2.52	14.38	2.38	....	16.00
18294	Stickney & Poor Spice Co., Boston	2.00	2.00	11.12	2.30	....	18.41

TABLE XXVIII. ANALYSES OF MAPLE SUGAR.

No.	Brand and Manufacturer	Moisture	Ash				Lead No.
			Total	Soluble in Water	Insol. in Water	Soluble / Insol.	
19887	Acker Merrall & Condit Co., New York	32.93	0.61	0.39	0.22	1.77	1.51
19827	Austin, Nichols & Co., Inc., New York. *Sunbeam*	30.05	0.59	0.40	0.19	2.10	1.31
19873	Curtice Bros. Co., Rochester, N. Y. *Blue Label*	31.66	0.70	0.46	0.24	1.91	1.64
19886	Lewis De Groff & Son, New York	33.82	0.56	0.33	0.23	1.44	1.36
19866	The Great Atlantic & Pacific Tea Co., Jersey City, N. J.	34.13	0.58	0.36	0.22	1.64	1.39
19913	Vermont Farmers Co., Springfield. *Our Finest*	33.60	0.66	0.39	0.27	1.44	1.72

Nineteen samples collected by the Station agent were examined for moisture and ash. Only three samples exceeded thirty-five per cent. of moisture, the excesses ranging from 0.8 to 2.9 per cent. Ash ranged from 0.1 to 1.9 per cent.

Molasses, etc.

Molasses is the product left after separating the sugar from massecuite, melada, mush sugar or concrete and contains not more than twenty-five per cent. of water and not more than five per cent. of ash.[1]

Eleven samples were collected by the Station agent. Two, **19876** and **19861**, were declared to be mixtures of molasses and other syrups. All of the remaining samples exceeded the moisture limit, four exceeding it by more than ten per cent. Two exceeded the limit for ash by more than ten per cent.

Sulphur dioxide was declared in all cases.

Analyses are given in Table XXIX.

Table XXIX. Analyses of Molasses, etc.

No.	Manufacturer and Brand	Moisture	Ash
		%	%
19850	Henry Adams, Jr., New York. *Atlantic*	25.96	5.79
19834	Alexander Molasses Co., Chicago, Ill. *Cherry Grove*	26.48	5.46
19863	Alexander Molasses Co., Chicago, Ill. *Dove*	27.33	4.97
19822	The American Molasses Co., New York. *New Home*	25.81	4.43
19876	American Sugar Refining Co., New York. *Dixiano*..	26.51	5.49
19829	New Orleans Packing Co., Inc., New Orleans, La. *Woman's Club*	27.83	4.50
19819	Penick & Ford, Ltd., New Orleans, La. *Brer Rabbit*	27.33	4.69
19851	Penick & Ford, Ltd., New Orleans, La. *Aunt Dinah*	27.80	5.45
19861	Southern Moslasses Co., New York. *B. & O.*	24.52	2.17
19884	Southern Molasses Co., New York. *Moro*	29.05	6.03
19825	W. Wirt Wickes & Son, New York. *Giltedge*	28.00	2.79

TEA.

Water Extract.[2]

The present tentative method for the determination of hot water extract in tea, originally suggested by Doolittle and Woodruff[3], derived extractive matter indirectly, by determining the percentage of insoluble leaf. This procedure involves a separate moisture determination, and is time-consuming due to slow filtrations which are generally encountered. Modifications have been suggested from

[1] Circ. 136, U. S. Dept. Agr., Office of the Secretary.
[2] Abstract of report of R. E. Andrew, referee on tea to the A. O. A. C., Nov., 1922.
[3] U. S. Bureau of Chemistry, Bull. 105, p. 48.

TABLE XXX. WATER EXTRACT IN TEA.

