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CONNECTICUT AGRICULTURAL EXPERIMENT STATION

NEW HAVEN, CONN.

THE TWENTY-EIGHTH REPORT ON

FOOD PRODUCTS

AND THE SIXTEENTH REPORT ON

DRUG PRODUCTS

1923

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The Twenty-Eighth Report on Food Products and the Sixteenth Report on Drug Products

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E. M. BAILEY.

CONNECTICUT AGRICULTURAL EXPERIMENT STATION

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February, 1924.

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CONTENTS AND SUMMARY.

* Includes 333 samples "below standard" only.

The Twenty-eighth Report on Food Products and Sixteenth Report on Drug Products

1923

By E. M. Bailey.

This report summarizes the examinations which have been made of foods and drugs during the past year. Much of the work has been required by the Dairy and Food Commissioner for the immediate purpose of food and drug control, but some of it, notably the examinations of alimentary pastes, eggs, table salt, salad dressings and evaporated milk, has been upon samples collected by our Station agent. A considerable number of so-called diabetic and special foods and of vegetable foods of particular interest to diabetics, have been analyzed. Special attention has been given to some changes taking place in eggs during holding, particularly with reference to ammonia content; and to the lipoid phosphorous content of commercial flours and of certain egg-flour mixtures.

The writer has prepared a revision of tables of composition of diabetic and special foods and of normal foods for the third edition of Dr. Joslin's text on Treatment of Diabetes Mellitus; and has also collaborated with the Director of this Station and the Dairy and Food Commissioner in revising the Rules and Regulations pertaining to the Food and Drug Law.

Acknowledgment is made to Messrs. Andrew, Shepard, Nolan and Fisher for their efficient cooperation; to Mrs. Storrs for painstaking work in connection with the preparation of the tables of composition of foods for Dr. Joslin's text; and to Miss Bacon for assistance in preparing this and other reports for publication.

I. FOODS.

ALIMENTARY PASTES.

Egg Noodles, Etc.

METHODS.

The evaluation of egg noodles with reference to the proportion of eggs or egg material which they contain has generally been based upon the amount of fat and the amount of alcohol-soluble phosphoric acid (P_2O_5), in the product. Fat has been determined by

continuous extraction with dry ether and alcohol-soluble phosphoric acid (lecithin phosphoric acid), by the method as described by Juckenack.[1] By these methods flour of average composition yields about 0.66 per cent. of ether extract and 0.0225 per cent. of alcohol-soluble phosphoric acid. The addition of 1 egg to a pound of flour increases the ether extract to about twice the amount in the flour and considerably more than doubles the alcohol-soluble phosphoric acid (0.0513). These figures are based on the water-free material. Judging by these data noodles containing less than 0.04 or 0.05 per cent. of alcohol-soluble phosphoric acid do not contain appreciable quantities of whole egg material.

More recent methods of determining so-called lecithin phosphoric acid have been based upon adaptations of the Roese-Gottlieb method for the determination of fat and the estimation of phosphoric acid in the fatty residue so obtained. The methods of Jacobs and Rask, as stated by Lourie,[2] Rask and Phelps[3] and of Hertwig[4] are the chief methods of this type. The two first named make use of an alkaline extraction while in the last named procedure the extraction is effected in a neutral medium. All of these methods give higher figures for fat and for lecithin phosphoric acid both in flour and in noodles than is obtained by the Juckenack method. It should be understood, however, that the fatty residue as obtained by alcohol-ether extraction may contain many other substances than neutral fats, such as phosphatides, phytosterol, pigments, etc., and Rask and Phelps suggest the term lipoid phosphoric acid as more accurately descriptive of this alcohol-ether-soluble phosphoric acid than the term lecithin phosphoric acid.

Whatever the method used, the magnitude of the figures obtained for crude fat and for alcohol-soluble or alcohol-ether-soluble phosphoric acid are not of determining importance so long as the results by the different methods are referred each to its corresponding basis of comparison, i.e., the figures obtained by the particular method upon the basic materials. Hertwig has called attention to the fact that there may be a decrease in lipoid phosphoric acid as noodles age and probably also during the manufacturing process and suggests that results for this constituent be increased by .1 before calculating egg solids in the product examined.

Hertwig gives comparative figures for lipoids (crude fat), and for lipoid phosphoric acid by the neutral extraction and the alkaline extraction methods, and for lecithin phosphoric acid by the Juckenack method as applied to flour and noodles. The figures are of interest and are as follows:

[1] Ztschr. f. Unters. Nahr. und Genuss., **3**, 13. 1900.
[2] Jour. Assoc. Official Agr. Chemists, **6**, 11. 1922.
[3] Cited by Hertwig. Ibid. **7**, 92. 1923.
[4] Ibid. **7**, 92. 1923.

TABLE I. COMPARATIVE RESULTS FOR LIPOID PHOSPHORIC ACID AND LECITHIN PHOSPHORIC ACID. (*Hertwig.*)

Substance	Alcohol-ether, Neutral extraction method		Alcohol-ether, Alkaline extraction method		Alcohol extraction, Juckenack method
	Lipoids	Lipoid–P_2O_5	Lipoids	Lipoid–P_2O_5	Lecithin–P_2O_5
	%	%	%	%	%
Flour (a).....	2.13	0.0531	1.84	0.0401	0.0293
Flour (b).....	2.07	0.0461	1.82	0.0473	.....
Noodles (c)....	4.13	0.0877	3.79	0.0765	0.0613

Hertwig recommends the neutral method of extraction in order to avoid possible decomposition of lipoids by acid or alkaline media.

PRELIMINARY TRIALS WITH EGG-FLOUR MIXTURES.

Without trying to simulate the process used in the manufacture of noodles the following trials were made with egg-flour mixtures using the method of Jacobs and Rask for determining alcohol-ether-soluble phosphoric acid as suggested by Lourie.

The flour used contained, on the moisture-free basis, protein (N x 6.25), 10.84 per cent.; alcohol-ether extract 1.71 per cent.; alcohol-ether-soluble phosphoric acid 0.041 per cent. Eggs in the proportion of one, two and three to a pound of egg-flour mixture were added and the mixtures dried at low temperature until they contained from 5 to 10 per cent. of moisture after which the preparations were ground and analyzed. The results obtained are as follows:

TABLE II. ANALYSES OF EGG-FLOUR MIXTURES, DRY BASIS.

Material	Ash	Protein, (N. x 6.25)	Lipoids, (Alcohol-ether extract)	Lipoid-P_2O_5
	%	%	%	%
Flour.....	....	10.84	1.71	0.041
One egg per lb. mixture.....	0.63	11.84	3.21	0.082
Two eggs per lb. mixture.....	0.73	13.30	4.70	0.117
Three eggs per lb. mixture.....	0.81	14.84	5.92	0.151

The egg solids in the eggs used in the above mixture averaged 13.8 grams per egg. Assuming 1.38 per cent. of lipoid

P_2O_5 in egg solids[1] the amount of lipoid–P_2O_5 we should expect to find in the mixture can be approximated as follows:

1 egg—13.8 gms. solids x 1.38 per cent. . . 0.190 gm. lipoid–P_2O_5
Flour—439.2 gms. (dry) x 0.041 per cent 0.180 gm. lipoid–P_2O_5
Mixture—453.0 gms. . . . . 0.370 gm. lipoid–P_2O_5
Per cent. lipoid–P_2O_5 calculated 0.082
Per cent. lipoid–P_2O_5 found 0.082

Similarly for two eggs per lb. of mixture we find 0.117 per cent. whereas the calculated amount is 0.122 per cent.; and for three eggs per lb. of mixture 0.151 per cent. instead of the calculated amount of 0.163 per cent. The percentage recovery is lower for greater amounts of eggs; in the case of three eggs per lb. of mixture (about 9 per cent. of egg solids), the recovery was about 92 per cent. Calculating the amount of egg solids in these mixtures according to the formula suggested by Lourie[2], thus,

$$\frac{(A - 0.041) \times 100}{1.38 - 0.041} = x$$

in which x = the per cent. of egg solids in the sample, A = the per cent. of lipoid–P_2O_5 in the sample and 0.041 = the per cent. of lipoid-P_2O_5 in the flour used in these trials, the following comparisons may be made:

	Egg solids used	Egg solids, estimated from lipoid–P_2O_5, found
	%	%
1 egg mixture.	3.04	3.08
2 " "	6.08	5.70
3 " "	9.12	8.23

COMMERCIAL NOODLES, ETC.

Six samples of commercial noodles and one sample of macaroni were examined and the results are given in Table III.

TABLE III. ANALYSES OF ALIMENTARY PASTES.

No.	Material	Moisture	Ash	Protein, (Nx6.25),	Crude fat, (alcohol-ether extract)	Nitrogen-free extract and fiber	Lipoid-P_2O_5	Lipoid-P_2O_5, water-free basis
	Noodles	%	%	%	%	%	%	%
20201	Anger's. . . .	9.28	0.89	15.69	3.40	70.74	0.065	0.071
20211	A. & P. . . .	8.13	0.65	14.25	3.98	72.99	0.197	0.214
20205	Freihofer's. .	9.25	0.92	16.56	4.39	68.88	0.092	0.102
20194	Meuller's. . .	9.18	0.78	13.56	3.70	72.78	0.080	0.088
20206	Quaker.	8.92	2.01	15.88	4.35	68.84	0.075	0.082
20213	Warner's. . .	9.30	1.17	16.75	4.29	68.49	0.076	0.084
	Macaroni.							
20214	Warner's. . .	10.45	0.95	13.88	1.90	72.82	0.047	0.052

[1] Jour. Assoc. Official Agr. Chemists, **6**, 11. 1922.
[2] Ibid., **6**, 11. 1922.

According to Lourie's formula noodles containing 5 per cent. of egg solids would show a lipoid–P_2O_5 content of about 0.121 per cent. Apparently, however, allowance should be made for the possible use of flour of less alcohol-ether-soluble phosphoric acid content than 0.0548 and also for the fact that the recovery of lipoid–P_2O_5 is not complete particularly, as noted by Hertwig, in products that are not of recent manufacture.

If allowance is made for flour containing as little as 0.041 per cent. of lipoid–P_2O_5 and for only 90 per cent. recovery of the lipoid–P_2O_5 present in the freshly made noodles, a product containing 0.097 per cent. lipoid–P_2O_5 would represent a formula calling for 5 per cent. of egg solids. Two of the samples examined exceeded this amount and four did not, although three of them approximated it more or less closely. Whether the egg solids represent whole egg or merely egg yolk cannot be deduced from the lipoid–P_2O_5 content alone. Hertwig has pointed out that the ratio of lipoid–P_2O_5 to alcohol precipitable nitrogen is a useful criterion for this purpose.

BAKERY PRODUCTS.

CAKES.

A number of bakery products, all yellow cakes, were examined for evidence of eggs and for artificial colors. Flour and eggs, or egg products, contribute all, or essentially all, of the phosphatid or lipoid phosphorus in this class of foods. Milk and shortening materials which consist of, or contain, milk constituents (butter and the margarines), may contribute some phosphorus of the phosphatid type in those products in which they are used but the amount will be relatively small.

In the samples of pastry examined lipoid phosphoric acid was determined in addition to the usual proximate constituents. "Fat" is the alcohol-ether extract upon which the lipoid phosphorus was determined and not "fat" in the generally accepted sense of "ether extract." For comparison in the case of sponge cake, two experimental cakes were made using the same recipe but with varying proportions of eggs. These are designated in the table of analyses as "home made."

TABLE IV. ANALYSES OF BAKERY PRODUCTS.

No.	Material	Moisture	Ash	Protein, (N x 6.25)	Crude fat, (alc-ether extract)	N-free extract and fiber	Lipoid-P_2O_5
	Sponge Cake	%	%	%	%	%	%
20649	Home made (2 eggs). . . .	23.44	2.41[1]	6.68	3.78	63.69	0.069
20650	Home made (4 eggs). . . .	26.31	1.49	7.89	6.32	57.99	0.133
20207	Bakery.	23.85	0.80	10.69	11.25	53.41	0.226
20208	Bakery.	19.91	1.86	6.59	8.20	63.44	0.107
20209	Bakery.	27.55	1.42	8.18	5.51	57.34	0.131

[1] More baking powder used than in 20650.

TABLE IV. ANALYSES OF BAKERY PRODUCTS—*Concluded.*

No.	Material	Moisture	Ash	Protein, (N x 6.25)	Crude fat, (alc-ether extract)	N-free extract and fiber	Lipoid-P_2O_5
	Sponge Cake	%	%	%	%	%	%
20210	Bakery	18.85	2.11	7.97	5.71	65.36	0.139
20212	Bakery	18.75	1.39	8.35	10.60	60.91	0.116
20217	Bakery	42.45	0.54	5.03	3.57	48.41	0.060
	Cup Cakes						
20216	Bakery	20.66	1.42	6.00	14.38	57.54	0.034
20219	Bakery	18.98	1.64	5.65	23.44	50.29	0.053
	Plain Cake						
20218	Bakery	20.02	0.71	7.00	6.06	66.21	0.087
	"Cream" Puffs (Custard)						
20215	Bakery	57.03	0.61	5.63	14.02	22.71	0.067
20220	Bakery	58.34	0.98	6.27	88.77	25.64	0.079

No artificial color was found in any of the samples and the lipoid phosphorous content would indicate appreciable or substantial amounts of eggs or egg material. In general the cakes contained from 20 to 25 per cent. of moisture. Three approached or exceeded 50 per cent. of moisture and the lipoid phosphorous content is correspondingly low in these samples. Cup cakes showed the lowest percentage of this type of phosphorus.

CARBONATED BEVERAGES.

One hundred and one samples of carbonated beverages have been examined for the Dairy and Food Commissioner of which sixteen were found to contain saccharin and one contained preservative which was not declared on the label.

The inspection of this class of products is carried out largely under the provisions of a special act[1] which makes the use of saccharin illegal and which further provides that establishments bottling water and non-alcoholic beverages shall be licensed and that such license shall be issued only when conditions of cleanliness and general sanitation are satisfactory to the Dairy and Food Commissioner. Cleanliness in the preparation and distribution of food products is an item of the utmost importance and the results obtained from the operation of this law have been most gratifying.[2]

Adulterated or otherwise illegal samples are given in Table V.

[1] Public Acts of 1921, Chapt. 159.
[2] Twenty-fourth Report of the Dairy and Food Commissioner, Public Document No. 32.

TABLE V. CARBONATED BEVERAGES ADULTERATED OR OTHERWISE ILLEGAL.

D. C. No.	Sampled at		Manufacturer	Remarks
24366	*E. Portchester,*	Andrew Esposito	H. Dehmer Co. Inc.	Contains saccharin
24367		Louis P. Wellner	H. Dehmer Co. Inc.	Contains saccharin
24688		Andrew Esposito	H. Dehmer Co. Inc.	Contains saccharin
24689		Rocco Dattola	Silver Bot. Wks.	Contains saccharin
24690		Zachria Pessy	Atlantic Bot. Wks.	Contains saccharin
24372	*Greenwich,*	Hannah Hassan	H. Dehmer Co. Inc.	Contains saccharin
24373		Joseph Curtis	Atlantic Bot. Wks.	Contains saccharin
24374		George Matthews	H. Dehmer Co. Inc.	Contains saccharin
24375		George Matthews	H. Dehmer Co. Inc.	Contains saccharin
24376		Edward Dulmba	H. Dehmer Co. Inc.	Contains saccharin
24377		Edward Dulmba	H. Dehmer Co. Inc.	Contains saccharin
26026		P. Schinto	Silver Bot. Wks.	Contains saccharin
26000	*New Haven,*	B. Roklen & H. Abert	Own make	Contains saccharin
26744		Vincent Limauro	Own make	Contains saccharin
26745		Vincent Limauro	Own make	Contains saccharin
26746		Vincent Limauro	Own make	Contains saccharin
26048	*Willimantic,*	Thread City Bot. Wks.	Own make	Preservative not declared

COCOA.

One sample of cocoa was submitted by Miss E. F. Packer, secretary of the Hartford Tuberculosis Society.

It was examined as follows:

Moisture 3.87 per cent.; ash 4.84 per cent.; protein (N x 6.25), 24.63 per cent. (not corrected for the nitrogen of alkaloids); fiber 4.49 per cent.; carbohydrates, by difference, 42.29 per cent.; fat 19.88 per cent.

Formerly cocoa contained more fat than many brands now show. This is because of the increased demand for cocoa to be used in various beverages where the cacao flavor is chiefly desired as, for example, in soda fountain and other beverages. So-called "breakfast" cocoa should contain 22 per cent. or more of fat.

CASEIN.

Analyses of a number of casein preparations designed for clinical purposes were examined and reported in a previous bulletin.[1] One sample, **21431,** was examined during the past year. It was made by the Harris Laboratories, Tuckahoe, N. Y., and offered for clinical purposes and for use in feeding trials in nutritional investigations.

