

Bulletin 426

May, 1939

THE FORTY-THIRD REPORT ON
FOOD PRODUCTS
AND THE THIRTY-FIRST REPORT ON
DRUG PRODUCTS

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Agricultural Experiment Station
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E. M. BAILEY, Chemist in Charge



Connecticut
Agricultural Experiment Station
New Haven

CONTENTS AND SUMMARY

Material	Page	Sampled by or submitted to		Total	Adulterated, below standard or questionable
		The Station	The Dairy and Food Commissioner		
FOODS					
Beverages:					
Soda type.....	5	....	73	73	5
Flavors.....	5	....	14	14	2
Miscellaneous.....	9	10	8	18	....
Bread.....	10	17	....	17	....
Coffee.....	11	....	12	12	0
Eggs.....	12	13	....	13	....
Flavoring extracts.....	12	....	9	9	2
Fats and Oils:					
Olive oil, sweet oil.....	12	14	24	38	10
Butter.....	12	2	4	6	1
Honey.....	13	3	4	7	....
Maple syrup.....	13	....	2	2	0
Meat Products:					
Frankfurts.....	14	10	30	40	11
Hamburg.....	15	6	....	6	0
Sausage filler.....	15	....	1	1	....
Milk and milk products:					
Vitamin D milk.....	19	....	87	87	5
Plain milk.....	19	684	17	701	8
Cream.....	19	9	....	9	....
Pickles, sweet.....	20	....	22	22	0
Spray residue.....	20	34	27	61	1
Tomato Products:					
Puree.....	20	....	2	2	1
Tomato juice.....	21	2	....	2	....
Vinegar:					
Cider.....	21	1	4	5	0
Distilled.....	21	....	14	14	3
Miscellaneous foods.....	24	73	8	81	....
<i>Total for foods.....</i>		878	362	1,240	49
DRUGS					
Alcohol, rubbing.....	25	....	30	30	0
Argyrol, 10%.....	28	....	9	9	1
Epsom Salt.....	30	....	37	37	1
Glycerin.....	32	....	8	8	1
Magnesium citrate, solution of.....	34	....	25	25	5
Mineral oil.....	37	....	29	29	4
Sodium bicarbonate.....	41	....	14	14	1
Spirit of nitrous ether.....	42	2	26	28	14
Turpentine.....	42	....	2	2	0
Witch hazel water.....	42	....	33	33	1
Whiskey, etc.....	47	....	47	47	....
Miscellaneous drugs, etc.....	52	35	8	43	3
<i>Total for drugs.....</i>		37	268	305	31
<i>Total for foods and drugs.....</i>		915	630	1,545	80

Material	Page	Sampled by or submitted to		Total	Adulterated, below standard or questionable
		The Station	The Dairy and Food Commissioner		
MISCELLANEOUS					
Samples examined for other State and Station Departments.....	55	250	.....	250	.....
<i>Total for all samples.....</i>		1,165	630	1,795	80
Babcock glassware, milk test bottles, thermometers, etc.....	55	.....	.....	2,036	1

The Forty-Third Report on Food Products and the Thirty-First Report on Drugs

E. M. BAILEY, Chemist in Charge

THIS REPORT summarizes examinations of foods, drugs and miscellaneous materials for the calendar year 1938.

Approximately 1800 samples were examined of which 630 were submitted by the Dairy and Food Commissioner for official control purposes. Of the remainder, 684 were milk samples tested for dairymen who wished to check the production of their herds or of individual cows in their herds; and 250 were incidental to collaborative work done for other State and Station departments.

A Food, Drug and Cosmetics Bill was introduced into the Connecticut legislature at the present session. It is patterned after the Federal Act and modified to serve State needs. At the time this report is written final disposition of the measure has not been reached.

Analyses and other examinations required have been made by the department staff, and they have contributed otherwise in carrying on administration duties when necessary. Their efficient coöperation is gratefully acknowledged.

FOODS

BEVERAGES, ETC.

Soda Type Beverages

Seventy-three samples of "soda water" type beverages were examined. No saccharin was found and the sugar content, indicated by the solids, exceeded the minimum requirement of the Statutes (5 percent). Samples 542, 580 and 581 were labelled as "orange drinks" but the indicated juice content, based upon the ash figure, was less than 15 percent, the minimum required for orange drink or orangeades. If labelled as "orange soda" these samples would comply with regulations. Samples 599 and 608 contained benzoate which should have been declared on the label.