Sample No.	18616			18617			18618			18619		
	Moisture	Method		Moisture	Method		Moisture	Method		Moisture	Method	
		Tent'v.	Proposed		Tent'v.	Proposed		Tent'v.	Proposed		Tent'v.	Proposed
	%	%	%	%	%	%	%	%	%	%	%	%
Maximum ..	8.21	45.5	42.3	7.42	48.6	42.7	7.17	43.4	40.8	8.95	39.6	36.2
Minimum ..	4.93	36.7	38.7	3.20	38.2	38.4	4.75	35.9	34.5	4.92	30.4	32.9
Average ...	6.12	40.1	40.9	4.29	42.4	41.1	5.63	39.8	39.0	6.81	34.5	35.0

time to time. One was devised in this laboratory[1] which largely eliminated the filtration difficulties. McGill[2] and Allen[3] have described methods which obtain extractive matter by direct evaporation of the aqueous extract of the ground tea. Preliminary trials of this process in comparison with the present method gave satisfactory results, and the proposed procedure was submitted to collaborative study. The tentative method was followed as now described[4] except that a longer condenser was used. The proposed method is as follows:

To two grams of the ground sample in a 500 cc graduated flask add 200 cc of hot water and boil over a low flame for one hour, rotating the flask occasionally. The flask should be closed with a rubber stopper through which passes a glass tube 30 inches long for a condenser. Boil very slowly so that no steam escapes from the top of the air condenser. Cool, dilute to volume, mix thoroughly and filter through a dry filter paper. Take an aliquot of 50 cc and evaporate to dryness over a steam bath. Then place in oven and heat to 100° C for one hour, cool and weigh.

Four samples were sent out and twelve analysts from various laboratories participated and reported results for moisture and for hot water extract by the two methods suggested. The results need not be reported here in detail but maximum, minimum and average figures are given in Table XXX.

The results showed that checks by the same analyst were closer by the proposed method and also the variation between different workers was less by this method.

Analyses of Market Teas, etc.

Complete analyses of twenty-five samples of market tea and two samples of Cassina, supplied by courtesy of Mr. Mitchell of the Bureau of Chemistry are given in Table XXXI.

Cassina is obtained from the shrub *Ilex Cassine,* and the infusion of the dried and cured leaf resembles tea in some of its characters. Caffeine and nitrogen contents are distinctly less than in tea. Water-insoluble ash is considerably greater. The official ether extract in tea is that obtained by means of petroleum ether. Ethyl ether, prepared as directed for feeding stuffs gives higher results; in a limited number of trials the figures were about twice as great.

VINEGAR.

Seventy-six samples of vinegar were examined for the Dairy and Food Commisioner, of which fifteen were below standard. Twenty-six samples were collected by the Station agent of which

[1] Conn. Exp. Sta. Bull. 210, p. 182.
[2] Inland Revenue Dept., Ottawa, Canada, Bull. 359.
[3] Commercial Organic Analysis, *4*, p. 623.
[4] Methods of Analysis, A. O. A. C., p. 273.

TABLE XXXI. ANALYSES OF

Station No.	Description	Moisture	Petroleum Ether Extract	Hot Water Extr.		Nitrogen	Crude Fiber
				Official	Proposed*		
		%	%	%	%	%	%
15711	Black	6.33	1.13	35.29	36.70	3.80	12.00
18312	"	6.85	0.93	38.06	37.90	4.06	10.30
18322	"	5.90	1.21	37.92	37.70	3.48	12.58
18368	"	6.80	1.61	37.75	38.20	3.83	11.37
18367	"	5.78	1.02	40.72	39.80	3.85	11.21
18409	"	5.83	0.60	38.56	39.00	3.84	11.47
18320	Black, Orange Pekoe	6.98	0.87	40.67	41.00	3.97	9.11
18332	Blk. O. P.	6.50	0.98	38.90	39.50	3.96	10.50
18382	" " "	7.40	0.92	....	37.60	4.10	10.40
18616	" " "	6.21	...	40.35	40.00	4.39	....
18339	" Ceylon ...	7.15	0.82	39.05	38.50	4.07	9.82
18342	" " ...	7.79	0.87	....	37.75	4.13	10.12
18356	" Oolong ..	6.58	1.03	41.57	39.40	3.61	11.26
18617	" " ..	4.40	...	41.28	39.82	4.04	....
18619	" English Breakfast ..	6.93	...	34.26	34.65	4.41	....
15709	Gr. Japan	5.55	2.00	37.52	35.80	3.64	13.94
18317	" "	5.08	1.75	37.49	36.05	3.64	14.06
18359	" "	4.45	2.10	35.84	35.50	3.44	14.29
18381	" "	5.28	1.58	36.66	37.40	3.52	13.36
18395	" "	5.48	2.11	35.03	35.80	3.48	14.35
18618	" Gunp'wd'r..	5.81	...	40.16	37.30	3.90	....
18369	Mixed	5.93	1.80	38.36	38.20	3.50	12.48
18375	"	6.18	1.29	36.74	36.50	3.50	11.34
18386	"	6.50	1.34	37.59	37.40	3.21	12.96
18397	"	5.67	1.60	34.53	33.70	3.44	12.90
18613	Blk. Cassina ..	3.15	1.68	....	31.00	2.25	14.13
18612	Gr. Cassina ...	3.68	1.98	....	40.00	2.30	12.29