The analysis is as follows:[2]

Moisture 10.73 per cent.; ash 0.59 per cent.; calcium trace; nitrogen 13.66 per cent. (equivalent to 87.09 per cent. casein); fat 0.20 per cent.; moisture, fat and ash-free material 88.48; difference between casein and moisture, fat and ash-free material 1.39 per cent.; undetermined 1.39 per cent.; nitrogen on moisture-free basis 15.30 per cent.

[1] Conn. Exp. Sta., Bull. 236, p. 233, 1921.
[2] Methods as given in New and Non-official Remedies, Am. Med. Assoc. 1923.

DIABETIC AND SPECIAL FOODS.

Commercial and Manufactured Products.

A considerable number of brands of so-called diabetic and special foods have been examined during the past year. The foods of foreign manufacture were obtained chiefly through the courtesy of Mr. Benjamin Baruch of New York who secured them in England. The samples which he submitted were carefully labeled and original packages were furnished wherever possible.

COMMENTS UPON ANALYSES.

Flours and Meals. The official definition and standard for gluten flour is as follows:[1]

"Gluten flour is the clean, sound product made from wheat flour by the removal of a large part of the starch, and contains not more than ten per cent. (10%) of moisture, and, calculated on the water-free basis, not less than seven and one-tenth per cent. (7.1%) of nitrogen, not more than fifty-six per cent. (56%) of nitrogen-free extract (using the protein factor 5.7), and not more than forty-four per cent. (44%) of starch (as determined by the diastase method).

The gluten flours examined conform to these requirements but it should be emphasized that the use of such flours, or of any so-called diabetic food, should be governed entirely by the tolerance of the patient. Analyses are a guide to the physician in determining this factor in each case.

Ground gluten of standard quality should contain, on the moisture-free basis, twice as much nitrogen (14.2) per cent., and much less starch (not over 5.5 per cent.) than gluten flour. Compared with these specifications *Special Gluten,* **20829,** was about 0.6 per cent. low in nitrogen and exceeded the limit of starch.

The sample of *Cellulose Flour* from corncobs was submitted by Dr. Orton who explains that it is obtained after the cobs have been treated to remove starch and sugar for the manufacture of adhesives and furfural. It is used in the diabetic diet as a component of muffins, cookies, etc. *Cellu flour,* which we have discussed in a previous report,[2] is the same sort of material derived from other sources.

Sample **21559** was submitted for an opinion as to its suitability for diabetics. It is plain wheat flour of average composition.

Bakery Products. The analyses show that the products of Callard & Co. are generally high in protein and fat and low in carbohydrate, particularly the more available carbohydrate, i. e., starch and sugar. Many of the other products in this group show considerable or large amounts of starch. However, since the metabolism of protein may result in the production of considerable and varying amounts of sugar, a low starch, if accompanied by a very high protein, is not an unqualified advantage.

[1] Circ. 136, U. S. Dept. Agr., Office of Secretary.
[2] Conn. Exp. Sta. Bull. 227, p. 230.

Plasmon is the name adopted by the Plasmon Co., Ltd., London, for their preparation of milk protein (casein), which is a constituent of a number of their products. Jacob and Co. Ltd. of Dublin, Ireland, also make or distribute Plasmon products.

Cestus bread has about the average composition of ordinary wheat bread.

Protein Preparations. These are casein and gluten products. The sample of *Aleuronat* contained about 71 per cent. of protein which is much less than the product now manufactured contains according to the statement of the American agents, Messrs. Glogau and Company, Chicago. They explain that the product now has a protein content of 96 per cent.

Plasmon contained 11.90 per cent. of nitrogen which is equivalent to about 76 per cent. protein (casein). Previous analyses of this product summarized in Bulletin 220 of this Station, show about the same nitrogen content. By an oversight in compilation, however, the protein was there calculated by the factor 5.7. If the factor 6.38 had been used these analyses would have been in substantial agreement with the recent analysis as given in Table VI.

The specifications for dietetic casein accepted by the American Medical Association[1] require that it contain 15 per cent. of nitrogen on the moisture-free basis. On that basis *Cheltine Milk Protein,* **20074,** contains 14.5 per cent. of nitrogen and the sample of *Plasmon,* **20066,** contains 13.5 per cent.

Breakfast Foods. We have no information that *Kellogg's* bran or *Plasmon* oats are designed for diabetic diets. *Hoyt's Gluten Flakes* is relatively low in starch but contains about 15 per cent. of available carbohydrate.

Alimentary Pastes. These preparations are macaroni and vermicelli made with casein instead of flour or gluten flour.

Cocoa. Cocoa generally will contain from 2.8 to 3.8 per cent. of nitrogen, from 8.5 to 13.5 per cent. of starch and from 30 to 40 per cent. of total carbohydrate (nitrogen-free extract). The term "diabetic" as applied to foods should signify a "considerable lessening of the carbohydrates" as compared with normal foods of the same class. Circular 136[2] prescribes that the glycogenic carbohydrates shall not be more than one-half as much as in the corresponding normal foods.

The sample of *Biogene Cocoa* examined contains more nitrogen than ordinary cocoa but neither the starch (about 10 per cent.), nor the total carbohydrate (about 31 per cent.), is substantially less than is found in cocoa of average composition. The same may be said of *Loeb's* diabetic cocoa. *Cheltine* milk cocoa shows 22

[1] New and Non-official Remedies, 1923.
[2] U. S. Dept. Agr., Office of the Secretary.

TABLE VI. ANALYSES OF SO-CALLED DIABETIC AND SPECIAL FOODS.

No.	Manufacturer and Brand	Moisture	Ash	Nitrogen	Protein N x 6.25	Protein N x 5.7	Fiber	Nitrogen-free Extract: Starch	Nitrogen-free Extract: Sugar as Dextrose	Nitrogen-free Extract: Other N-free Extract	Fat, Ether Extract	No.
	Flours and Meals.											
	Cereal Meal Corporation, St. Louis, Mo.											
20137	Cereal Meal	% 6.39	% 4.60	% 3.07	% 19 19	%	% 5.13	% 27.09	% 7.68	% 23.35	% 6.57	20137
	Cheltine Food Co., Cheltenham, England.											
20056	Cheltine Diabetic Food	4.66	6.89	9.26	57.88	....	0.78	8.64	7.76	3.34	10.05	20056
	Farwell and Rhines.											
21222	Gluten Flour	8.81	0.65	7.10	.....	40.47	0.34	38.90	4.34	5.12	1.37	21222
	Federal Mill and Elevator Co., Lockport, N. Y.											
20113	Gluten Flour	9.20	0.90	6.76	.....	38.53	0.41	39.60	2.70	6.88	1.78	20113
	Loeb's Diabetic Food Bakery, N. Y.											
20828	Pure Gluten Flour	8.22	0.83	7.28	.....	41.50	0.15	36.68	3.04	7.39	2.19	20828
20829	Special Gluten	5.76	0.77	12.84	.....	73.19	0.19	8.66	0.76	8.70	1.97	20829
	Plasmon Ltd., London.											
20067	Plasmon Arrowroot	12.98	2.20	3.17	19.81	.....	0.11	61.59	0.65	2.53	0.13	20067
	Pure Gluten Food Co., N. Y.											
20666	Hoyt's Gluten Flour	7.40	0.99	9.32	.....	53.12	0.42	29.14	2.24	3.43	3.26	20666
	Miscellaneous.											
20086	Cellulose Flour from Corncobs	5.00	0.82	0.16	1.00	.....	63.80	0.34	none	28.50	0.54	20086
21559	Wheat Flour	11.02	1.02	2.06	.....	11.74	0.76	58.50	8.10	6.37	2.49	21559
	Bakery Products.											
	Callard & Co., London.											
20083	Almond Biscuits No. 15	4.08	5.30	5.46	34.13	.....	1.66	0.39	3.10	2.79	48.55	20083
20043	Bran and Almond Biscuits No. 13	3.34	4.03	3.90	24.38	.....	4.14	0.49	2.32	3.81	57.49	20043
20039	Casoid Biscuits No. 17 A	6.04	8.95	9.32	58.25	.....	0.13	0.32		1.71	24.60	20039
20040	Casoid Rusks No. 8	5.98	7.70	8.68	54.25	.....	0.09	0.49		4.91	26.58	20040
20085	Gluten and Almond Biscuits No. 11	5.42	2.58	10.46	65.38	.....	0.29	2.15	0.93	0.00	23.25	20085
20081	Gluten Biscuits No. 9	5.50	2.54	10.59	.....	60.36	0.40	2.42	0.98	3.90	23.90	20081
20080	Gluten Cracknells No. 7	6.18	2.12	12.06	.....	68.74	0.24	3.18	0.18	4.68	14.68	20080
20079	Gluten Dinner Rolls No. 6	6.89	1.52	12.94	.....	73.76	0.18	4.56	0.60	5.40	7.09	20079
20038	Kalari Batons No. 5	4.92	6.68	7.07	44.19	.....	0.38	trace	1.16	0.13	42.54	20038
20084	Parmesan Cheese Straws No. 17	3.43	5.79	5.00	31.25	....	0.50	3.48		6.61	48.94	20084
20037	Ponos Biscuits No. 14	7.55	8.44	9.69	60.56	.....	0.33	1.25		2.64	19.23	20037
20082	Prolacto Biscuits No. 12	5.76	8.82	9.56	59.75	.....	0.22	0.26		4.74	20.45	20082
20078	Soup Sippets	1.89	7.70	8.66	54.13	.....	0.03	0.52		6.99	28.74	20078
	Cheltine Food Co., Cheltenham, Eng.											
20073	Cheltine Assorted Biscuits	6.02	2.44	2.92	18.25	.....	0.55	46.18	5.28	5.28	16.00	20073
20075	Cheltine Brown Rusks	8.02	2.14	2.91	18.19	.....	0.22	45.42	5.55	10.75	9.71	20075
20076	Cheltine White Rusks	7.39	2.35	3.63	22.69	.....	0.20	40.44	7.53	4.61	14.79	20076
20062	Manhu Diabetic Biscuits	5.97	1.07	2.07	12.94	.....	0.80	52.59	9.12	5.55	11.96	20062
	Levine Bros., New Haven, Conn.											
20114	Gluten Bread	39.17	1.87	3.07	.....	17.52	0.29	23.83	1.89	11.68	3.75	20114

TABLE VI. ANALYSES OF

No.	Manufacturer and Brand	Moisture	Ash	Nitrogen	Protein N x 6.25	Protein N x 5.7	Fiber	Nitrogen-free Extract: Starch	Nitrogen-free Extract: Sugar as Dextrose	Nitrogen-free Extract: Other N-free Extract	Fat, Ether Extract	No.
	Bakery Products—Concluded.	%	%	%	%	%	%	%	%	%	%	
	Loeb's Diabetic Food Bakery, New York.											
20139	Aerated Bread	5.53	1.60	8.73	.....	49.76	0.34	20.76	2.83	7.00	12.18	20139
20145	Genuine Gluten Bread	30.21	1.83	5.71	.....	32.57	0.24	25.37	1.79	4.40	3.59	20145
	Jacob & Co. Ltd., Dublin, Ireland.											
20072	Plasmon Oat Biscuit	5.86	2.43	2.46	15.38	. ...	0.26	37.91	11.34	6.09	20.73	20072
20071	Plasmon Plain Biscuit	6.40	2.54	2.98	18.63	.....	0.19	45.99	6.54	3.89	15.82	20071
20069	Plasmon Sweet Biscuit	6.19	2.42	2.85	17.81	.....	0.18	43.88	9.70	4.64	15.18	20069
20070	Plasmon Wholemeal Biscuit	5.88	2.85	3.20	20.00	.....	0.71	39.21	7.98	6.57	16.80	20070
	R. M. Scott, Ipswich, England.											
20061	Gluten and Almond Biscuits	5.93	2.24	3.80	23.75	.....	0.50	40.73	3.76	3.18	19.91	20061
	Therapeutic Foods Company, Inc., New York.											
20133	Dr. Charrasse Gluten Bread	7.83	2.25	7.49	.....	42.69	0.16	32.26	3.73	5.25	5.83	20133
20136	Dr. Charasse Gluto-Kola Bread	8.51	2.17	7.34	45.88	.....	0.16	32.76	4.50	0.00	6.02	20136
20135	Dr. Charasse Gluto-Soja Bread	8.11	2.20	7.77	48.56	.....	0.26	30.04	3.26	0.69	6.88	20135
20134	Dr. Charasse Supreme Bread	8.21	2.45	7.30	45.63	.....	0.22	32.60	3.33	0.64	6.92	20134
	Therapeutic Foods Company, London.											
20055	Energen New Natural Gluten Bread	7.05	0.97	5.80	.....	33.06	0.59	35.44	8.60	4.23	10.06	20055
	Van Abbott & Sons, London.											
20060	Soya Biscuits	4.85	5.52	6.27	39.19	.....	2.20	2.50	8.94	11.82	24.98	20060
	Miscellaneous.											
20140	Cestus Bread, Gluten	34.26	1.15	1.97	.....	11.23	0.14	44.09	4.29	3.38	1.46	20140
21307	Gluten Bread	.....	.....	3.18	.....	18.13	.....	40.71		.....	.....	21307
	Protein Preparations.											
	Cheltine Food Co., Cheltenham, Eng.											
20074	Cheltine Milk Protein	9.05	3.08	13.24	84.47[1]	.....	none	none	0.19[2]	2.24	0.97	20074
20698	Cheltine Milk Protein	.....	.....	13.38	85.36[1]	.....	.....	.....	.....	.....	.....	20698
	Glogau & Company, Chicago, Ill. (Sole Agents).											
21558	Aleuronat	8.11	0.76	12.46	.....	71.02	0.26	7.14	3.54	3.59	5.58	21558
21874	Aleuronat	.....	.....	12.46	.....	71.02	.....	.....	.....	.....	.....	21874
	Plasmon, Ltd., London.											
20066	Plasmon Milk Proteid	12.13	7.92	11.90	75.92[1]	.....	none	none	1.44[2]	1.87	0.72	20066
	Breakfast Foods.											
	Kellogg's Toasted Corn Flake Co., Battle Creek, Mich.											
20193	Kellogg's Bran Cooked and Krumbled	5.05	6.30	2.31	14.41	.....	.....		68.53[3]		3.40	20193
	Plasmon, Ltd., London.											
20059	Plasmon Oats	9.02	1.80	2.77	17.31	.....	0.53	54.45	2.94	5.86	8.09	20059
	The Pure Gluten Food Co., N. Y.											
21861	Hoyt's Gluten Flakes	8.18	3.55	7.84	.....	44.69	3.89	4.50	11.98	18.86	4.35	21861

SO-CALLED DIABETIC AND SPECIAL FOODS—(*Continued*).

[1] Factor 6.38.
[2] Lactose.
[3] Includes fiber.

TABLE VI. ANALYSES OF

No.	Manufacturer and Brand	Moisture	Ash	Nitrogen	Protein N x 6.25	Protein N x 5.7	Fiber	Nitrogen-free Extract: Starch	Nitrogen-free Extract: Sugar as Dextrose	Nitrogen-free Extract: Other N-free Extract	Fat, Ether Extract	No.
	Alimentary Pastes.											
	Callard & Co., London.											
20041	Casoid Flakes (Macaroni Paste)	%	%	%	%	%	%	%	%	%	%	
20042	Casoid Vermicelli	9.63	7.41	12.56	78.50	.....	0.22	1.16		0.01	3.07	20041
		9.33	7.31	12.80	80.00	.....	0.13	0.50		0.00	2.73	20042
	Cocoa.											
	Callard & Co., London.											
20044	Biogene Cocoa	8.25	7.50	5.29	33.06	.....	2.41	10.15	0.90	19.82	17.91	20044
	Cheltine Foods Co., Cheltenham, Eng.											
20057	Cheltine Milk-Cocoa	7.75	5.14	7.53	47.06	.....	2.11	8.15	0.76	13.12	15.91	20057
	Loeb's Diabetic Food Bakery, N. Y.											
20830	Diabetic Cocoa	4.98	5.47	5.29	33.06	.....	3.62	11.08	1.56	22.34	17.89	20830
20138	Diabetic Cocoa	4.90	5.80	4.07	25.44	.....	3.83	11.59	4.44	23.09	20.91	20138
	Plasmon, Ltd., London.											
20065	Plasmon Cocoa	9.82	7.74	8.07	50.44	.....	1.33	4.53	1.48	13.07	11.59	20065
	Confections, etc.											
	Callard & Co., London.											
20049	Chocolate Biscuits	3.74	4.11	4.18	26.13	. ..	1.50	1.83	3.74	9.18	49.77	20049
20045	"Casoid" Chocolates	5.54	3.14	3.67	22.94	.....	1.54	1.83	3.18	23.02	38.81	20045
20047	"Casoid" Dessert Chocolate	3.83	3.95	3.98	24.88	.....	2.13	4.11	3.76	11.26	46.08	20047
20048	"Casoid" Nut Chocolate	3.66	3.88	3.82	23.88	.....	2.22	3.86	4.78	11.28	46.44	20048
20050	"Ponos" Cocoanut Ice[1]	7.85	1.29	1.38	.....	.....	1.19	3.12		....	36.18	20050
20046	Sugarless Chocolate	2.81	4.28	2.24	14.00	.....	3.16	5.85	8.14	17.33	44.34	20046
20077	Sugarless Jujubes (Peppermint)[2]	21.70	0.40	3.01	.....	.....	none	none	trace	.....	.....	20077
20052	Sugarless Glycerine Jujubes[2] (Pineapple)	19.76	0.35	2.89	.....	.....	none	none	trace	.....	.....	20052
20053	Sugarless Table Jelly[3]	8.68	0.42	4.50	.....	.....	none	none	trace	.....	.....	20053
	Lister Bros., New York.											
20058	Lister's Sugar Free Candy[4]	9.44	1.41	3.67	.....	....	none	none	trace	.....	.....	20058
	Plasmon, Ltd., London.											
20068	Plasmon Chocolate	1.76	1.74	2.20	13.75	.....	0.47	2.00	36.52	14.40	29.36	20068
	Miscellaneous.											
	Callard & Co., London.											
20054	Cibrola	11.31	10.86	11.94	76.18[5]	.....	none	none	0.19[6]	1.06	0.40	20054

[1] Saccharin present, glycerine indicated.
[2] Glycerine present, gelatin indicated.
[3] Saccharin present, gelatin indicated.
[4] Gums, saccharin, glycerine and gelatin present.