Results are summarized in Table 1, pages 6-7.

Soda Water Flavors

Fourteen samples of flavors were examined and the results are summarized in Table 2, page 8.

All of the products of the Atlantic Food Packing Co. are correctly labelled except that the qualification "imitation" seems unnecessary in case of the lemon-lime and orange flavors.

Two of the Virginia Dare flavors appear to be wholly or in part artificial although not so labelled. Judgment of flavors has been based entirely on organoleptic tests.

TABLE 1. SODA-MAKER TYPE BEVERAGES

D. C. No.	Dealer	Solids (Approximate Sugar Content)	Remarks
	Ansonia	%	
P-556	Crystal Bottling Works.....	12.06	Pass
	Bridgeport		
P-592	American Bottling Co.....	11.44	Pass
P-543	Berkshire Bottling Co.....	11.67	Pass
P-593	Gray & Light, Inc.....	13.34	Pass
P-605	Greater N. Y. Bottling Co.....	11.24	Pass
P-603	Martin Bros.....	10.94	Pass
P-561	National Bottling Co.....	11.96	Pass
P-581	Nehi Bottling Co.....	14.60	Pass if labelled as a "soda"
P-276	Nehi Bottling Co.....	13.49	Pass
	Bristol		
P-542	Bristol Bottling Works.....	13.57	Pass if labelled as a "soda"
P-609	Perkins Bottling Works.....	11.94	Pass
	Central Village		
P-594	La France Bottling Co.....	14.04	Pass
	Danbury		
P-576	R. F. Baker.....	11.30	Pass
P-554	Light Rock Spring Water Co.....	11.77	Pass
	Glastonbury		
P-568	Pequot Spring Water Co.....	13.90	Pass
	East Haven		
P-552	Foxon Park Spring Water Co.....	10.38	Pass
P-565	Olde Bridge Beverage Co.....	12.00	Pass
	Hartford		
P-589	American Bottling Co.....	11.44	Pass
P-604	Blue Label Beverage Co.....	11.94	Pass
P-586	Brady Bros.....	8.40	Pass
P-587	Hartford Club Beverages.....	11.80	Pass
P-596	Tumble Brook Beverage Co.....	11.44	Pass
	Manchester		
P-541	Manchester Bottling Works.....	14.98	Pass
	Meriden		
P-572	Hampden Bottling Works.....	12.50	Pass
P-573	Hyrox Beverage Co.....	13.00	Pass
	Middletown		
P-514	Coca Cola Bottling Co. of Middletown	9.80	Pass
	New Britain		
P-585	S. F. Avery.....	8.80	Pass
P-584	Haberl Bottling Works.....	12.00	Pass
P-567	Lafayette Bottling Works.....	11.80	Pass
P-547	Spring Bottling Works.....	10.73	Pass
	New Haven		
P-557	American Bottling Co.....	12.51	Pass
P-564	Atlantic Bottling Works.....	11.31	Pass
P-579	Blakeslee Bros.....	12.10	Pass
P-562	Blue Ribbon Beverage Co.....	10.56	Pass
P-607	Elm City Bottling Co.....	9.94	Pass
P-570	Hamilton Bottling Works.....	11.80	Pass
P-595	Kenes Bottling Works.....	11.24	Pass
P-559	Mosca Bottling Works.....	11.26	Pass
P-606	New Haven Bottling Works.....	10.24	Pass
P-553	New York Bottling Works.....	10.42	Pass
P-571	J. Scarpace.....	10.30	Pass