* By R. E. Andrew.
† Bailey-Andrew method.

three were below standard. Thirteen samples were submitted by individuals and of these three were below standard. Of the total number of one hundred and fifteen, ninety-four were not found adulterated and were passed. Of nineteen samples, not found to be adulterated, sulphate was determined in terms of milligrams of SO_3 per 100 cc of vinegar, and the amount ranged from 1.6 to 6.2 the average being 3.9. In five other samples amounts ranging from 7.6 to 12.6 were found. It would appear that the sulphate (SO_3) content of vinegar stock will not exceed six or seven milligrams per 100 cc, and that for amounts greater than this vinegar derived wholly or in part from sulphured apple stock may be suspected.

TEA, ETC.

Caffeine†		Ash									
By Weight	From Nitrogen	Total	Soluble in Water	Insoluble in Water	Soluble in Acid	Insoluble in Acid	Soluble P_2O_5	Insoluble P_2O_5	Alk. of Soluble	Alk. of Insoluble	Station No.
%	%	%	%	%	%	%	%	%			
2.49	2.43	6.15	3.17	2.98	5.45	0.70	0.22	0.47	3.15	4.25	15711
3.08	3.00	5.63	3.43	2.20	5.37	0.26	0.19	0.54	3.55	3.80	18312
2.39	2.23	6.30	3.28	3.02	5.42	0.88	0.22	0.40	2.60	4.00	18322
2.44	2.33	6.14	3.46	2.68	5.94	0.20	0.35	0.41	3.00	3.70	18368
2.95	2.88	5.98	3.66	2.32	5.03	0.95	0.32	0.43	3.65	3.45	18367
3.00	2.88	5.88	3.90	1.98	5.75	0.13	0.26	0.45	4.00	3.30	18409
2.81	2.72	5.25	3.27	1.98	5.12	0.13	0.23	0.45	3.50	3.40	18320
3.32	3.26	6.10	3.57	2.53	5.70	0.40	0.23	0.56	3.80	3.85	18332
3.17	3.12	5.35	3.02	2.33	5.12	0.23	0.24	0.47	3.00	3.55	18382
...	...	...	...	...	...	...	...	...	...	...	18616
3.22	3.15	5.63	3.68	1.95	5.41	0.22	0.29	0.46	3.75	3.50	18339
3.14	3.06	5.40	3.52	1.88	5.32	0.08	0.29	0.45	3.45	3.55	18342
2.92	2.84	6.05	3.65	2.40	5.60	0.45	0.24	0.45	3.50	3.80	18356
...	...	...	...	...	...	...	...	...	...	...	18617
...	...	...	...	...	...	...	...	...	...	...	18619
2.27	2.13	5.68	3.38	2.30	5.40	0.28	0.20	0.43	3.30	3.70	15709
2.09	2.04	5.68	3.30	2.38	5.40	0.28	0.13	0.51	3.40	4.05	18317
2.02	1.91	5.75	3.02	2.73	5.30	0.40	0.09	0.49	3.45	4.25	18359
1.91	1.86	5.50	3.30	2.20	5.20	0.30	0.19	0.45	3.50	3.35	18381
2.07	1.84	5.83	3.40	2.43	5.43	0.40	0.14	0.46	3.15	3.90	18395
...	...	...	...	...	...	...	...	...	...	...	18618
2.17	2.13	6.10	3.32	2.78	5.42	0.68	0.23	0.41	3.10	3.70	18369
2.20	2.16	6.50	3.27	3.23	5.65	0.95	0.19	0.42	2.90	3.90	18375
2.04	1.99	6.43	2.95	3.48	5.50	0.93	0.24	0.36	2.60	3.65	18386
1.99	1.86	6.85	2.95	3.90	5.42	1.43	0.20	0.42	2.50	3.70	18397
0.79	0.69	6.00	1.71	4.29	4.91	1.09	0.03	0.58	2.30	5.35	18613
0.51	0.38	6.00	1.72	4.28	4.60	1.40	0.14	0.63	2.10	5.65	18612