SO-CALLED DIABETIC AND SPECIAL FOODS—(*Concluded.*)

[5] Factor 6.38.
[6] Lactose.

per cent. of total carbohydrate which is considerably less than the average and approximately one-half of the maximum found in the normal product. *Plasmon* cocoa shows material reduction in both starch and total carbohydrate, approximately one-half the normal amount in each case. This is largely due to the increase in nitrogenous material. In the tables protein has been calculated from the total nitrogen without allowance for the nitrogen in the theobromine and caffeine present.

Confections, etc. A number of samples of confections have been examined. These are generally prepared without sugar and may be sweetened with saccharin or glycerine. Gelatin was present in some cases. Glycerine is convertable to sugar by chemical methods and bacteria effect upon it a similar change.[1] According to various authorities it is also transformed to sugar in the body. Gums may be present, as in *Lister's* sugar-free candy. To what extent these substances yield sugar in metabolism we cannot state; but they result in the formation of a considerable amount of copper-reducing material by the usual chemical methods of hydrolysis and in all cases when gums were present or suspected they were excluded by precipitation with alcohol before total sugars were determined.

Plasmon chocolate contained about 36 per cent. of soluble carbohydrate and was evidently a sweet chocolate.

Cibrola is a preparation of casein probably reinforced with glycerophosphates.

Natural Foods of Interest to Diabetics.

The restricted diet to which the diabetic patient must conform presents a real problem. Rigid menus become monotonous and increased attention is being given to variety by those interested in diabetic dietetics. Dr. Allen has emphasized the importance of this factor and much has been accomplished in this direction particularly by one of his student-patients, Dr. Orton. Commenting upon these efforts Dr. Joslin says:

"Diabetics everywhere throughout the world owe a debt of gratitude to Dr. W. A. Orton of the U. S. Department of Agriculture for his earnest endeavor to increase the number of agreeable vegetables. For this purpose he has brought to Washington specimens from all over the world. It is to be hoped that he will shortly publish a monograph giving the results of his work. Already there has appeared an article on the subject.[2] In England, also, the subject of gardening and vegetables for diabetics has been seriously considered by Spriggs.[3]"

This laboratory has collaborated with Dr. Orton by making analyses of a number of uncommon vegetables and other foods which have proved to be valuable adjuncts to the diabetic dietary.

[1] Browne, Sugar Analysis, p. 771.
[2] Orton, W. A.: Am. Jour. Med. Sci. 1921, 162, 498.
[3] Spriggs, E. I.: Duff House Papers, Henry Frowde, London, 1920, 1.

Data on these and other foods submitted by physicians and others interested are given in Table VII.

Description of the character and uses of some of the uncommon foodstuffs which we have analyzed are of interest. It is taken chiefly from data furnished by Dr. Orton who submitted most of the specimens. The information concerning nuts was furnished by Mr. C. A. Reed of the Office of Horticultural and Pomological Investigations.

VEGETABLES.

Artichokes. The carbohydrate of the artichoke is largely or entirely inulin, a polysaccharide which is present also in dahlia and some other plants. A brief discussion of this carbohydrate has already been given in a previous bulletin.[1] The name Jerusalem artichoke is considered by authorities as highly inappropriate and "Girasole" and "Sunroot" have been suggested as more suitable names. The latter term is used in the latest edition of Robinson's "Vegetable Garden." The comparison between the analysis of the cooked and uncooked tubers is not a strict one because they were not made upon the same sample. Cooking was effected by steaming. Boiling in water would probably have shown greater differences in composition, particularly a greater loss in mineral matter in the boiled tuber.

String Beans, canned. The samples represent the standard commercial grades. The analysis of Fancy No. 1 grade is of the beans only, but those of the other grades are of the beans with accompanying liquor.

Chayote. The chayote (pronounced chi-ó-tay), belongs to the cucumber family and is a native of Mexico and Central America but is now cultivated as a garden vegetable in the Southern States and in California. There are a number of varieties varying in color, size and character of surface. The surface may be smooth, corrugated, spiny or spineless. The fruit may be eaten when immature but the quality improves with maturity. Cultural directions and recipes for preparing the vegetable for the table are given in a pamplet issued by the Bureau of Plant Industry at Washington.

Chinese vegetables. In submitting these samples Dr. Orton wrote as follows:

"These are interesting Chinese specialties of which I believe no analysis has ever been made. Both are species of Brassica and are described by Prof. L. H. Bailey in his "Gentes Herbarum". The white-stalked vegetable, Bak Toy, is found on almost every oriental stand on the Pacific Coast cities. It makes an excellent salad and can be cooked in various ways. The green vegetable, Kai Tsoi, is perhaps, even more prized by the Chinese and we consider it an excellent mustard greens."

[1] Conn. Exp. Sta., Bull. 236, p. 245, 1921.

TABLE VII. ANALYSES OF

No.	Material
	Vegetables.
20510	Artichokes, Jerusalem:
	fresh, whole tuber
20511	cooked, whole tuber
	cooked, edible portion
21560	Asparagus, fresh, edible portion
	Beans, canned:
20803	No. 1, Fancy green refugee, drained beans
20804	No. 2 Fancy green refugee beans and liquor
20805	No. 3 Fancy green refugee beans and liquor
20806	No. 4 Cut green Refugee beans
20807	Extra Standard No. 5 Cut green Refugee
20460	Chayote, green, fresh
20461	white, fresh
20462	white, fresh
20463	pale green Guatemalan, fresh
20464	dark green, fresh
20465	light green, fresh
	Chinese Vegetables:
21823	Kai Tsoi
21824	Bak Toy
	Palmetto cabbage:
20979	fresh
20980	cooked
	Peppers, dried:
20146	Neapolitan
20147	Squash, pungent
20149	Royal
20150	Sunnybrook
20151	Mexican, pungent
21561	Rhubarb, fresh, edible portion
	Salad Vegetables:
21565	Aralia Cordata (Udo)
21566	Celeriac
20030	Tomatoes, green, edible portion
	Vegetable Marrow:
20686	edible portion, fresh
20687	edible portion, cooked
	Nuts.
21562	Pignolia nuts, shelled
21563	Pistache nuts, shelled
21564	Cashew nuts, shelled
21569	Brazil nuts, shelled

NATURAL FOODS OF INTEREST TO DIABETICS.

Moisture	Ash	Nitrogen	Protein, (N x 6.25)	Fiber	Carbohydrate (other than fiber)			Fat, ether extract	No.
					Starch	Sugar, as dextrose	Other carbohydrate		
77.76	2.00	0.47	2.93	0.80	14.03[1]	0.20[2]	2.17	0.11	20510
75.85	1.60	0.44	2.77	1.09	15.43[1]	0.29[2]	2.87	0.10	20511
78.86	1.37	0.38	2.36	0.82	14.04[1]	0.23[2]	2.25	0.07	.....
92.15	0.69	0.48	3.00	0.70	0.08	0.70	2.37	0.31	21560
93.65	1.14	0.22	1.39	0.76	0.10	0.89	1.98	0.09	20803
94.43	1.07	0.16	0.98	0.53	0.06	1.21	1.62	0.10	20804
95.12	1.22	0.13	0.79	0.49	0.06	0.98	1.29	0.05	20805
94.08	0.97	0.16	0.99	0.55	0.12	1.45	1.78	0.06	20806
94.77	1.13	0.14	0.85	0.51	0.23	1.00	1.46	0.05	20807
90.38	0.54	0.19	1.16	0.93	2.98	2.25	1.66	0.10	20460
91.45	0.50	0.13	0.83	0.91	1.98	2.40	1.82	0.11	20461
92.45	0.37	0.11	0.70	0.87	1.26	2.55	1.69	0.11	20462
90.83	0.40	0.14	0.85	0.83	2.05	2.94	1.97	0.13	20463
94.13	0.37	0.13	0.83	0.51	0.57	2.28	1.22	0.09	20464
93.61	0.36	0.12	0.77	0.54	0.85	2.31	1.46	0.10	20465
94.56	1.08	0.27	1.71	0.70	0.03	0.42	1.31	0.19	21823
95.91	1.06	0.19	1.21	0.59	0.02	0.33	0.78	0.10	21824
87.22	1.74	0.53	3.33	0.93	1.01	1.00	4.13	0.64	20979
88.97	1.22	0.46	2.89	0.85	0.83	0.88	3.89	0.47	20980
9.60	5.55	1.86	11.63	7.57	1.55	35.15	25.35	3.60	20146
10.29	5.98	2.28	14.25	8.41	1.46	30.00	25.59	4.02	20147
9.64	5.55	1.94	12.13	7.59	1.24	35.35	25.47	3.03	20149
10.59	7.32	2.16	13.50	6.57	1.13	32.00	24.39	4.50	20150
8.15	5.42	1.63	10.19	5.93	1.32	36.10	23.34	9.55	20151
96.11	0.49	0.07	0.42	0.40	0.07	0.51	1.87	0.13	21561
95.29	0.51	0.16	0.97	0.50	0.07	1.07	1.44	0.15	21565
89.57	0.95	0.29	1.79	1.45	0.14	0.80	5.08	0.22	21566
94.72	0.62	0.19	1.21	0.42	0.36	1.19	1.25	0.23	20030
93.22	1.09	0.07	0.45	1.21	0.10	1.74	2.12	0.07	20686
93.03	1.04	0.07	0.41	1.36	0.08	1.89	2.13	0.06	20687
5.84	4.19	5.84	36.50	0.82	none	4.32	0.46	47.87	21562
5.80	2.79	3.88	24.25	1.75	none	6.13	8.20	51.08	21563
4.50	2.48	3.06	19.13	0.61	13.39	6.84	5.93	47.12	21564
3.41	3.35	2.69	16.81	2.10	none	1.30	3.65	69.38	21569

[1] Water-soluble carbohydrate after hydrolysis calculated from levulose to inulin, factor 0.9.

[2] Direct reducing sugar calculated as levulose.

Palmetto cabbage. This sample was submitted by Dr. Orton from Sanford, Fla. He explains that it is the bud of the palmetto, the common palm of Florida. The fibrous outer portions of the bud are discarded and the tender inner tissues constitute the edible portion which is esteemed as a food. Taking the bud, however, sacrifices the life of a tree.

Peppers, dried. These were grown at Arlington Farm, Virginia and sent by Dr. Orton. Only the edible portion was included in the samples. The original green weights of the samples are not recorded but the water content of the fresh material is propably 90 to 95 per cent. so that the percentages of the constituents given, other than moisture should be divided at least by 9 to approximate the composition of the fresh vegetable.

Salad vegetables. Samples of Aralia Cordata (or Udo) and of Celeriac were submitted by Dr. Orton in June, 1923. The Udo was freshly gathered and the Celeriac had been kept in storage since the fall of 1922. Both are desirable salad vegetables, one of the merits of the last named being that it keeps so well in storage.

Vegetable Marrow, Moore's Cream. This sample was submitted in February 1923 by Dr. Minot of Boston and had been stored since the previous fall. Analyses are of the edible portion i. e. with rind, seeds and placentae removed.

NUTS.

Brazil Nut.[1] (*Bertholletia excelsa*). Also called Cream Nut' Nigger Toe, Para Nut, Castanha, Butter Nut, etc. The fruit of a lofty uncultivated tree in the Amazon Country of South America. It is gathered by the natives and brought to the coast for export, Para being the principal center. These nuts are received in the United States from February to April and held in cold storage until late summer or early fall, when they are placed upon the market as the new crop.

Pignolia (*Pinus panes*).[2] The edible seeds of the stone pines of southern Europe are imported into this country in large quantities. They are rarely seen this side of the Atlantic except in the shelled condition. These nuts are chiefly imported from Tuscany, the Castilian section of Spain and sometimes, but rarely, from Turkey.

Pistache (*Pistacea vera L.*) This species is said by "Nut Culture in the U. S." to have originated in Syria; however, it is now well established in the warmer countries of Europe, Asia, and Africa. It was introduced into this country nearly a half century ago and is now receiving considerable attention in California and other parts of the West and Southwest.

[1] Specimens contributed by Hills Bros. Co., New York.
[2] Specimens from lot purchased from Wood and Selick, Inc., New York.

Cashew (*Anacardium occidentale L.*) This species is widely known throughout the tributaries of the greater part of the world. It is peculiarly interesting in two respects: First, the seed, shaped like a large bean not unlike a kidney, both in form and color, forms on the apical end of a fleshy, pear-shaped, yellowish or crimson fruit. Its method of attachment is decidedly unnatural in appearance. Second, the seed is incased within two thin but firm shells, between which there is enclosed a brownish colored fluid, extremely poisonous to the skin. This is readily dispelled by roasting, but in the process strong fumes are given off which are said to be highly irritating to the eyes. Painful cases of poisoning have been experienced by those handling this nut in the unroasted condition. This might be anticipated since the species is closely allied to our poisonous sumac and ivy in this country.

From the standpoint of composition these nuts are characterized by high contents of oil and relatively high protein. The carbohydrate is correspondingly low, particularly the part which may be regarded as available. Cashew nuts are conspicuous in the group in that they contain over 13 per cent. of starch.

EGGS.

Frequent requests are received from the Dairy and Food Commissioner to determine whether eggs sold under the designation of "fresh" are in fact fresh eggs. The examination made in such cases has been based chiefly upon the characteristics of the eggs as shown before the candle and on breaking out of the shell as noted in a previous report.[1] Lythgoe[2] and others, cite the determination of ammonia as useful additional evidence in deciding the question of freshness. The actual figures obtained for ammonia content, however, are always to be interpreted in connection with evidence obtained as to physical characteristics and also with inspection evidence.

We have made a limited number of trials in which eggs of known freshness[3] were held for a period of 40 days, the ammonia content being determined at intervals during that time. The eggs were held in a reasonably dry atmosphere protected from light, and the temperature varied from 36° to 73° F, the average mean temperature being 56° F. These conditions probably represent those under which eggs are often held in practice. There were 24 eggs in the lot and they were examined in eight groups of three eggs each. The results are not regarded as final criteria for classification but they are useful for reference and furnish some interesting comparisons. In general the air spaces were less than 1 inch in diameter (5/8 to 7/8), until the eggs were 21 days old. Until about this time also the yokes were not appreciably settled and the whites remained fairly firm. After 21 days the air spaces were one inch or more in diameter, the yolks were uniformly settled to one side of the shell and the whites were thin or watery.

Ammoniacal nitrogen determined at four intervals between 1 day and 15 days ranged from 1.3 to 2.1 milligrams and averaged 1.9 milligrams per 100 grams of egg. The average for the interval twenty-two to thirty-two days was 2.3 milligrams and from thirty-three to forty days it was 2.9 milligrams per 100 grams. Ammoniacal nitrogen was not found uniformly progressive in the later intervals but, in general, the results showed that up to two weeks the average content was slightly under 2 milligrams; from then up to one month the average was less than 2.5 milligrams and thereafter and up to about six weeks the average was 2.9 milligrams. At about three weeks the eggs, under the conditions of this experiment, began to show the characteristics of staleness, as judged by candling, at which time the ammoniacal nitrogen was found to be somewhat in excess of 2 mgs. per 100 grams of egg. At the end of the experiment the eggs were very stale but not rotten and the ammoniacal nitrogen found was about 3 mgms. per 100 grams.

Remington[4] has cited the probable limits of ammoniacal nitrogen in fresh eggs as from 1 to 1.5 mgms. per 100 grams. At about 2 mgms. the characteristics of staleness are noted and eggs containing 2.5 mgm. or more are very stale. Lythgoe[5] regards a strictly fresh egg as not exceeding 1 mgm. of ammonia while one containing 2 mgms. might be regarded as reasonably fresh. Lythgoe further suggests that large air spaces with low ammonia indicate eggs held at low (cold storage) temperature, while large air spaces with high ammonia indicate eggs held at higher temperatures.