Samples showing in excess of seven milligrams SO_3 per 100cc were as follows:

No.	Dealer	Manufacturer
D. C. 24452	Capitol Pickling Co., Hartford.	Powell Corporation, Canandaigua, N. Y.
19849	Hartford Market Co., Hartford.	Hartford Market Co.
19848	Wise, Smith & Co., Hartford.	National Fruit Products Co., Washington, D. C.
19820	People's Grocery, Madison.	G. N. Ayer, Buffalo, N. Y.
19830	P. Vong New Haven.	Canandaigua Products Corp., Canadaigua, N. Y.

MATERIALS SUSPECTED OF POISON OR OTHER INJURIOUS SUBSTANCES.

Twenty-four samples, two of which were sent by the Dairy and Food Commissioner, have been examined for poisons or to identify suspicious elements therein. The samples include foods, medicines, stomach contents, animal viscera, etc. The results of the examinations did not reveal anything of public interest or value, and no comment of individual cases is therefore necessary. The Station refuses to accept work of this kind when it is evidently submitted to satisfy idle curiosity or with little likelihood of fruitful results; however, it co-operates so far as time and facilities permit, with health officers, food officials and physicians where there is reasonable ground for suspicion. It is difficult to rule consistently in the premises and it often happens that the results of examinations do not appear to justify the amount of work involved. Many of these cases should more properly be referred to one of the State chemists.

II. DRUGS.

U. S. PHARMACOPOEIAL PREPARATIONS.

All samples of drugs were submitter by the Dairy and Food Commissioner unless otherwise stated.

Acetic Acid.

Acetic Acid is an aqueous solution containing not less than 36 per cent. nor more than 37 per cent. of acetic acid.[1]

Diluted acetic acid contains not less than 5.7 per cent. nor more than 6.3 per cent. acetic acid.[2]

Forty-three samples of acetic acid and 28 of diluted acetic acid were examined. Three samples of the stronger solution and three of the dilute preparation did not conform to the specifications noted above. One was glacial acetic acid not so marked and therefore presumed to be the 36 per cent. solution. Sample **23680** contained no acetic acid; a second sample from the same dealer, **23739**, conformed to the requirements.

Samples not conforming to the U. S. P. requirements are listed in Table XXXII.

Table XXXII. Assays of Acetic Acid.

No.	City or Town	Dealer	Acetic Acid %
22837	*Bristol*	Perry N. Holley	99.7
23677	*Hartford*	H. F. Ruby & Co.	31.4
22778	*Meriden*	Victor W. Schmelzer	44.0
23708	*Winsted*	G. L. Fancher	29.2
22843	*Bristol*	Madden Drug Store	3.7
23212	*Danielson*	M. H. Berthiaume	8.3
23683	*Hartford*	W. H. Coleman	none

[1] U. S. P. IX, p. 6.
[2] Ibid, p. 7.

Tincture of Aconite.

One hundred mils of tincture of aconite yields not less than 0.045 gm. nor more than 0.055 gm. of the ether-soluble alkaloids of aconite[1].

Six samples were examined, all of which conformed substantially to the limits stated.

Ammonia Water.

Ammonia water is an aqueous solution of ammonia (NH_3) containing not less than 9.5 per cent. nor more than 10.5 per cent. by weight of ammonia. Stronger ammonia water contains not less than 27 per cent. nor more than 29 per cent. of ammonia[2]. The solutions deteriorate and should be tested frequently.

Twenty-four samples were examined, three of which were stronger ammonia. Twelve of the samples were passed and 12 did not conform to the U. S. P. requirements. One sample, **22747,** was 50 per cent. too strong for the diluted article. Sample **23215** was labeled 26 per cent. Samples varying from the U. S. P. standard by more than 10 per cent. are given in Table XXXIII.

Table XXXIII. Assays of Ammonia Water.