A sample consisting of twelve eggs purchased in the market as *fresh* showed air spaces generally less than three-fourths of an inch in diameter, yolks and whites were normal and the ammonia content varied from 0.9 to 1.3 mgms., averaging 1.0 mgm. per 100 grams. The eggs clearly qualified as fresh.

Six other samples of six eggs each were purchased at prices ranging from thirty to forty-five cents per dozen, the quality of freshness being emphasized or implied in most cases. One of these samples might be passed as reasonably fresh, but the others, though edible, could not be called fresh eggs.

Determination of Ammoniacal Nitrogen in Eggs.

For the determination of ammoniacal nitrogen an adaptation of the Folin method was employed.

[1] Conn. Exp. Sta. Bull. 248, p 394.
[2] Mass. State Board of Health, Report of 1911, p 431.
[3] The eggs were laid March 1st, 1923 and were less than 24 hours old when the experiment began.
[4] U. S. Dept. Agr., Bull. 51, July 1914.
[5] Loc. citu.

REAGENTS.

Nessler solution: Prepare as described in A. O. A. C. Methods of Analysis, p. 22.

Sodium carbonate: Saturated solution.

Potassium oxalate: Saturated solution.

White Mineral Oil.

Hydrochloric acid, N/10: Make approximately N/10 by diluting concentrated hydrochloric acid with ammonia-free water.

Ammonia-free water: Redistil distilled water from alkaline potassium permanganate and reject the first portion of the distillate. Acidify the remainder of the distillate with dilute sulphuric acid and distil again.

Standard ammonium sulphate: Aerate a concentrated solution of ammonium chloride, which has been made alkaline with sodium hydroxide, into dilute sulphuric acid until the acid is neutralized, using the regular Folin aeration apparatus. Precipitate the ammonium sulphate by means of alcohol, filter and wash with alcohol. Dissolve and reprecipitate the salt, filter and dry in a vacumm desiccator. Take 0.4717 gm. of the dry ammonium sulphate and make up to 500 cc. Five cc of this solution is equivalent to 1 mgm. of nitrogen.

DETERMINATION.

Break three eggs into a suitable dish and mix by beating thoroughly. Weigh 20 gms. into the cylinder of the Folin apparatus, add 5 cc of sodium carbonate, 2 cc of potassium oxalate and 5 cc of mineral oil. Place 2 cc of N/10 hydrochloric acid and 50 cc of ammonia-free water in a 100 cc graduated flask used as a receiving flask. Connect the apparatus with the blast pump and aerate the sample for two hours. Nesslerize the contents of the receiving flask as follows: Take 5 cc of Nessler solution, dilute with 25 cc of ammonia-free water, add it to the contents of the receiving flask in three portions, mixing after each addition, then make up to volume of 100 cc and thoroughly mix. Take 5 cc of standard ammonium sulphate solution, dilute with ammonia-free water, add 5 cc of Nessler solution diluted with 25 cc of ammonia-free water and make up to volume of 100 cc. Estimate the amount of nitrogen in the unknown solution by comparison with this standard solution (which contains 1 mgm. of nitrogen), using a Duboscq colorimeter.

Determine the efficiency of the apparatus from time to time by aerating known quantities of the standard solution. Introduce also the necessary correction for blanks run with the reagents alone at the time of each trial or series of trials.

FATS AND OILS.

Butter.

Five samples of butter were examined for the Dairy and Food Commissioner and all were passed as genuine.

Cocoanut Fat.

A sample of a fat was submitted by Prof. Fisher of Storrs for identification. Constants were determined as follows:

Polensky No. 11.7, Reichert-Meissel No. 7.2, Kirschner No. 2.3, Butyro-refractometer reading at 40° C, 36.

The constants indicated cocoanut fat which the sample proved to be.

Cooking Fats.

A sample of Nut-z-all, D. C. No. **24809** was examined as follows:

Moisture 10.73 per cent., fat 87.58 per cent., salt 1.37 per cent., casein (by difference), 0.26 per cent., undetermined mineral matter 0.06 per cent. Butyro-refractometer reading at 40°C. 36.5°. Reichert-Meissel No. 8.95. Halphen test negative.

The sample has substantially the same composition as that of other vegetable fat margarines which we have examined.[1]

Olive Oil, etc.

Seven samples were examined six of which were submitted by the Dairy and Food Commissioner. Five were sold for olive oil and no adulterants were found. Two samples contained cotton-seed oil. They were not, however, sold as olive oils but as table oils.

Phosphoric Acid Content of Some Cooking Fats.

A number of cooking fats were examined for phosphoric acid in connection with the determination of alcohol-ether-soluble phosphorous in baked products. Lard, Snowdrift, Crisco, Mazola, Oleomargarine, vegetable oil margarine and butter were included. The clear fats were ashed and treated as described in the methods of Jacobs and Rask[2]. In no case did the fats show more than traces of phosphoric acid (P_2O_5), by the method employed. In the case of butter and the margarines, when the whole products were used, appreciable quantities of total phosphoric acid were found due to the non-fat milk constituents present. Thus butter contained 0.038 per cent., oleomargarine 0.024 per cent., and vegetable oil margarine 0.019 per cent. of total phosphoric acid (P_2O_5).

[1] Conn. Exp. Sta., Bull. 210, p 203. 1918.
[2] Jour. Assoc. Official Agr. Chemists, **6**, 11. 1922.

FLOUR.

In connection with the analysis of egg-flour mixtures as described under alimentary pastes,[1] fifteen samples of commercial flour, analysis of which were published last year,[2] were further examined for lipoid phosphoric acid by the alkaline extraction method of Jacobs and Rask as used in the examinations of our egg-flour mixtures and of commercial noodles. In addition to these flours three authentic samples[3] of recognized grades of flour were also analyzed. A summary of the results obtained on the market flours and the analyses of the three authentic samples are given in Table VIII.

Table VIII. Analyses of Commercial Flour and of Three Authentic Samples of Flour.

Description.	Moisture, (5 hrs. at 105°C)	Ash	Protein, (N. x 5.7)	Fat, (Alc-ether extract)	Acidity, (as lactic acid)	Lipoid-P_2O_5, (moisture-free basis)
Commercial flours	%	%	%	%	%	%
Maximum	13.63	0.48	11.97	1.67	0.13	0.060
Minimum	11.18	0.36	7.03	1.03	0.06	0.035
Average	12.21	0.43	9.79	1.38	0.10	0.046
Authentic samples						
First patent	9.70	0.38	11.40	1.21	....	0.043 +
Straight	10.08	0.48	11.74	1.50	....	0.045 −
First Clear	9.77	0.64	13.11	1.66	....	0.045 +

The figures obtained for the alcohol-ether soluble phosphoric acid content of flour are, on the average, somewhat lower than have been reported by some other workers. In the method employed,[4] after evaporating the combined extracts to dryness there was found to be a considerable amount of material which was insoluble in the ether-petroleum ether mixture and this was removed by filtration. Filtration at this point is a departure from the method as described but it seemed evidently improper to include material insoluble in the reagents indicated. This may be a partial explanation of the discrepancy noted.

GELATIN

A sample of gelatin, **21225**, made by the Grayslake Gelatine Co., Grayslake, Ill., was examined as follows:

Moisture, determined 12.92 per cent.; by difference 12.47 per cent.; ash 0.26 per cent.; nitrogen 15.72 per cent., equivalent to gelatin 87.24 per cent.,

[1] See page 167.
[2] Conn. Exp. Sta. Bull. 248, p. 401.
[3] These were obtained through the courtesy of Mr. C. B. Morison, American Institute of Baking.
[4] Jour. Assoc. Official Agr. Chemists, **6**, 11. 1922.

(factor 5.55); fat 0.03 per cet.; keratin none found; arsenic none found; copper slight trace; zinc trace(?); in hot water solution, clear and no odor.

The analysis indicates a very pure product.

HONEY.

One sample of comb honey, **21603,** was submitted by a producer. Partial analysis was made as follows:

Ash 0.41 per cent.; moisture (in vacuum over sulphuric acid, room temp.) 10.67 per cent.; polarization—2.4° at 20° C.

The results obtained are substantially within the limits as given for honey by Leach.[1]

ICE CREAM.

Three hundred and thirty-nine samples of ice cream have been examined for the Dairy and Food Commissioner and two samples have been submitted from other sources. A summary of the results by towns or cities is given in Table X.

Only five samples were found to be substantially deficient in milk fat. One sample purchased from Rosario Cipolla, Hartford, was found to contain but 3 per cent. of fat. Two samples taken subsequently contained approximately the same amount but the dealer was protected by the display of a sign declaring the composition of his product.

The samples presumed to be of standard quality, but found to be deficient are as follows (Table IX):

TABLE IX. ICE CREAM BELOW STANDARD.

No.	Dealer	Manufacturer	Flavor	Fat
	Hartford			%
24937	Rosario Cipolla	Own make	Vanilla	3.0
	New Britain			
25647	Charlie Piccolei	Own make	Vanilla	5.1
	New Haven			
27236	Francisco De Felice	Own make	Vanilla	5.4
	Stamford			
26758	A. Esposito	Own make	Vanilla	7.1
	Unionville			
26018	Charles A. Hackney	Own make	Vanilla	6.7

[1] Food Inspection and Analysis, p. 666.

TABLE X. INSPECTION OF ICE CREAM.

City or Town	No. of Samples	Fat Content, Range		Average
		%	%	%
Ansonia	10	11.2	8.0	10.0
Bridgeport	33	21.0	7.8	12.0
Bristol	3	15.6	11.2	13.7
Collinsville	2	15.4	15.4	15.4
Crescent Beach	1	....	....	16.0
Danbury	11	17.2	9.2	11.7
Danielson	1	....	....	9.6
Derby	1	....	....	9.2
Forestville	3	15.0	11.4	12.8
Greenwich	5	15.4	11.2	13.5
Hartford	34	18.4	2.8[1]	13.5
Jewett City	2	18.0	14.0	16.0
Litchfield	1	....	...	13.8
Meriden	8	14.4	9.4	11.5
Middletown	9	17.6	12.8	14.8
Montville	1	....	....	8.0
Moosup	2	22.0	20.0	21.0
Mystic	3	24.0	12.0	18.3
Naugatuck	5	13.2	9.2	10.8
New Britain	12	14.0	5.1	11.1
New Haven	46	20.4	5.4	11.8
New Milford	5	18.4	7.8	11.6
New London	16	20.0	10.0	14.9
Norwalk	3	13.8	8.6	11.0
Norwich	12	24.0	10.0	15.4
Pawcatuck	4	19.6	10.8	15.2
Plainfield	1	....	....	13.0
Plainville	2	16.4	11.4	13.9
Pomfret	2	24.0	20.0	22.0
Portland	1	....	....	14.8
Putnam	7	22.0	12.4	16.1
Rockville	2	16.4	16.0	16.2
Somers	1	....	....	16.0
Somerville	1	....	....	11.6
Southington	1	....	....	14.8
South Manchester	4	16.0	11.2	13.3
South Norwalk	3	15.6	11.2	12.7
Stafford Springs	6	17.4	12.0	14.9
Stamford	12	17.4	7.1	11.5
Stonington	1	....	....	14.0
Stratford	1	....	....	11.4
Suffield	3	11.4	8.6	9.9
Terryville	1	....	....	10.0
Thomaston	3	14.8	11.2	12.6
Thompsonville	7	14.4	8.4	12.8
Torrington	7	14.4	7.4	11.0
Unionville	2	6.7	6.2	6.4
Wallingford	8	16.0	11.6	14.1
Waterbury	13	15.0	8.4	11.4
Waterford	1	....	....	10.4
West Wauregan	2	11.2	8.0	9.6
Willimantic	9	16.0	8.8	14.3
Winsted	5	18.4	9.8	13.4
Total	339			

[1] Sign displayed declaring per cent. of fat.

The manufacturers of ice cream may be divided, broadly, into two groups, *viz.*, those who exercise careful factory control and aim to keep their output reasonably close to the legal standard for fat; and those who intentionally make high-fat products for a special trade or who unintentionally, through lack of control, put more milk fat into their product than the law requires. In general, the large producers belong to the first-named group, and without data as to the comparative production of the two groups a study of the results for fat obtained on official samples will not give an adequate idea of the average fat content of ice cream sold in the State. However, with proper reservations it is of interest to consider, on the basis of fat content, the classification of official samples of ice cream examined in the five years since the ice cream law became effective.

CLASSIFICATION OF OFFICIAL SAMPLES OF ICE CREAM ON BASIS OF FAT CONTENT, 1919-1923 INCL.

	No. of Samples	Per cent.
8.0–9.9 per cent. fat	387	26.1
9.9–11.9 per cent. fat	344	23.2
12.00 per cent. and above	609	41.1
Below 8 per cent	142[1]	9.6
Total	1482	100.0

DETERMINATION OF FAT IN ICE CREAM.

The necessity for a rapid test for fat in ice cream has been felt by all analysts who are required to test ice cream in a routine way for purposes of control. For this purpose various modifications of the Babcock test have been suggested from time to time, but none have proved to be uniformly satisfactory or reliable. We have used the method as described by Lichtenberg[2] which, according to Troy[3], is substantially like a procedure previously described by Ross. A method suggested by Utt[4] employs the same reagents but after the addition of acetic-sulphuric acids the mixture is heated before centrifuging. A procedure[5] which is a combination of the two just mentioned, but which gives better satisfaction than the Lichtenberg method which we have heretofore used, is carried out as follows:

Transfer 9 grams of the well mixed sample to a 10 per cent. milk test bottle. Add 10 cc. of glacial acetic acid, mix thoroughly, and place in a water bath at a temperature of 75°–80° C for thirty minutes, shaking the bottle several times during the heating. Remove from the bath, add 5 cc. of water and 10 cc. of sulphuric acid of the strength used in the Babcock test. Mix thoroughly and

[1] Includes 32 fruit ice creams of legal standard, viz., 6 per cent.
[2] J. Ind. Eng. Chem., **5**, 786. 1913.
[3] Ibid., **5**, 960. 1913.
[4] Ibid., **7**, 773. 1915.
[5] Suggested by R. E. Andrew.

whirl in a centrifuge for 10 minutes. Add hot water up to the neck of the bottle and whirl for five minutes after which bring the fat column up into the graduation and whirl for three minutes longer. Multiply the fat reading by two for the percentage of fat in the sample.

The Roese-Gottlieb method is used in all cases where an amount of fat less than that required by the standard is found.

MILK AND MILK PRODUCTS.

MARKET MILK.

Twelve hundred and twenty-eight samples of milk have been examined for the Dairy and Food Commissioner and on the results of analyses are classified as follows:

Not found adulterated	706	57.5%
Adulterated by dilution with water	113	9.2
Adulterated by skimming	73	5.9
Adulterated by skimming and diluting with water	3	0.2
Adulterated by reason of being		
below standard in solids and solids not fat	136	11.1
below standard in solids and fat	29	2.4
below standard in solids, fat and solids-not-fat	168	13.7
Total	1228	100.0

Samples found to be adulterated by dilution with water, by skimming or by skimming and dilution are given in Table XI.

One hundred and thirty-one samples submitted by consumers or producers require no particular comment.

TESTER'S LICENSE.

Three samples of milk and nine samples of cream were tested for fat to check results obtained by candidates for license to test milk and cream as required by Sec. 1 of Chapter 180, Public Acts of 1923 amending Sec. 2464 of the General Statutes.

EVAPORATED MILK.

Twenty-three samples of evaporated milk and one of evaporated skimmed milk were collected by the Station agent. One sample was submitted by the Dairy and Food Commissioner and three were received from other sources.

The standard for *condensed milk, evaporated milk, concentrated milk*, requires, all tolerances allowed for, not less than 7.8 per cent. of milk fat and not less than 25.5 per cent. of total milk solids; provided, however, that the sum of the percentage of fat and of total solids be not less than 33.7[1].

Analyses of these samples are given in Table XII.

[1] F. I. D. 189.

TABLE XI. ADULTERATED MILK.

No.	Dealer	Solids	Fat
	Containing Added Water		
	Ansonia.	%	%
25856	Sam Ferlo	10.97	3.5
25857	Sam Ferlo	10.71	3.2
	Branford.		
26972	William Hall	11.01	3.4
25837	G. G. Nesbit	10.93	3.4
	Brewster, N. Y.		
25777	Weizenecker Bros	10.17	3.2
25778	Weizenecker Bros	10.34	3.2
25779	Weizenecker Bros	10.10	3.1
25780	Weizenecker Bros	10.05	2.9
25781	Weizenecker Bros	9.61	2.9
25782	Weizenecker Bros	10.2	2.7
25783	Weizenecker Bros	9.52	2.7
25784	Weizenecker Bros	10.03	2.9
	Bridgeport.		
24857	R. F. Barske	10.96	3.3
24858	R. F. Barske	11.33	3.6
24859	R. F. Barske	10.98	3.4
24794	Connecticut Lunch	10.53	2.9
24662	John Pappas	10.62	3.2
25916	Snow & Snow	10.52	3.2
24797	The Brothers Lunch	10.53	3.0
	Bridgewater.		
25787	Lee S. Dickenson	9.32	2.7
25788	Lee S. Dickenson	10.39	3.2
25789	Lee S. Dickenson	10.55	3.1
25790	Lee S. Dickenson	9.42	2.6
	Colchester.		
25711	A. Macker	10.47	3.1
25712	S. Schmil	8.87	2.6
25713	S. Schmil	7.90	2.0
	Cornwall Bridge.		
24616	H. Chapman	10.47	3.1
24617	H. Chapman	10.46	3.3
24618	H. Chapman	9.10	3.0
24619	H. Chapman	11.09	3.4
24620	H. Chapman	9.29	2.3
22247	W. Livenstone	10.92	3.2
22232	F. Lorch	11.42	3.7
22238	J. Lorch	10.25	3.0
24611	Mrs. P. Tamgo	10.72	3.1
	Containing Added Water—*Continued.*		
	Danbury.	%	%
25775	Morey Bros. Store	10.31	3.2
25771	Pure Milk & Cream Co.	10.22	3.1
25776	United States Stores Company	10.54	3.3
	Durham Center.		
25235	W. I. Parmelee	9.33	2.8
25236	W. I. Parmelee	8.52	2.7
25237	W. I. Parmelee	9.26	2.9
25238	W. I. Parmelee	9.40	3.1
25239	W. I. Parmelee	9.16	2.8
25240	W. I. Parmelee	11.33	3.6
25241	W. I. Parmelee	9.71	3.3
	East Haddam.		
25710	Max Ludnar	10.36	3.3
	East Hampton.		
25709	J. M. Peters	9.68	2.9
	East Haven.		
26955	Thomas Shirsky & Son	9.86	2.8
	Goshen.		
25993	H. E. Cass	11.93	4.4
	Leonard's Bridge.		
26305	Root Bros.	10.97	3.6
	Meriden.		
26365	C. H. Childs	11.13	3.6
27700	C. H. Childs	11.56	4.0
27703	C. H. Childs	11.44	3.9
26370	Wm. Hozlett	7.31	2.8
24523	E. J. Kaemner	11.66	3.6
26368	Wm. Pomeroy	10.66	3.2
24516	Presto Lunch	11.21	3.6
24526	Presto Lunch	11.42	3.4
24517	Quality Lunch	11.23	3.6
24527	Quality Lunch	11.40	3.6
24518	Smart's Lunch	10.87	3.1
24528	Smart's Lunch	11.06	3.3
	Monroe.		
26985	Sam. Goldstein	11.15	3.6
26983	Anton Shura	11.19	3.8
26984	Anton Shura	10.70	3.1

TABLE XI. ADULTERATED MILK—(*Continued*).

No.	Dealer	Solids	Fat
	Containing Added Water—*Continued.*		
	New Britain.	%	%
24874	James Portigo	11.24	3.5
24876	James Portigo	10.91	4.3
24877	James Portigo	9.74	3.2
25026	Tony Tomaszeski	10.23	2.9
	New Hartford.		
26520	Louis Malaten	10.40	3.1
26522	Louis Malaten	10.30	3.0
	New Haven.		
24729	T. F. Fitzsimmons	12.64	5.5
	New Preston.		
27469	John Chemski	10.62	3.2
27470	John Chemski	10.07	2.6
27472	John Chemski	10.31	2.9
	Newtown.		
26990	Chas. R. Beardsley	10.71	3.3
26991	Chas. R. Beardsley	10.80	3.5
	Northford.		
26389	D. Formissano	10.90	3.7
	North West Chester.		
25708	John Lensewsky	10.03	3.4
	Orange.		
27681	C. Winkle	10.25	3.6
27748	C. Winkle	10.62	4.2
27749	C. Winkle	12.05	4.7
27683	Philip Yarash	10.24	3.2
27750	Philip Yarash	10.04	3.3
27751	Philip Yarash	11.27	4.1
	Rockville.		
27319	Louis Pestretto	9.49	2.8
27320	Louis Pestretto	8.96	2.4
27321	Louis Pestretto	10.26	3.4
27322	Louis Pestretto	10.18	3.4
	Roxbury.		
25792	N. Oguan	9.65	2.6
	Containing Added Water—*Concluded.*		
	Shelton.	%	%
26361	Joe Ovesny	10.43	3.3
	So. Manchester.		
24543	Frank Beccio	10.43	3.3
24544	Frank Beccio	10.55	3.4
	Stamford.		
24805	Bliss Lunch	10.76	3.4
	Stepney.		
14518	I. Sippin	9.47	3.1
	Trumbull.		
24162	Jessie G. Lyon	9.60	3.1
24163	Jessie G. Lyon	10.80	3.0
24164	Jessie G. Lyon	9.17	2.7
	Wallingford.		
25582	Geo. Nesbit	10.95	3.5
25898	Mrs. A. E. Quigley	7.03	1.9
25899	Mrs. A. E. Quigley	9.71	3.4
26350	Mrs. A. E. Quigley	9.52	3.1
	Westport.		
25942	Silverbrook Farm	11.16	3.6
25945	Silverbrook Farm	10.50	3.1
25946	Silverbrook Farm	8.48	2.3
25947	Silverbrook Farm	8.32	2.2
	West Cheshire.		
27708	Howard E. Ives	10.06	3.2
	West Chester.		
25707	Solomon Sugannan	11.46	4.3
	West Hartford.		
24950	C. A. Carlson	10.17	2.6
	Yalesville.		
27752	Chas. Carttanota	9.75	3.1
27753	Chas. Carttanota	9.27	2.6
	Yantic.		
25724	Gregory Muckensturm	9.04	2.2
25714	Wm. Tibbitts	8.59	2.7
25715	Wm. Tibbitts	8.34	2.8
25716	Wm. Tibbitts	8.52	2.7

TABLE XI. ADULTERATED MILK—(*Continued*).

No.	Dealer	Solids	Fat
	Skimmed Milk		
	Amston.	%	%
26404	Morris Freeman	11.19	2.7
	Bridgeport.		
22984	Columbia Lunch	10.52	2.2
22988	Garden Restaurant	10.66	2.3
22986	Harvard Lunch	10.91	2.4
22979	477 Main Street	10.79	2.3
24650	Pappas Bros.	9.50	1.1
22990	Phoenix Lunch	11.09	2.7
	Danbury.		
23421	Joe Hurst	9.77	1.5
	Danielson.		
25180	Wm. S. Brown	9.50	1.1
	Hartford.		
24764	Armory Lunch	10.70	1.9
24761	Asia Restaurant	10.00	1.1
24313	Baldwin's Lunch	11.42	2.3
24314	Central Lunch	10.04	0.8
26543	Colt's Lunch	11.93	2.2
24319	Cranton's Coffee Lunch	11.56	2.5
27207	Crystal Lunch	11.08	2.2
24317	Eagle Lunch	10.34	1.7
24340	Gem Lunch	9.99	1.3
24754	Grand Restaurant	11.24	2.7
27311	Hillside Lunch	10.91	1.9
24758	Jack's Lunch	12.45	3.2
27609	Kosher Restaurant	9.83	1.0
24320	Longley's Lunch	10.71	2.0
24798	McNamara Lunch	10.30	2.1
26549	New Way Lunch	10.94	2.3
24326	Victory Lunch	9.58	1.0
27204	Victory Lunch	10.30	1.6
24343	Virginia Lunch	9.90	1.1
26529	Waldorf Lunch	11.44	2.7
26539	Waldorf Lunch	10.72	1.7
27601	Waldorf Lunch	10.32	1.2
24753	Washington Lunch	9.72	1.2
27611	Washington Lunch	10.43	1.5
26546	Welcome Lunch	11.27	2.4
	Leonard's Bridge		
25892	Root Bros.	10.29	1.8
	Moosup.		
25191	A. T. Hill	11.58	2.7
	Skimmed Milk— *Continued.*		
	New Britain.	%	%
24771	Hudson Lunch	11.22	2.6
	New Haven.		
24841	B. & L. Lunch	11.08	2.4
24715	Barberito Lunch	10.98	1.7
25123	Chicago Lunch	10.86	2.3
24828	Citizen's Lunch	10.14	1.7
24816	Diamond Lunch	9.79	1.1
25118	Grand Restaurant	9.46	0.8
24840	Loft's Inc	11.00	2.5
25109	New Haven Oyster and Chop House	10.79	2.3
24833	Old Homestead Lunch	10.63	1.9
25111	James Otis Restaurant	10.48	2.0
25102	Oxford Lunch	9.54	1.2
24813	P. & G. Restaurant	10.46	1.9
24713	Quality Del. & Lunch	11.17	2.6
24817	Mrs. Root's Food Shop	10.24	1.8
24700	Smith Lunch	11.30	2.6
24707	Waterbury's Luncheonette	11.38	2.6
	Newington.		
27251	M. Gacovitz	10.60	2.1
	Northford.		
25244	Fred Wellman	11.62	2.9
	Plainville.		
22977	Collins Restaurant	10.21	1.3
	South Norwalk.		
22993	Savoia Restaurant	11.37	2.8
	Stamford.		
24677	Carter's Lunch Room	9.64	1.6
24800	Hartford Lunch	10.25	2.0
24670	Joe Kerbel	9.27	1.5
24671	S. J. Ross	10.17	2.2
	Torrington.		
26162	Mrs. H. Hennessey	10.82	2.2
	Wallingford.		
27593	Louis Naisnerska	11.25	2.2
27594	Louis Naisnerska	11.00	2.2
27595	Louis Naisnerska	11.19	2.2

TABLE XI. ADULTERATED MILK—(*Concluded*).

No.	Dealer	Solids	Fat
	Skimmed Milk— *Continued.*		
	Waterbury.	%	%
22954	A. Blazevich	12.06	3.0
22960	Boston Lunch	11.41	2.5
22966	Hodson-Dean Lunch	11.01	2.4
22962	Plaza Lunch	10.96	2.3
22965	Star Lunch	10.60	2.1
	Willimantic.		
25368	Joe Putnyk	11.10	2.3
25367	R. Verry	10.84	2.3
	Skimmed Milk— *Concluded.*		
	Woodbridge.	%	%
24190	Pattsy Lonzo	9.80	2.0
	Skimmed and Watered		
	Bridgeport.		
24665	Efford & Murray	9.48	2.0
24792	Home Restaurant	10.10	2.5
22987	New York Lunch	9.17	2.2

It will be noted that the requirements of the standard are such that the sum of the percentages of solids and fat shall not be less than 33.7, that is to say, if an evaporated milk contains only the minimum of fat, viz., 7.8 per cent., then it cannot have also the minimum of 25.5 per cent. of solids, but must have at least 25.9 per cent. to make the required sum of 33.7; on the other hand a brand having the minimum of total solids (25.5 per cent.), must have at least 8.2 per cent. of fat.

The analyses show that the samples examined equalled or exceeded the standard in practically all cases. One sample of *Dairylea*, **21615**, was deficient, but two others fully met the requirements. *Sealect* brand, **20412**, was also deficient; a second sample could not be secured.

SWEETENED CONDENSED MILK.

One sample was submitted by Prof. Fisher of the Storrs Station to be examined for sucrose. It was found to contain 42.64 per cent. of that sugar.

CHOCOLATE-MILK MIXTURES.

Two samples of milk or skimmed milk mixed with cocoa or chocolate have been submitted for analysis. These were sold under the distinctive names of "*400*" and "*Angel Drink*" and were bottled by dairies. In substance they are analogous to the so-called chocolate-milk drinks long sold at soda fountains. In some States regulations have been passed fixing a minimum of milk fat which such products shall contain but no special regulations have been issued in this State.

Analyses of the products examined are as follows (p. 199).

TABLE XII. ANALYSES OF EVAPORATED MILK.

Sta. No.	Brand and Manufacturer or Dealer	Water	Solids	Ash	Protein (N x 6.38)	Fat	Solids + Fat	Milk Sugar, (by difference)
	Evaporated Milk	%	%	%	%	%	%	%
20409	*A. & P.*, The Great A. & P. Co.	73.21	26.79	1.60	6.64	8.03	34.82	10.52
21672	*Armour's Veribest*, Armour & Co., Chicago, Ill.	73.93	26.07	1.57	6.76	7.95	34.02	9.7
21629	*Borden's.* The Borden Co., N. Y.	73.98	26.02	1.57	7.98	8.18	34.20	8.2
21621	*Carnation.* Carnation Milk Products Co., Chicago, Ill.	74.48	25.52	1.49	6.38	8.30	33.82	9.3
20516	*Connecticut Valley.* S. Vogel & Sons, Hartford, Conn.	73.74	26.26	1.60	6.64	7.50	33.76	10.52
20670	*Connecticut Valley.* S. Vogel & Sons, Hartford, Conn	.....	.....	.....	.....	7.80	.....	.....
20423	*Dairylea.* Dairyman's League Cooperative Asso., Inc	72.14	27.86	1.70	6.76	8.21	36.07	11.19
21838	*Dairylea.* Dairyman's League Cooperative Asso., Inc	74.21	25.79	1.61	6.57	8.13	33.92	9.48
21615	*Dairylea.* Dairyman's League Cooperative Asso., Inc	72.96	27.04	1.59	6.89	5.81	32.85	12.75
21651	*Daisy.* Defiance Dairy Products Co., Defiance, Ohio	74.24	25.76	1.58	6.64	7.89	33.70	9.65
20415	*Fonda.* Fond du lac, Wis[1]	73.78	26.22	1.58	6.70	7.83	34.05	10.11
21626	*Good Luck.* John F. Jelke Co., Huntley, Ill	74.04	25.96	1.56	6.12	7.72	33.68	10.56
21705	*Lee.* H. D. Lee Mercantile Co., Waterbury, Conn.	74.13	25.87	1.66	6.76	7.91	33.78	9.54
21623	*Libby's.* Libby, McNeil & Libby, Chicago, Ill.	73.65	26.35	1.56	6.25	7.77	34.12	10.77
21633	*Mohican Special.* The Mohican Co., N. Y.	73.64	26.36	1.63	6.38	8.52	34.88	9.83
21616	*Nestle's Every Day.* Nestle's Food Co., N. Y.	73.71	26.29	1.54	6.00	7.91	34.20	10.84
21685	*Page.* Condensed Milk Co., N. Y.	74.30	25.70	1.57	6.70	7.85	33.55	9.58
21618	*Pet.* Helvetia Milk Condensing Co., St. Louis, Mo.	73.69	26.31	1.57	6.38	7.93	34.24	10.43
20421	*Pocono.* Jones Bros. Tea Co., N. Y.	73.63	26.37	1.55	6.06	7.56	33.93	11.20
21840	*Pocono.* Jones Bros. Tea Co., N. Y.	74.20	25.80	1.65	6.70	7.90	33.70	9.55
20412	*Sealect.* Sheffield Condensed Milk Co. Inc., N. Y.	73.91	26.09	1.56	5.93	7.25	33.34	11.35
21640	*Sunbeam.* Austin, Nichols & Co., N. Y.	73.88	26.12	1.63	6.95	8.02	34.14	9.52
20425	*Van Camp's.* The Van Camp Packing Co. Indianapolis, Ind.	71.28	28.72	1.73	7.72	7.56	36.28	11.71
21839	*Van Camp's.* The Van Camp Packing Co., Indianapolis, Ind.	73.23	26.77	1.73	6.64	7.95	34.72	10.45
21710	*Van Dyke's.* James Van Dyke Co., N. Y.	74.23	25.77	1.59	6.44	8.04	33.81	9.70
26951	[2]*Brand Unknown*	.....	.....	.....	.....	8.13	.....	.....
	Evaporated Skim Milk.							
21654	*Carolene.* Carolene Products Co., Detroit, Mich.	78.62	21.38	1.69	7.66	2.02	23.40	10.01

[1] Label damaged, manufacturer's name obscured.
[2] Dairy Commissioner's Series.

21810. *"400"*. Water 86.01 per cent.; solids 13.99 per cent.; ash 0.59 per cent.; fat (Roese-Gottlieb), 3.21 per cent.; total nitrogen 0.38 per cent.; protein (N. x 6.25), 2.38 per cent.; casein, determined,[1] 1.48 per cent.

21811. *"Angel Drink"*. Water 83.21 per cent.; solids 16.79 per cent.; ash 0.67 per cent.; fat (Roese-Gottlieb), 3.51 per cent; total nitrogen 0.44 per cent.; protein (N. x 6.25), 2.75 per cent.; casein, determined,[1] 1.81 per cent.

HUMAN MILK.

Sixteen samples of breast milk have been examined. The samples were submitted by Visiting Nurse Associations and by physicians. We impress upon those who submit samples that analyses may be very misleading unless the entire secretion of the gland is drawn and thoroughly mixed before sampling. The variations which may occur in different portions of human milk have been noted in a previous bulletin.[2]

Analyses of samples submitted during the year are given in Table XIII.

TABLE XIII. ANALYSES OF HUMAN MILK.