D. C. No.	City or Town.	Dealer	Ammonia (NH_3) %
22841	*Bristol*	The Madden Drug Store...	7.2
23201	*Hartford*	James W. Lynch.....	2.5
23693	*Hartford*	City Drug Co.....	7.6
22715	*East Hartford*	W. B. Noble.....	7.8
22747	*Norwich*	Utley & Jones	15.9
23215	*Putnam*	Edward H. Burt.....	19.9
22889	*Rockville*	John Lee	8.4
22881	*Rockville*	Mrs. E. F. Wilson.....	8.4
22878	*Rockville*	Thomas Pharmacy	4.4
22717	*Thompsonville*	Steel's Cor. Drug Store....	7.6
22861	*West Hartford*	Allen B. Judd Co.....	4.1
22863	*West Hartford*	Henry C. Kottenhoff.....	6.9

Calcium Hydroxide.

Lime water is an aqueous solution containing not less than 0.14 per cent. of calcium hydroxide, $Ca(OH)_2$, at 25°C.[3]

Sixty-nine samples were examined of which five contained substantially less than 0.14 per cent. of $Ca(OH)_2$. The deficient samples are listed in Table XXXIV.

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[1] U. S. P. IX, p. 445.
[2] Ibid, p. 53.
[3] Ibid, p. 239.

TABLE XXXIV. ASSAYS OF LIME WATER.

No.	Town or City.	Dealer	Calcium Hydroxide %
22713	*East Hartford*	W. B. Noble	0.05
22894	*Hartford*	T. A. Lynch	0.07
22849	*New Britain*	Louis K. Liggett Co.	0.12
23217	*Putnam*	James F. Donahue	0.09
22892	*Rockville*	E. N. Metcalf	0.02

CHLOROFORM.

Two samples said to be stock released by the U. S. Army did not comply with the specifications as required by the U. S. P.[1] Impurities decomposable by sulphuric acid and chlorinated decomposition products were present. When evaporated on filter paper a camphoraceous odor remained and there was a considerable amount of dirt in the bottom of the can. One sample was obtained at the Bay State Drug Co., Willimantic, and the other at Burroughs Drug Store, Danielson. Both containers were marked Squibb & Son N. Y.

TINCTURE OF CINCHONA AND COMPOUND TINCTURE OF CINCHONA.

One hundred mils of this tincture yield not less than 0.8 gm. nor more than 1. gm. of the alkaloid of cinchona[2]. One hundred mils of the compound tincture yield not less than 0.4 gm. nor more than 0.5 gm. of the alkaloid of cinchona.[3]

One sample of each of these preparations was examined and found to comply with the requirements.

SOLUTION OF FERRIC SUBSULPHATE.

This is an aqueous solution containing basic ferric sulphate corresponding to not less than 13 per cent. nor more than 14 per cent. of iron (Fe)[4].

Sixteen samples were assayed which, with one exception, conformed substantially to the limits defined. One sample was about one-half strength (7.2 per cent. iron), and not so marked. It was purchased at the Apothecaries Hall Co., Waterbury.

DILUTE HYDROCHLORIC ACID.

Hydrochloric acid, diluted, is an aqueous solution containing not less than 9.5 per cent. nor more than 10.5 per cent. of hydrochloric acid (HCl)[5].

Twenty-three samples were examined, of which only three varied from the U. S. P. requirements by more than ten per cent. Assays of these are given in Table XXXV.

[1] U. S.P. IX, p. 108.
[2] Ibid, p. 451.
[3] Ibid, p. 452.
[4] Ibid, p. 243.
[5] Ibid, p. 14.

TABLE XXXV. ASSAYS OF HYDROCHLORIC ACID, DILUTED.

No.	Town or City.	Dealer	Hydrochloric Acid (HCl) %
23674	*Hartford*	Nelson Drug Co.	11.8
23717	*Waterbury*	Apothecaries Hall Co.	12.1
22757	*Willimantic*	Bay State Drug Co.	13.1

FLUID EXTRACT OF HYOSCYAMUS.
(FLUID EXTRACT OF HENBANE).

One hundred mils of fluid extract of hyoscyamus yield not less than 0.055 gm. nor more than 0.075 gm. of the alkaloids of hyoscyamus[1].

Ten samples were examined and all found to conform closely to the limits required for this preparation.

TINCTURE OF IODINE.

This tincture contains in 100 mils not less than 6.5 gms. nor more than 7.5 gms. of iodine; and not less than 4.5 gms. nor more than 5.5 gms. of potassium iodide[2].

Two samples were assayed, both of which conformed to the requirements.

FLUID EXTRACT OF IPECAC.