No.	Solids	Protein, (N.x 6.38)	Fat	Sugar	Ash
	%	%	%	%	%
19973	....	1.83	3.2	....	....
20628	13.45	1.45	4.4	7.60	....
20712	12.85	1.38	4.60	6.67	0.20
20747	15.08	0.94	6.80	7.17	0.17
20749	15.73	1.56	7.0	6.96	0.21
20890	9.97	1.44	1.4	6.88	0.25
21037	.....	1.43	5.5	....	....
21038	13.29	1.29	4.8	6.98	0.22
21362	10.88	1.17	2.4	7.08	0.23
21520	10.00	1.33	1.2	7.23	0.24
21573	.....	....	4.2	....	....
21590	10.17	1.12	1.7	7.10	0.25
21598	11.65	1.23	3.1	7.09	0.23
21723	12.74	1.44	5.0	5.99	0.31
21724	9.51	1.06	1.5	6.73	0.22
21945	....	1.38	3.6	....	....

MEAT PRODUCTS.

HAMBURG STEAK.

Hamburg steak rapidly deteriorates and develops a tainted or foul odor and an unattractive appearance. To deodorize the product and simulate the red color associated with fresh meat sodium sulphite or other salt of sulphurous acid is frequently employed. The use of sulphites for this purpose is in violation of the provisions of the food law, more particularly in that it conceals damage or inferiority.[3]

[1] Methods of Analysis, A. O. A. C., p. 267.
[2] Conn. Exp. Sta., Bull. 227, p. 255. 1920.
[3] Conn. Reg. 51.

Of fifty-nine samples examined for the Dairy and Food Commissioner, fifteen contained sulphites in amounts ranging from 326 milligrams to over 2,500 milligrams of sulphur dioxide per kilo of sample.

The samples in which this disinfectant was found are as follows:

TABLE XIV. HAMBURG STEAK CONTAINING SULPHITES.

D. C. No.	Sampled at		Sulphites (SO_2), mgms. per kilo.
25623	*Bridgeport,*	Chicago Market	1912.0
25620		Washington Market	865.0
25627	*Derby,*	F. Swist	426.0
25056	*Hartford,*	Hartford Cash Market Co.	834.0
25094	*New Britain,*	S. Welniskey & Sons	749.0
25080	*New Haven,*	A. M. Levine	784.0
25067		Congress Cash Market	1805.0
25618		Georges Market	1657.0
25611		E. Schoenberger & Sons	1281.0
25614		Capitol Market	1262.0
25617		William Miller Co.	326.0
25268	*Norwich,*	S. &. W. Self Service Co.	441.0
24848	*Union City,*	People's Market	1624.0
25626	*Waterbury,*	Waterbury Cash Market	2535.0
25602		Fulton Market	2470.0

A powder, **25630,** used for treating hamburg steak was submitted by the Dairy and Food Commissioner and found to contain sulphur dioxide equivalent to about 96 per cent. sodium sulphite (Na_2SO_3).

SAUSAGE.

The addition of cereal products or other starchy materials to sausage is not an uncommon practice. The purpose is to increase the water-absorbing power of the meat used and to prevent undue shrinkage of the sausage when cooked. Cuts of meat which are fresh and of good quality will contain enough moisture to secure a consistency of the ground sausage stock which will permit it to be readily packed in casings; but inferior sausage stock may be very dry. Because the use of absorbents in such products may readily lead to abuses the amount of starchy material which may be added to sausage is limited by official rulings and the presence thereof must be declared. According to regulations in this State[1], cereal products or other starchy materials added to sausage must be declared and the amount must not exceed 2 per cent. This ruling is in accord with that which is in force with the Federal meat inspection service.

Certain types of sausage, such for example as frankfurts, are frequently packed in artificially colored casings. This practice is permissible[2] if the proper declaration of color is made.

[1] Conn. Regulation 51.
[2] Ibid.

TABLE XV. SAUSAGE CONTAINING EXCESS OF STARCH OR ARTIFICIAL COLOR OR BOTH.

D.C. No.	Dealer	Manufacturer	Remarks.
	Pork Sausage.		
	Hartford.		
25050	Kashmann's Market	Scholefields, Meriden	Excess starch.
	Naugatuck.		
25250	Naugatuck Valley Market	Own make	Excess starch.
	New Britain.		
25071	M. Berkowitz	Thos. J. McNamara & Co., Bridgeport	Excess starch.
25073	Mohican Co	Thos. J. McNamara & Co., Bridgeport	Excess starch.
	New Haven.		
25063	H. Brown		Excess starch.
25069	Rice & Gorden		Excess starch.
25134	Van Dyke Co		Excess starch.
	Waterbury.		
25610	Swift & Co.	Own make	Excess starch.
25606	Washington Market	Own make	Excess starch.
	Frankfurts.		
	Bridgeport.		
25086	The Bridgeport Public Market	George Kearns, New York, N. Y.	Color undeclared.
25081	Cudahy Packing Co.	Own make	Excess starch; color undeclared.
25085	Elm City Provision Co.	Own make	Excess starch; color undeclared.
24989	Elm City Provision Co.		Color undeclared.
25083	Peter Hron	Own make	Color undeclared.
24987	T. J. McNamara	Own make	Color undeclared.
24988	T. J. McNamara	Own make	Color undeclared.
25091	T. J. McNamara	Own make	Excess starch; color undeclared.
25088	New England Market, Inc.	Own make	Excess starch; color undeclared.
	New Britain.		
25072	M. Berkowitz	T. J. McNamara & Co., Bridgeport	Excess starch
	New Haven.		
25075	The Alois Schwabe Co.	Own make	Color undeclared.
25078	Cedar Provision Co.	Own make	Color undeclared.
25082	Mrs. C. Hertler	Own make	Color undeclared.
25076	S. J. Hugo & Sons	Max Tunz	Color undeclared.

TABLE XV. SAUSAGE CONTAINING EXCESS OF STARCH OR ARTIFICAL COLOR OR BOTH—(*Concluded*).

D.C. No	Dealer	Manufacturer	Remarks
	Frankfurts—Concluded.		
	New Haven—Concluded.		
25092	Katz & Winn	Armour & Co., Hartford Branch	Excess starch; color undeclared.
25136	Henry Novicki	Elm City Prov. Co., New Haven	Excess starch.
25079	R. Perri	Elm City Prov. Co., Bridgeport	Excess starch; color undeclared.
25077	Carl Rossler	Own make	Color undeclared.
25074	Sperry & Barnes Co.	Own make	Color undeclared.
	Stamford.		
25275	Klein and Amahle	Own make	Excess starch.
	Waterbury.		
25604	John Hullstrunk	Own make	Excess starch.
25607	Sachsenhauser, Inc.	Own make	Excess starch.
25605	Washington Market	Own make	Excess starch.

Twenty-six samples of pork sausage and forty-nine of frankfurts were submitted by the Dairy and Food Commissioner.

Pork sausage was examined for starch, sulphites and borax. Sixteen samples were passed, nine contained starch in excess of 2 per cent. and one contained less than 2 per cent., but its presence was not declared. No sulphites or borax was found in any of the samples.

Frankfurts were examined for starch, color, sulphites and, in some cases, for borax. In sixteen samples no starchy absorbant was found. Twelve samples contained starch in excess of 2 per cent., fifteen contained 2 per cent. or less and in six the amount was not determined.

Eighteen samples were packed in casings which were artificially colored but in one case (**24696**, Bethel Provision Co.), color was declared. In eighteen no color was found; and in thirteen color was either not tested for or not proven.

Traces of starch possibly derived from spices were disregarded. In the samples examined the minimum amount of starch determined was about 1 per cent (0.94), and the maximum was 5.35 per cent.

A sample of color, D. C. No. **18137**, used by a manufacturer for coloring casings, was identified as Orange I, a permitted coal tar color. So far as colors in the samples examined were identified they were coal tar colors of the permitted group.

In Table XV are listed samples in which excesses of starch (over 2 per cent.), and artificial color were found. These amounts of starch are not permissible under Regulation 51 even if declared.

TABLE SALT.

The defination and standard for table salt is as follows:

> Table salt, dairy salt, is fine-grained crystalline salt containing, on a water-free basis, not more than 1.4 per cent. of calcium sulphate ($CaSo_4$), not more than 0.5 per cent. of calcium and magnesium chlorides ($CaCl_2$ and $MgCl_2$), nor more than 0.1 per cent. of matters insoluble in water.[1]

To prevent caking when exposed to atmospheric conditions and facilitate free delivery from a shaker, salt is sometimes mixed with starch, or the carbonates of calcium or magnesium.

Twenty-three samples of table salt were collected by the Station agent, including all the familiar brands, and analyses are given in Table XVI. In calculating the probable distribution of constituents, sulphuric acid (So_3) was calculated as calcium sulphate and any excess as magnesium sulphate. If calcium was in excess of sulphuric acid, the excess was calculated as calcium carbonate (if carbonates were indicated), or to calcium oxide (if the solution was alkaline), or to calcium chloride (if the solution was neutral). Excesses, if any, of magnesium over sulphuric acid were calculated as carbonate, oxide or chloride as in the case of calcium. Qualitative tests indicated that phosphates were either not present or present in not more than traces. Actual salt (sodium chloride) was calculated as the difference between 100 per cent. and the sum of the percentages of moisture, iron and aluminum oxides, sulphate, carbonate and chloride of calcium, and carbonate and chloride of magnesium. If the carbonates of calcium and magnesium were not present the per cent. of material insoluble in water was included with the impurities.

Eight samples were slightly under the weight claimed, but the deficiency was less than one ounce per pound, except in one case where it was 1.4 ounces. Fourteen samples contained more than the weight declared. One package was broken and there was some loss of contents.

The price per pound ranged from 1.8 cents to 6.9 cents and the average was 4 cents.

The samples contained from 96.6 per cent. to 99.5 per cent. of pure salt (sodium chloride), the average being 98.2 per cent. On a previous inspection[2] the average sodium chloride was 98.5 per cent.

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[1] Circ. 136, U. S. Dept. Agr., Office of Secretary.
[2] Conn. Exp. Sta. Report 1908, pp. 596-7.

TABLE XVI. ANALYSES OF

Sta. No.	Brand and Manufacturer	Cost per lb.	Carbon dioxide (CO_2)
		cents	
21697	*Benefit.* Direct Stores, Inc., Boston, Mass.	5.0	Present
20411	*Big 4.* Rock Glen Salt Co., Rock Glen, N. Y.	2.6	None
21649	*Columbia.* International Salt Co., N. Y.	2.4	None
21620	*Crystaline.* Crystaline Salt Co., Ithaca, N. Y.	4.8	Present
21628	*Diamond.* Diamond Crystal Salt Co., St. Clair, Mich.	6.4	Present
21689	*Diamond.* Diamond Crystal Salt Co., St. Clair, Mich.	6.9	Present
21699	*Diamond.* Diamond Crystal Salt Co., St. Clair, Mich.	5.6	None
20406	*Grandmother's.* The Great Atlantic and Pacific Tea Co.	1.8	None
21660	*Iona.* The Great Atlantic and Pacific Tea Co	1.8	None
21643	*L. B. C.* The Logan Bros. Co., Bridgeport, Conn	5.1	Present
21641	*Mardor.* E. C. Greening, Bridgeport, Conn.	5.8	Present
20407	*Nutmeg.* Miner, Read & Tullock, New Haven, Conn.	5.1	Present
21676	*Purity.* International Salt Co., Scranton, Pa	4.8	Present
20414	*Red Cross.* Independent Salt Co., N. Y.	4.6	Present
21614	*Remington.* Remington Salt Co., Ithaca, N. Y.	3.4	Present
21619	*Remington.* Remington Salt Co., Ithaca, N. Y.	2.4	None
21708	*Remington.* Remington Salt Co., Ithaca, N. Y.	3.2	None
21631	*Sunbeam.* Austin, Nichols & Co., Inc., N. Y.	5.0	Present
20422	*U. S.* The Union Salt Co., Cleveland, Ohio	2.6	Present
20408	*Watkin's.* The Watkins Salt Co., Watkins, N. Y.	3.2	None
20420	*White Lily.* The Wadsworth Salt Co., Wadsworth, Ohio.	3.0	Present
21624	*Worcester.* Worcester Salt Co., N. Y.	3.4	None
20405	*Yorkshire.* International Salt Co., N. Y.	2.4	None

The moisture content was inconsiderable and did not exceed 0.5 per cent. in any case. Material insoluble in water was generally within the limits of the standard except where material had been added to prevent caking. In eleven samples such added material was declared on the labels of the packages. In two cases the insoluble matter was about 0.5 per cent. in each case due to carbonates of calcium and magnesium of which there was no declaration. The amount of calcium sulphate did not exceed the limit of the standard 1.4 per cent. and the sum of the percentages of calcium and magnesium chlorides was less than 0.5 per cent. in all cases. Sample **21697** appears to contain calcium carbonate instead of magnesium carbonate and in **21676** somewhat more than the 1 per cent. declared was found.

SALAD DRESSING.

There is no official definition or standard for salad dressing but, in general practice, the product contains an edible oil, eggs, vinegar and spices. Sugar and starchy materials may also be present. Eggs appear to be an essential constituent in the dressing known as mayonnaise according to most recipes.

TABLE SALT.

Moisture	Insoluble in water	Iron and Aluminum (Fe_2O_3, Al_2O_3)	Calcium Sulphate ($CaSo_4$)	Calcium Carbonate ($CaCO_3$)	Calcium Chloride ($CaCl_2$)	Magnesium Carbonate ($MgCO_3$)	Magnesium Chloride ($MgCl_2$)	Sodium Chloride (NaCl), by difference	Sta. No.
%	%	%	%	%	%	%	%	%	
0.26	1.74	0.02	0.83	1.71	....	0.15[1]	....	97.03	21697
0.18	0.15	0.01	0.70	....	....	....	....	98.84[2]	20411
0.46	0.01	0.00	0.73	....	0.11	....	0.05	98.64	21649
0.40	0.56	0.02	1.36	0.07	....	0.58[3]	....	97.57	21620
0.22	0.69	0.08	0.14	0.10	....	0.81[3]	....	98.65	21628
0.20	0.59	0.04	0.15	0.09	....	0.94[1]	....	98.58	21689
0.14	0.00	0.01	0.22	....	0.08	....	0.02	99.53	21699
0.23	0.04	0.01	1.09	....	0.14	....	0.01	98.48	20406
0.22	0.02	0.01	1.05	....	0.11	....	0.02	98.57	21660
0.39	0.91	0.06	0.82	0.15	....	0.90[3]	....	97.68	21643
0.38	0.95	0.03	0.82	0.18	....	0.92[3]	....	97.67	21641
0.43	0.92	0.01	0.97	0.16	....	0.98[3]	....	97.45	20407
0.41	1.52	0.02	1.16	0.16	....	1.65[1]	....	96.60	21676
0.30	0.64	0.01	0.71	0.12	....	0.79[3]	....	98.07	20414
0.32	0.60	0.01	1.02	0.15	....	0.60[3]	....	97.90	21614
0.32	0.01	0.01	1.00	....	0.15	....	0.02	98.49	21619
0.21	0.02	0.00	0.66	....	0.10	....	0.01	99.00	21708
0.43	0.73	0.14	0.85	0.18	....	0.49[3]	....	97.91	21631
0.15	0.53	0.01	0.53	0.54	....	0.15	....	98.62	20422
0.43	0.00	0.01	1.02	....	0.12	....	0.02	98.40	20408
0.32	0.47	0.01	1.19	0.11	....	0.47	....	97.90	20420
0.22	0.02	0.01	0.60	....	0.11	....	0.02	99.02	21624
0.36	0.02	0.01	0.61	....	0.21	....	0.05	98.74	20405

[1] One per cent. magnesium carbonate declared.
[2] Calcium and magnesium as oxides 0.12 per cent.
[3] Added magnesium carbonate declared.

Analyses of a number of commercial salad dressings have been given in a previous report[1] and during the past year further inspection has been made. Twenty-eight samples were collected by the Station agent and analyses are given in Table XVII.

The methods employed are substantially as suggested by Lepper[2] except that "fat" was determined by a modified Roese-Gottlieb method as employed in the work on alimentary pastes and alcohol-ether-soluble P_2O_5 was determined upon the fat thus extracted.

The analyses show that five samples contained relatively little oil (4.3 to 12.8 per cent.), and that in all of these starchy material was present. Starch was also present in two samples where the oil approached 50 per cent., but it was not found in any case where the oil content was over 50 per cent. Moisture varied widely.

The identity of the oils used was not established beyond the fact

[1] Conn. Exp. Sta., Report for 1911, p. 151.
[2] Jour. Assoc. Official Agr. Chemists, **5**, 248. 1921.