One hundred mils of this prepartion yield not less than 1.8 gms. nor more than 2.2 gms. of the ether-soluble alkaloids of ipecac[3].

Six samples were assayed and all conformed to the limits defined or closely thereto.

MERCURY WITH CHALK.

This powder contains not less than 37 per cent. nor more than 39 per cent. of mercury (Hg)[4].

Six samples were assayed and all conformed substantially to the limits of the standard.

SACCHARATED FERROUS CARBONATE.

Saccharated Ferrous Carbonate contains not less than 15 per cent. of ferrous carbonate ($FeCO_3$)[5]. There is no maximum limit stated in the pharmacopoeia.

Ten samples were assayed, seven of which ranged from 15.6 per cent. to 20.3 per cent. of $FeCO_3$. Three were practically double the strength of the pharmacopoeial standard, containing 27.5, 29.5 and 29.5 per cent. $FeCO_3$ respectively.

[1] U. S. P. IX, p. 187.
[2] Ibid, p. 457.
[3] Ibid, p. 187.
[4] Ibid, p. 221.
[5] Ibid, p. 165.

Diluted Sulphuric Acid.

Sulphuric acid, diluted, is an aqueous solution containing not less than 9.5 per cent. nor more than 10.5 per cent. of sulphuric acid (H_2SO_4)[1].

Fifteen samples were examined, of which six varied from the specification by considerable amounts. The variations were excesses in all cases. The explanation in one case was found to be that the strong acid was measured instead of weighed in preparing the diluted solution.

Samples not conforming to the U. S. P. requirements are given in Table XXXVI.

Table XXXVI. Assays of Sulphuric Acid, Diluted.

No.	Town or City.	Dealer	Sulphuric Acid %
23675	*Hartford*	Nelson Drug Co.....	13.7
22722	*Middletown*	The Woodward Drug Co.....	17.3
22730	*Middletown* ...	John J. Cronin.....	15.0
22735	*Middletown*	The Hartman Drug Co.....	16.5
22853	*New Britain* ...	The Clark & Brainerd Co.....	17.2
23220	*Putnam*	Geo. E. Dresser.....	15.3

Distilled Water.

Among other specifications distilled water is colorless, without odor or taste, and is neutral to official indicators. One hundred mils, evaporated to dryness and the residue further dried at 100°C., yield not more than 0.001 gm. of residue. The limit of organic or other oxidizable substances is the equivalent of not more than 0.1 mil of N/10 potassium permanganate[2].

Seventeen samples were examined with respect to these requirements. Only five conformed strictly to the pharmacopoeial limits for residue on evaporation and for oxidizable substances. Six gave residues of from 1 to 2 milligrams; six gave residues of from 3 to 7 milligrams. Two samples required 0.35 cc and 0.50 cc N/10 potassium permanganate solution to oxidize organic and other oxidizable material. The markedly deficient samples are given in Table XXXVII.

Table XXXVII. Distilled Water.

D. C. No.	City or Town.	Dealer	Residue, gm./100cc	$KMnO_4$ requirement cc N/100 soln.
22712	*Hartford*	Fox & Co.....	0.0045	0.35
22852	*New Britain* ...	Clark & Brainerd..	0.0064	none
22799	*South Manchester*	McNamara's Pharm.	0.0030	0.50
22876	*Stafford Springs*	D. H. McCormick..	0.0052	none
22874	*Stafford Springs*	E. H. Wickes.....	0.0070	none
22867	*West Hartford* .	West Hill Pharm...	0.0046	none

[1] U. S. P. IX, p. 25.
[2] Ibid, p. 57.

WITCH HAZEL WATER.

Witch Hazel water, although listed in the pharmacopoeia, is chiefly used as a toilet water. The restrictions placed upon the use of pure alcohol for such preparations has resulted in the approval of a number of formulas for denaturing alcohol to be used in the manufacture of toilet lotions.

The one sample, **22486,** of witch hazel water examined was labeled Barber's Special and declared to have been rendered non-potable. It was evidently made with denatured alcohol; the solids on evaporation were about ten times the amount contained in the official preparation, and the test for salicylates was positive.

MISCELLANEOUS.

Eleven samples were submitted by individuals for identification of medicament, active principles or injurious ingredients. These included two samples of cutting oil, two rheumatism remedies, two cleaning fluids and one sample of sodium benzoate, the last named being for an assay.

BABCOCK GLASSWARE.