TABLE XVII. ANALYSES OF

Sta. No.	Brand, Manufacturer or Dealer	Constants of Fat	
		Refraction, Butyro-ref. at 25° C.	Halphen test
20396	*A. & P.* Atlantic & Pacific Tea Co.	67.0	Positive
15677	*Benefit.* Direct Importing Co., Boston	65.0	?
15671	*Blue Ribbon.* Richard Hellman, Inc., Long Island City, N. Y.	69.0	Positive
20393	*Booth's.* M. W. Booth Co., Meriden, Conn.	70.5	Negative
20395	*Canton-Maid.* Canton-Maid Products Co., Canton, Ohio	67.0	Positive
20394	*Challenge.* The Challenge Products Co., New Haven, Conn.	66.3	Positive
20224	*Country Club.* Svirdoff & Brochin, New Haven, Conn.	67.5	Positive
15675	*Crubro.* Cruikshank Bros. Co., Pittsburgh, Pa.	67.2	Negative
20400	*Easton's.* Gilbert J. Easton, Newark, N. J.	70.0	Negative
20389	*El-Food.* Elizabeth Food Products Co., Elizabeth, N. J.	67.0	Positive
20388	*Empire.* Empire Delicatessen Co., Hartford, Conn.	66.3	Positive
20398	*French's.* F. C. Bushnell & Co., New Haven, Conn.	68.0	Positive
20223	*Gelfand's.* Gelfand Co., Baltimore, Md.	70.1	Negative
20399	*J. Gilbert's.* John Gilbert & Son, New Haven, Conn.	67.0	Positive
20386	*Howard's.* J. G. Howard, Haverhill, Mass.	67.0	Positive
20390	*I-Car-De.*[1] Jas. A. Aicardo & Sons, Boston, Mass.	67.7	Positive
20392	*Libby's.* Libby, McNeill & Libby, Chicago, Ill.	68.0	Negative
15680	*My Wife's.*[1] Fred Fear, Bloomsburg, Pa.	71.2	Positive
15674	*Our Best.*[1] W. W. Walker Co., Hartford, Conn.	67.5	Positive
15679	*Picnic Lunch.* E. R. Durkee & Co., New York City	68.0	Positive
20402	*P. & T.* Park & Tilford, N. Y.	67.0	Positive
15672	*Premier.* Francis H. Leggett & Co., N. Y.	67.2	Positive
20401	*Puro.* F. G. Crombie, Bridgeport, Conn.	69.0	Positive
20403	*Riker's.* Liggett's Drug Stores, New York	70.1	Positive
20385	*Seidner.* Otto Seidner, Westerly, R. I.	67.5	Positive
15681	*Sunbeam.*[1] Austin, Nichols & Co., Inc., New York	67.0	Positive
20397	*Van Camp's.* Van Camp Packing Co., Indianapolis, Ind.	67.0	Positive
20225	*Wallacks'.* M. R. Wallack & Co., New Haven, Conn.	68.0	Positive

that cottonseed oil was present in three-fourths of the total number. Borax was not found.

Assuming 1.38 per cent. of lipoid-P_2O_5 in the dry matter of whole egg the analyses indicate the presence of egg approximately

[1] Labeled Mayonnaise.

SALAD DRESSING.

Moisture	Ash	Protein, (N x 6.25)	Carbohydrate (including fiber by diff.)	"Fat" (alcohol-ether extract)	Salt (NaCl)	Lipoid-P_2O_5	Nitrogen	Total acidity (as acetic acid)	Starch	Sta. No.
39.95	2.21	1.88	12.05	43.91	1.93	0.024	0.30	1.23	1.58	**20396**
74.37	2.25	3.94	15.17	4.27	1.49	0.034	0.63	1.32	3.87	**15677**
10.85	0.91	1.38	0.26	86.60	0.70	0.037	0.22	0.39	None	**15671**
13.29	1.70	1.69	5.25	78.07	1.41	0.023	0.27	0.39	None	**20393**
12.42	1.30	1.38	1.48	83.42	0.75	0.032	0.22	0.42	None	**20395**
20.49	1.67	1.19	4.67	71.98	1.43	0.016	0.19	0.48	None	**20394**
13.55	1.53	2.19	2.97	79.76	1.18	0.056	0.35	0.38	None	**20224**
68.53	3.16	1.38	14.09	12.84	2.73	0.005	0.22	1.92	2.01	**15675**
13.63	1.60	1.38	0.36	80.36	1.31	0.051	0.22	0.36	None	**20400**
37.57	3.32	3.13	1.41	54.57	2.77	0.080	0.50	1.14	None	**20389**
24.18	0.73	1.06	0.98	73.05	0.60	0.014	0.17	0.96	None	**20388**
31.51	2.46	3.75	0.48	61.80	1.98	0.109	0.60	0.84	None	**20398**
15.75	0.87	1.88	0.13	81.37	0.56	0.057	0.30	0.54	None	**20223**
10.70	0.91	1.19	0.00	87.20	0.43	0.051	0.19	0.39	None	**20399**
38.06	3.03	4.13	1.19	53.60	2.15	0.056	0.66	1.50	None	**20386**
21.03	1.37	3.94	6.85	66.81	0.81	0.162	0.63	0.54	None	**20390**
72.58	3.49	4.50	12.39	7.04	2.60	0.030	0.72	2.46	0.63	**20392**
72.83	3.72	2.06	11.71	9.68	3.27	0.004	0.33	0.71	2.41	**15680**
15.98	0.93	2.75	5.21	75.13	0.56	0.061	0.44	0.45	None	**15674**
40.85	6.62	4.69	15.24	32.60	5.72	0.031	0.75	1.68	0.82	**15679**
28.93	2.12	1.50	6.34	61.11	1.72	0.040	0.24	0.54	None	**20402**
40.16	3.00	3.75	0.09	53.00	2.37	0.140	0.60	1.38	None	**15672**
15.86	1.77	1.69	2.91	77.77	1.29	0.008	0.27	0.45	None	**20401**
72.87	3.53	2.56	12.41	8.63	2.22	0.041	0.41	0.60	3.29	**20403**
18.08	1.95	2.13	4.51	73.33	1.59	0.019	0.34	0.48	None	**20385**
38.33	2.02	2.75	None	56.92	1.49	0.098	0.44	0.48	None	**15681**
38.90	3.14	4.81	2.48	50.57	2.49	0.078	0.77	1.44	None	**20397**
16.45	1.83	1.44	3.76	76.52	1.49	0.003	0.23	0.54	None	**20225**

equivalent to from 1 to 10 per cent. of dry, whole egg material (.014 to .162 per cent. lipoid-P_2O_5), in the dressings as sold. This is disregarding three samples where the lipoid-P_2O_5 was less than 0.01 per cent. and assuming that the cereal or other starchy matter present does not appreciably increase the lipoid-P_2O_5. Comparison on the water-free basis of five samples labeled,

"Mayonnaise", viz., **15675, 20390, 15680, 15674** and **15681,** shows that the lipoid-P_2O_5 varies from 0.014 to 0.205 per cent. Many dressings not claimed to be of this type show amounts of lipoid phosphorus which equal or exceed these limits.

SYRUP, ETC.

A sample of brown sugar, **21584** and one of sugar syrup, **21585,** submitted by a consumer were examined for ash and total sugars.

21584. Ash 0.46 per cent.; sucrose (by polarization), 98.32 per cent.
21585. Ash 5.51 per cent.; invert sugar 25.60 per cent.; sucrose (increase in reduction after hydrolysis), 38.87 per cent.

The samples were of normal composition and quality.

A sample of *Green's Muscadine Punch,* **21206,** submitted by a consumer was examined as follows:

Total solids 62.24 per cent.; ash .014 per cent.; alcohol trace (2 per cent. by wt.); invert sugar 31.80 per cent.; sucrose (by increase in reduction after hydrolysis), 29.49 per cent.; preservative (other than sugar), none found; saccharin none found; color permitted coal tar, Guinea Green B and Amaranth identified.

This is a syrupy fruit flavor base to be diluted for beverage purposes.

VINEGAR.

The legal standard for cider vinegar in the State requires 4 per cent acidity (as active acid) and 1.6 per cent. of cider vinegar solids.[1]

Six samples were submitted by the Dairy and Food Commissioner one of which was unofficial. All met the requirements of the standard and other constituents so far as determined were normal.

Seven samples were examined for producers or other individuals; three were below requirement as to solids, but all substantially met the required degree of acidity.

MISCELLANEOUS MATERIALS EXAMINED CHIEFLY FOR POISONS.

Eighteen samples of miscellaneous materials were submitted by health officers, veterinarians and others to be examined for poisons. In thirteen cases no poisons were detected. The remaining five may be cited as follows:

20893. *Hens* which had died under suspicious circumstances. Submitted by the health officer, Town of Stratford. An appreciable amount of yellow phosphorus was found.

19769. *Material* thought to have caused death of several cows. Submitted by request of Dr. Thompson of Sharon. The material contained about 10 per cent. of arsenate of lead.

[1] Sec. 2459, General Statutes of Connecticut.

20515. *Poisoned bait.* Submitted by Mr. Titcomb, State Board of Fisheries and Game. Chromium was found.

20569. *Dog's stomach contents.* Submitted by B. W. Kenneson, State Police Barracks, Canaan. Strychnine was identified.

21303. *Wine made in galvanized tub.* The wine contained zinc (ZnO), in the amount of 370 parts per million which is considerably more than the amount allowed (100 parts), in foods where limits for metallic impurities are recognized. Recently attention has been called[1] to instances of poisoning apparently arising from eating foods cooked in galvanized iron utensils; and it was shown that certain acid beverages dissolved large amounts of zinc from galvanized containers in which the liquids had been allowed to stand.

II. DRUGS.

PREPARATIONS RECOGNIZED IN THE UNITED STATES PHARMACOPOEIA OR THE NATIONAL FORMULARY.

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

Solution of Ammonium Acetate.

Solution of ammonium acetate is an aqueous solution containing not less than 7 per cent. of ammonium acetate, $NH_4C_2H_3O_2$.[2]

Sixteen samples were examined. Two of these, viz., **26561,** purchased of the Clark and Brainerd Co., New Britain and **25417,** purchased of Curran and Flynn, Willimantic, contained 5.55 and 5.28 per cent. of ammonium acetate respectively and were below standard. Thirteen samples satisfied the requirements of the Pharmacopoeia and one was not analyzed because of leakage in transit.

Glycerite of Bismuth.

This preparation should contain not less than 0.640 gram of bismuth oxide (Bi_2O_3), in each 5 cc. of solution.[3]

Two samples were examined, both of which were below the requirement. No. **26553,** the Dickenson Drug Co., New Britain, contained 0.468 gm. Bi_2O_3 and **25399,** W. E. LaBelle, Est., Danielson, contained 0.442 gm. in 5 cc.

Citrated Caffeine.

Citrated caffeine contains, when dried to constant weight at 80° C., not less than 48 per cent. of anhydrous caffeine.[4]

[1] Jour. Ind. Eng. Chem., **16,** 164. 1924.
[2] U.S.P. IX, p. 237.
[3] N. F. IV, p. 95.
[4] U.S.P. IX, p. 86.

Sixteen samples were submitted. Five contained 48 per cent. or over of anhydrous caffeine. Eleven did not fully meet the standard of 48 per cent., but they contained over 90 per cent. of the required amount. The assays ranged from 43.8 to 49.6 per cent. of anhydrous caffeine of the correct melting point, viz., 235°–236°.

Tincture of Ginger.

Under the prohibition regulations tincture of ginger made according to the formula given in the United States Pharmacopoeia is held to be intoxicating liquor. If made double strength, however, it is classed as unfit for beverage purposes.[1] Unfortunately the Pharmacopoeia does not give the minimum amount of extractives in the official preparation; it merely says that the residue on drying does not *exceed* 2 per cent. Data from various sources[2] indicate that the solids in the U. S. P. tincture may vary from about 1 to 2 per cent. A preparation of double strength tincture[3] contained 2.46 grams solids per 100 cc. or about 3 per cent.

The sample submitted, **25324**, contained 1.3 per cent. of solids which, judging by the data cited, is too low for double strength.

Hydrobromic Acid, Diluted.

Diluted hydrobromic acid is an aqueous solution containing not less than 9.5 per cent. nor more than 10.5 per cent. of hydrobromic acid (HBr)[4].

The three samples examined contained from 10.2 per cent. to 10.6 per cent. of hydrobromic acid and conformed substantially to the official requirement.

Hypophosphorous Acid, Diluted.

Diluted hypophosphorous acid is an aqueous solution containing not less than 9.5 per cent. and not more than 10.5 per cent. of hypophosphorous acid (HPH_2O_2).[5]

One sample submitted was of standard quality. It contained 10.24 per cent. of HPH_2O_2.

Tincture of Iodine.

Tincture of iodine is an alcoholic solution containing in 100 cc. 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.[6]

Of seventy-six samples submitted only six were substantially outside the limits of the standard.

[1] Treasury Decision 3092.
[2] Conn. Exp. Sta. Report, 1910, p. 499; Lythgoe & Nurenberg, Jour. Ind. Eng. Chem., Dec. 1911; Snyder, Am. Jour. Pharmacy, Apr. 1918.
[3] Randolph & Beringer, Jour. Am. Pharm. Asso., Jan. 1924.
[4] U.S.P. IX, p. 12.
[5] U.S.P. IX, p. 16.
[6] U.S.P. IX, p. 457.

Five were below in one or both particulars and one contained a large excess of iodine.

Four samples purchased by the Station agent in department stores were of satisfactory quality and were passed.

Table XVIII. Assays of Tincture of Iodine.

D. C. No.	Sampled at	Grams per 100 cc. Iodine	Grams per 100 cc. Potassium iodide
26564	*Bristol.* Rickman's Economy Drug Store	17.52	5.86
26624	*Hartford.* Turgeon Drug Co.....	5.95	3.61
26664	*Middletown.* Hartman Drug Co.[1].....	6.13	3.80
26556	*New Britain.* Miller Hanson Drug Co...	3.91	2.93
26586	*Rockville.* John J. Lee.....	5.90	3.57
26588	E. F. Wilson[2].....	5.25	3.84

Citrate of Magnesia.

An unofficial sample of citrate of magnesia, **24387,** contained 0.79 gm. magnesium oxide (MgO), per 100 cc which is about one-half the amount required for the pharmacopoeial preparation.[3] The sample contained a large amount of sediment indicating impure ingredients or careless preparation or both.

Magnesia Magma.

(Milk of Magnesia).

Magnesia magma yields not less than 6.5 per cent. nor more than 7.5 per cent. of magnesium hydroxide $Mg(OH)_2$.[4]

Forty-three samples submitted by the Dairy and Food Commissioner and one purchased by the Station agent were examined of which twenty-eight satisfied the requirements of the standard or conformed substantially thereto. One sample was less than one-half strength and fifteen contained considerably more than the maximum of 7.5 per cent. The deficient sample and those containing excesses greater than 10 per cent. of the maximum limit are listed in Table XIX.

Table XIX. Assays of Magnesia Magma.

D. C. No.	Sampled at	Manufacturer	Magnesium Hydroxide $Mg(OH)_2$ %
25919	*Bridgeport.* Hindle Druggist....	Sharp & Dohme	11.10
25922	F. S. Porter.....	Lilly	10.20
26565	*Bristol.* The Madden Drug Store	Phillips, N. Y.	8.41
26622	*Hartford.* G. Fox & Co.....	Lilly	9.50
26575	Louis K. Liggett Co.....	Liggett	8.99
26663	*Middletown.* United Chemists Co.	United Chemists	8.61
26660	The Woodard Drug Co.....	Phillips	8.64

[1] Manufactured by Felborn Pharmacal Co.
[2] Manufactured by Adelphi Mfg. Co., Brooklyn, N. Y.
[3] U. S. P. IX, p. 248.
[4] U. S. P. IX, p. 261.

TABLE XIX. ASSAYS OF MAGNESIA MAGMA—*Concluded.*

D. C. No.	Sampled at	Manufacturer	Magnesium Hydroxide $Mg(OH)_2$
			—
26551	*New Britain.* The Dickinson Drug Co.	Phillips	8.47
26555	The Miller Hanson Drug Co.	Phillips	8.56
25392	*Putnam.* E. H. Burt	.....	8.61
25390	Geo. A. Dresser	.....	8.53
26596	*So. Manchester.* Geo. E. McNamara Drug Co.	Phillips	8.50
26590	J. H. Quinn & Co.	Sharp & Dohme	2.80
26580	*Stafford Springs.* D. H. McCormick	Phillips	8.94
26727	*Torrington.* Park Pharmacy	Brewer & Co., Inc.	8.91
26615	*Windsor.* Robert H. Barnes	Norwich Pharmacal Co.	8.75

SPIRIT OF NITROUS ETHER.

(SWEET SPIRIT OF NITRE).

Spirit of nitrous ether is an alcoholic solution containing not less than 3.5 per cent. nor more than 4.5 per cent. of ethyl nitrite (C_2H_5-NO_2).[1]

This preparation deteriorates and it is directed to keep it in small, well-stoppered containers, in a cool place and protected from light.

Forty-eight samples were examined, thirty-five of which were passed as conforming entirely or substantially to the standard. Thirteen were deficient, containing from 1.4 to 3.1 per cent. of ethyl nitrite.

The preparations were frequently labeled 4 per cent. or 18 mins. ethyl nitrite per fluid ounce. Eighteen minims is about 3.6 cc per 100 cc of solution or (taking the specific gravity of ethyl nitrite as 0.9), 4 grams per 100 cc of solution. Assuming the specific gravity of the finished solution to be 0.823 (25°C), the percentage of ethyl nitrite is about 4.9.

Samples containing substantially less ethyl nitrite than the minimum required by the Pharmacopoeia are listed in Table XX.

TABLE XX. ASSAYS OF SPIRIT OF NITROUS ETHER.

D. C. No.	Sampled at	Manufacturer	Ethyl nitrite
			%
25397	*Danielson.* W. E. LaBelle, Est.	.....	2.58
26634	*East Hartford.* The O'Connell Drug Co.	Sisson Drug Co.	2.75
26649	*Meriden.* W. W. Mosher	Powers, Weightman & Co.	3.13
26650	Pink's Pharmacy	Preston Chemical Co.	1.90
26658	*Middletown.* Lincoln Drug Co.	Mallinckrodt	1.96
26802	*Norwich.* James H. Dunn	.....	1.40
26593	*So. Manchester.* T. Weldon & Co.	Felborn Pharm. Assoc.	3.02
26578	*Stafford Springs.* D. H. McCormick	.....	2.90
25932	*Stamford.* C. S. Finch, Druggist	United Drug Co.	3.13
26730	*Thomaston.* George A. Lemmon	United Drug Co.	2.88
26737	*Waterbury.* R. E. Holmes	Conn. Chem. & Dis. Co.	3.01
26720	*Winsted.* Apothecaries Hall	Gibson-Howell, Inc.	2.80
26716	John A. Williams	Own Make	1.93

[1] U. S. P. IX, p. 403.

SOLUTION OF POTASSIUM HYDROXIDE.

This preparation is an aqueous solution containing not less than 4.5 per cent. of potassium hydroxide (KOH).[1]

The solution readily absorbs carbon dioxide from the air and should be securely stoppered.

Five samples were submitted, four of which exceeded the standard. One was slightly deficient containing 3.98 per cent. of potassium hydrate.

SOLUTION OF SODIUM HYDROXIDE.

This solution should contain not less than 4.5 per cent. of sodium hydroxide (NaOH).[2] Like potassium hydroxide solution it readily absorbs carbon dioxide and should be kept in bottles provided with rubber stoppers or with glass stoppers coated with paraffin.

Three samples were examined all of which were of satisfactory strength.

WITCH HAZEL WATER.

Forty-one samples of witch hazel water were examined for the Dairy and Food Commissioner and eleven were collected by the Station agent chiefly from department stores. Examination was made with reference to alcoholic strength, presence of wood alcohol and residue on evaporation.

Of the total number forty-eight were passed as conforming substantially to the requirements of the Pharmacopoeia.

Witch hazel water prepared according to the Pharmacopoeial formula and sold under the name recognized in that text should be made with pure alcohol. A number of samples have been found, however, which were evidently made with specially denatured alcohol. Such preparations should not be labeled in any way to confuse them with the official preparation of witch hazel. It should be made clear that they are not U. S. P. products and the fact that denatured alcohol has been used should be declared.

Four samples by reason of excessive residues[3] on evaporation were not official witch hazel water. Two contained alkaloids identified in one case as quinine. The sample in which quinine was identified was labeled "Double Distilled Hamamelis Virginica or Witch Hazel." While this is not the language of the title recognized in the Pharmacopoeia it suggests it closely enough to constitute a design or device which would mislead a purchaser to believe that the product is "witch hazel water" or "distilled extract

[1] U. S. P. IX, p. 252.
[2] U. S. P. IX, p. 255.
[3] U. S. P. IX, 58. Not more than 0.025 gm. residue per 100 cc allowed.

of witch hazel" which it is not in that it contains at least one substance (quinine) which is foreign to witch hazel water.

The samples not conforming to the Pharmacopoeial requirements are as follows:

TABLE XXI. ANALYSES OF WITCH HAZEL WATER.

No.	Sampled at	Manufacturer	Solids, gm. per 100 cc.
D. C. 26550	*Hartford.* G. Codrado.....	Amendola Bros., New Haven	0.072[1]
Sta. 21663	*New Haven.* Gamble-Desmond Co.	.....	0.232
D. C. 25436	*New London.* T. H. Stead.....	.....	0.052[2]
D. C. 25439	L. P. Desmarais...	.....	0.152

PROPRIETARY PREPARATIONS.

Two samples of medicated wine were examined.

19639. *Horke Vino,* bottled by T. F. Murray Co., Inc., Bridgeport, Conn., and **19640,** Trainer's American Elixir of Bitter Wine. (*Horke Vino*).

Analyses are as follows:

19639. Solids 3.62 gms. per 100 cc; ash 0.032 gms. per 100 cc; alcohol 19.14 per cent. by volume; emodin-like substances present; alkaloids none found.

19640. Solids 7.37 gms. per 100 cc; ash 0.38 gms. per 100 cc; alcohol 16.10 per cent. by volume; emodin-like substances present; alkaloids none found; phosphates, sulphates and magnesium present in ash.

Sample **19639** was slightly bitter to the taste and **19640** was more decidedly so.

It has been often suggested that the chief physiological effect of many so-called tonics is due to the stimulative action of the alcohol which they contain and in some cases astonishing quantities of such preparations may be consumed by a "patient"[3] who has developed the habit. Under the prohibition law the status of such remedies becomes of particular interest. The question hinges upon (a) whether the preparation in question contains medicament enough to preclude its use as a beverage;[4] (b) whether it contains more than enough alcohol to hold medicaments in solution or to act as a preservative.

In the absence of official ruling in particular cases[5] the question of beverage quality may be debatable unless the product has been rendered completely non-drinkable by bitter, astringent, nauseating or poisonous substances. Thus tincture of Jamaica ginger would seem to be clearly a non-beverage article but prohibition authorities have found it necessary to require that this

[1] Contains quinine.
[2] Alkaloids indicated.
[3] See Jour. Am. Med. Assoc., April 9, 1921, p. 1029.
[4] Webster's Dictionary defines "beverage" as "drink;" that which is drunk; especially a pleasant or refreshing drink, or an habitual one."
[5] The Internal Revenue Department holds certain U. S. P. and N. F. preparations fit for beverage purposes.

preparation shall only be made of double the ordinary strength and even then sold under rigid restrictions.

To determine whether the two wines under examination contained medicaments not immediately evident to the taste but which might produce subsequent effects which would tend to destroy their beverage character the following experiment was tried.

Two to four times the dose recommended to be taken at one time, *viz.*, two to four ounces, was freed from alcohol and fed to two human subjects. In the case of **13539** no effects were noted with the smaller amount and only mild cathartic action with the larger dose. With sample **13640** the cathartic effect of the smaller dose was more marked beginning in about three hours and extending over a period of eight hours. No other effects were experienced in either case by either subject.

As to whether the amount of alcohol present was in excess of the amount necessary to hold medicaments in solution the following trials were made to furnish at least the basis for an opinion.

Twenty-five cc of each sample were taken and the alcohol largely removed by successive dilutions and evaporations taking care not to reduce the volume below the original volume taken. These dealcoholized portions and equal volumes of the original samples were then transferred to Hortvet tubes centrifuged and the amounts of sedimentary material compared. With sample **13639** there was no appreciable difference between the original solution and the dealcoholized solution. With **13640** the amount of insoluble matter was considerably greater in the solution which had been freed from alcohol.

As to the necessity for alcohol, in the amounts found, for preservative purposes it was regarded as significant that dealcoholized residues from these samples when allowed to stand at summer temperature (80° to 90°F), exposed to the air for five days or longer developed no mould and showed no signs of decomposition. An aqueous solution can be adequately protected against decomposition in the sealed package by proper sterilization; and if these tonics are taken according to directions they will last only about six days. There appears to be no evident necessity for a preservative but if one is required, one-tenth per cent. of benzoate of soda would serve the purpose.

In case of **13639** it appears that the tonic might be used as a beverage, that the alcoholic content is in excess of the amount necessary to hold medicaments in solution and that alcohol is not necessary as a preservative. As for **13640,** in view of the results obtained, doubt might be raised as to the excess of alcohol and, possibly also, as to its beverage qualities.

21848. *Rheuma.* Anti-rheumatic, diuretic, demulcent and laxative. Made by the Rheuma Co., Buffalo, N. Y., and Walkerville, Ont. It is cautioned not to use large doses as a cathartic.

Examination was made as follows:

Brown liquid with considerable sediment; acid to litmus; odor of turpentine; taste bitter; solids 10.53 per cent.; ash 3.87 per cent.; salicylic acid

5.06 per cent.; iodine 0.69 per cent.; potassium oxide 0.90 per cent.; potassium iodide (calc. from iodine), 0.90 per cent.; digitalis glucosides indicated?; alkaloids none found; tannin, citrates, tartrates, none found.

The preparation consists of, or contains, salicylic acid, potassium iodide, probably turpentine and possibly also digitalis glucosides.

MISCELLANEOUS DRUGS, ETC.

AMMONIA WATER.

(HOUSEHOLD AMMONIA).

Twenty-four samples of ammonia water for laundry and household use were collected by the Station agent. The samples were purchased in grocery and department stores. There is no standard for this article and very few of the samples examined approach in ammonia (NH_3) content the minimum strength of ammonia water as prescribed in the United States Pharmacopoeia viz., 9.5 per cent. The lowest ammonia content found was 1.3 per cent. and the highest was 8.3 per cent. The average strength was 4.5 per cent.

Ammonia water, presumed to be of the strength demanded by the Pharmacopoeia and purchased from druggists, was examined last year[1] and of twenty-four samples ten were less than 90 per cent. of the required strength the deficient samples containing from 2.5 to 8.4 per cent. of ammonia (NH_3). On the average, household ammonia samples examined were about one-half as strong as pharmacopoeial ammonia water; on the other hand, judging from the results cited, five out of every twelve purchases of ammonia water in drug stores will be no stronger than the product for household use.

Partial analyses of the samples examined during the past year are given in Table XXII.

"POWDERED AMMONIA."

A sample of so-called powdered ammonia, **21679,** made by T. H. Britt Ammonia Co., Milwaukee, Wis., was examined as follows:

21679. Insoluble in acid trace; iron and aluminum none; phosphoric acid (P_2O_5), none; ammonia (NH_3), by distillation, 0.97 per cent.; calcium CaO, 0.45 per cent.; magnesium (MgO), 0.45 per cent.; sulphuric acid (SO_3), 3.75 per cent.; chlorine 20.75 per cent.; carbonate (CO_2), present.

The probable combinations were calculated to be as follows:

Ammonium chloride 3.05 per cent.; sodium chloride 30.88 per cent.; calcium sulphate 1.38 per cent.; magnesium sulphate 2.75 per cent.; sodium sulphate 8.93 per cent.; sodium carbonate 33.60 per cent.; sodium bicarbonate 13.69 per cent.; moisture and undetermined 5.72 per cent.

[1] Conn. Exp. Sta. Bull. 248, p. 437 1923.

TABLE XXII. ANALYSES OF HOUSEHOLD AMMONIA.

Sta. No.	Brand, Manufacturer or Dealer	Sp. Gr. at 20° C	Total solids	Ash	Ammonia (NH_3)
			%	%	%
21700	*Polo.* Austin, Nichols & Co., New Haven, Conn.	0.9870	0.130	0.040	3.13
21645	Bridgeport Public Market, Bridgeport, Conn.	0.9890	0.038	0.022	2.60
21639	*Parson's.* Columbia Chemical Works, New York	0.9640	0.134	0.066	8.83
21657	Economy Grocery Co., New Haven, Conn.	0.9695	0.014	0.010	7.42
21696	*Hartshorn.* Economy Grocery Co., Hartford, Conn	0.9755	0.013	0.007	5.66
21637	*Empire.* Empire Bottling Works, Newark, N. J.	0.9875	0.032	0.024	3.16
21677	*A & P.* The Great Atlantic & Pacific Tea Co., New London, Conn	0.9740	0.010	0.007	6.12
21647	Great Northern Pacific Grocery Co., Bridgeport, Conn	0.9724	0.119	0.037	6.65
21678	*Gold Seal.* Ideal Chemical Co., Boston, Mass.	0.9930	0.016	0.008	1.81
21684	*Red Cap.* C. M. Kimball Co., Winthrop, Mass.	0.9660	0.104	0.036	8.13
21635	*Hartshorn.* S. S. Kresge, New Haven, Conn.	0.9854	0.066	0.024	3.56
21833	C. S. Leete, New Haven, Conn.	0.9880	0.026	0.009	2.91
21658	Logan Bros. Co., New Haven, Conn.	0.9712	0.035	0.022	6.75
21702	*Hartshorn.* N. Y. Butter Co., Waterbury, Conn.	0.9806	0.032	0.025	4.54
21681	*Fortified.* Salem Chemical & Supply Co., Salem, Mass	0.9838	0.076	0.063	4.02
21653	Shelton Ave. Delicatessen, New Haven, Conn.	0.9884	0.115	0.054	2.97
21667	*Polo.* Stoddard, Gilbert & Co., New Haven, Conn	0.9950	0.029	0.016	1.31
21638	*Sun.* Sun Chemical Co., Roslindale, Boston, Mass	0.9646	0.113	0.035	8.67
21713	*Leslie's.* The Arthur Leslie Co., New York.	0.9930	0.018	0.015	1.78
21695	*Capitol.* The Capitol Pickling Wks., Hartford, Conn	0.9924	0.012	0.008	1.78
21650	United Grocery Co., Bridgeport, Conn.	0.9790	0.106	0.034	4.97
21636	*Hartshorn.* F. Woolworth, New Haven, Conn.	0.9910	0.026	0.024	2.32
21701	*Eagle.* F. Woolworth, Waterbury, Conn.	0.9778	0.012	0.010	5.16
21707	*Hartshorn.* Yate Tea & Coffee Co., Waterbury, Conn.	0.9850	0.063	0.030	3.42
	Minimum	0.9950	0.010	0.007	1.31
	Maximum	0.9640	0.134	0.066	8.83
	Average	0.9813	0.056	0.026	4.49

With less than one per cent. of ammonia (NH_3) in the product there is no justification for calling it "powdered ammonia." Soda ash (sodium carbonate), is a common constitutent of cleaning compounds.

UNCLASSIFIED.

19938. *Ointment.* The sample was found to be essentially a mixture of petrolatum and saponifiable fat medicated with methyl salicylate and menthol.

21256. *Deeva Soap.* Lye-less Soap Corporation, N. Y. It is claimed that the soap liberates no free lye in contact with water. It was examined as follows:

Moisture (at 110° C), 20.16 per cent.; free fatty acids 15.59 per cent.; combined fatty acids 52.91 per cent.; free sodium carbonate 2.00 per cent.; alkali combined as soap (as Na_2O), 7.83 per cent.; sodium chloride 0.20 per cent.

Any alkali liberated in water would be neutralized by the free fatty acids present so that the claim with reference to free lye is probably justified.

18474. *Soap.* Submitted for examination as to irritating action upon the skin. Only a trace of free alkali was found but alkaline salts (carbonates, etc.), were present in amount greater than most standards allow for laundry soap[1] and in too large an amount for toilet soap.

21787. *Soap,* Rinso. Submitted for identification of the alkali used. Tests indicated the sample to be a soda soap.

20705. *White Tablets.* Medicament, if any, was unidentified.

BABCOCK GLASSWARE.

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, if found accurate, stamped by this Station.

The following classification shows the number and distribution of pieces of such glassware examined by the Station during the past year.

BABCOCK GLASSWARE EXAMINED.

	Total	Broken	Accurate	Inaccurate
Cream test bottles	636	9	614	13
Milk test bottles	3379	9	3317	53
Pipettes	470	4	465	1
Acid measures	10	0	10	0
Totals	4495	22	4406	67

Attention of dairy officials, licensed testers and others concerned with the testing of milk and cream is directed to Bulletin No. 6, issued by the Dairy and Food Commissioner, in which the apparatus recognized as *standard* is described and specifications therefor given. These specifications are substantially the same as recognized and approved by the United States Bureau of Standards and also by the American Dairy Science Association and the Association of Official Agricultural Chemists. The types of test

[1] See Conn. Exp. Sta., Bull. 227, p. 267.

bottles regarded as *standard* are (1) *8 per cent. 18 gram milk test bottle*; (2) *50 per cent. 9 gram short neck cream test bottle*; (3) *50 per cent. 9 gram long neck cream test bottle*; and (4) *50 per cent. 18 gram long neck cream test bottle.* Frequently bottles of other descriptions are submitted for test of calibration. The Station does not feel justified under the Statute in refusing to certify such glassware, so long as it is for use in connection with the Babcock test, but it notifies the senders of non-standard types so that exchanges may be made if desired. These approved types adequately meet all ordinary requirements for the testing of milk and cream for milk fat and a multiplicity of styles and types serves no useful purpose.