Chapter 237, Section 4788 of the General Statutes provides that all test bottles and pipettes used in testing milk and cream, which are to be paid for on the basis of the Babcock test, shall be tested and stamped as accurate by this Station.

The following classification shows the apparatus tested under this provision during the past year.

BABCOCK GLASSWARE EXAMINED.

	Total	Broken[1]	Accurate	Inaccurate
Cream test bottles	486	9	477	0
Milk test bottles	1075	12	1053	10
Pipettes	342	15	327	0
Skim milk test bottles	36	0	36	0
Acid measures	34	0	34	0
Totals	1973	36	1927	10

Four dairy thermometers were checked for the Department of Health, New Haven.

[1] Broken in transit.

SUMMARY.

Materials	Sampled by, or at request of: Station Agent	Dairy and Food Commissioner	Individuals	Total	Adulterated, below standard or otherwise illegal
FOODS.					
Carbonated Beverages	5	104	3	112	6
Cereal Products	5	...	...	5	...
Cider	...	2	1	3	...
Clams	18	...	...	18	2
Diabetic and Special Foods	12	...	8	20	...
Eggs	...	22	...	22	15
Eskimo Pie	3	...	...	3	...
Fats and Oils:					
Olive Oil	...	45	...	45	12
Cottonseed Oil	1	...	...	1	...
Butter	...	...	2	2	1
Flavoring Extracts:					
Lemon	17	...	...	17	1
Lemon Substitute	3	...	...	3	...
Vanilla	18	...	...	18	1
Vanilla Substitute	2	...	...	2	...
Flour:					
Bread and Pastry	15	...	...	15	...
Self-raising	9	...	5	14	1
Ice Cream	...	332	...	332	23
Infant Foods	23	...	...	23	...
Meat Products:					
Hamburg Steak	...	8	...	8	5
Sausage	...	80	...	80	14
Milk and Milk Products:					
Cryoscopy of Milk	54	...	...	54	...
Market Milk	...	1037	43	1080	440
Tester's License (milk and cream)	21	...	...	21	...
Cream	2	1	6	9	...
Milk Powder	...	1	...	1	...
Human Milk	...	...	21	21	...
Spices:					
Allspice	12	...	...	12	2
Cinnamon	16	...	...	16	2
Cloves	15	...	...	15	3
Ginger	11	...	...	11	...
Mustard	...	4	...	4	...
Black Pepper	16	3	...	19	4
White Pepper	8	1	...	9	4
Cayenne Pepper and Red Pepper	9	1	...	10	1
Sage, etc.	7	...	...	7	1

SUMMARY—*Concluded.*

Materials	Sampled by, or at request of			Total	Adulterated, below standard or otherwise illegal
	Station Agent	Dairy and Food Commissioner	Individuals		
Syrups:					
Maple Syrup	6	...	...	6	...
Table Syrup	19	...	...	19	...
Molasses	11	...	...	11	9
Tea, etc.	31	...	...	31	...
Vinegar	26	76	13	115	21
Materials Examined for Poisons, etc.	...	2	22	24	...
Total	395	1719	124	2238	568
DRUGS.					
U. S. P. Drugs:					
Acetic Acid	...	43	...	43	4
Acetic Acid Dilute	...	28	...	28	3
Aconite, Tincture of	...	6	...	6	...
Ammonia Water	...	24	...	24	12
Calcium Hydroxide, Solution of	...	69	...	69	5
Chloroform	...	2	...	2	2
Cinchona, Tincture of	...	2	...	2	...
Ferric Subsulphate, Solution of	...	16	...	16	1
Hydrochloric Acid, Dilute	...	23	...	23	3
Hyoscyamus, Fluid Extract of	...	10	...	10	...
Iodine	...	2	...	2	...
Ipecac	...	6	...	6	...
Mercury with Chalk	...	6	...	6	...
Saccharated Ferrous Carbonate	...	10	...	10	...
Sulphuric Acid, Dilute	...	15	...	15	6
Water, Distilled	..	17	...	17	6
Witch Hazel Water	...	1	...	1	...
Miscellaneous	...	...	7	7	...
Vitamine Preparations[1]	21	...	...	21	...
Total	21	280	7	308	42
Total for Foods and Drugs	416	1999	131	2546	610

[1] Published in Bulletin 240, as Part I of this Report.