TABLE 1—Concluded

D. C. No.	Dealer	Solids (Approximate Sugar Content)	Remarks
	New Haven—Continued		
P-590	Star Bottling Co.....	10.54	Pass
P-591	Star Bottling Co.....	9.74	Pass
P-578	Yale & Eagle Bottling Co.....	12.20	Pass
	New London		
P-600	Coca Cola Bottling of New London...	11.14	Pass
P-602	Nutmeg Beverage Co.....	11.94	Pass
	Norwalk		
P-588	High Grade Mineral Water Works....	14.60	Pass
P-546	Olden Times Bottling Works.....	13.32	Pass
	Norwich		
P-558	Marathon Beverage Co.....	10.66	Pass
P-555	Washington Bottling Co.....	9.26	Pass
	Portland		
P-575	Portland Bottling Works.....	13.30	Pass
	Putnam		
P-583	Aspinock Spring Water Co.....	12.20	Pass
	Quinebaug		
P-582	Fairfield Bros.....	11.10	Pass
	Saybrook		
P-544	Merrill's Star Beverage Co.....	16.67	Pass
P-601	Merrill's Star Beverage Co.....	10.74	Pass
	Stafford Springs		
P-580	Stafford Springs Bottling Co.....	11.70	Pass if labelled as "soda"
	Stamford		
P-548	National Bottling Co.....	12.88	Pass
	Stratford		
P-550	Stratford Bottling Works.....	11.52	Pass
	Taftville		
P-597	Orange Crush Co.....	12.84	Pass
	Thomaston		
P-566	August Koegel.....	10.60	Pass
	Thompsonville		
P-598	Bogey Beverages.....	10.94	Pass
P-599	Newgate Ginger Ale Co.....	9.44	Benzoate present, not declared
	Torrington		
P-563	Mt. Claire Spring Water Co.....	11.96	Pass
P-545	Stone's Beverages.....	16.27	Pass
P-551	M. Zoli & Sons.....	12.62	Pass
	Wallingford		
P-549	Ben Hur Bottling Works.....	9.73	Pass
	Waterbury		
P-560	Brassco Bottling Works.....	14.02	Pass
	West Haven		
P-577	White's Sparkling Beverages.....	10.60	Pass
P-608	Speigel Bottling Works.....	12.44	Benzoate present, not declared
	Willimantic		
P-569	Mosmer Mt. Bottling Works.....	12.80	Pass

TABLE 2. SODA WATER FLAVORS

No.	Manufacturer	Brand Name	Odor and Taste	Remarks
P-416	Atlantic Food Packing Co., Trenton, N. J.	Imitation Cherry Frute-Ade	Artificial	Pass as labelled
P-413	Atlantic Food Packing Co., Trenton, N. J.	Imitation Grape Frute-Ade	Artificial	Pass as labelled
P-411	Atlantic Food Packing Co., Trenton, N. J.	Imitation Lemon-Lime Frute-Ade	Pass	Need not be labelled "imitation"
P-412	Atlantic Food Packing Co., Trenton, N. J.	Imitation Orange Frute-Ade	Pass	Need not be labelled "imitation"
P-414	Atlantic Food Packing Co., Trenton, N. J.	Imitation Raspberry Frute-Ade	Artificial	Pass as labelled
P-415	Atlantic Food Packing Co., Trenton, N. J.	Imitation Strawberry Frute-Ade	Artificial	Pass as labelled
P-410	Natural Sugars, Inc., Brooklyn, N. Y.	Early Morn Pure Fruit Strawberry Syrup	True strawberry	Pass as labelled
P-403	Virginia Dare Extract Co., Brooklyn, N. Y.	Virginia Dare Pure Instant-Aid Cherry Flavor	At least partly benzaldehyde	Should be labelled "imitation flavor"
P-408	Virginia Dare Extract Co., Brooklyn, N. Y.	Virginia Dare Pure Instant-Aid Grape Punch	True grape	Pass as labelled
P-406	Virginia Dare Extract Co., Brooklyn, N. Y.	Virginia Dare Pure Instant-Aid Lemon-Lime Flavor	Pass	Pass as labelled
P-407	Virginia Dare Extract Co., Brooklyn, N. Y.	Virginia Dare Pure Instant-Aid Orange Flavor	Pass	Pass as labelled
P-405	Virginia Dare Extract Co., Brooklyn, N. Y.	Virginia Dare Pure Instant-Aid Raspberry Flavor	True raspberry	Pass as labelled
P-404	Virginia Dare Extract Co., Brooklyn, N. Y.	Virginia Dare Pure Instant-Aid Strawberry Flavor	Wholly artificial	Should be labelled "imitation flavor"
P-409	Virginia Dare Extract Co., Brooklyn, N. Y.	Virginia Dare True Fruit Instant-Aid Lemon	Pass	Pass as labelled

Miscellaneous Beverages

Eighteen miscellaneous beverages were examined, among them grape beverage and raspberry beverage made by the Hoffman Beverage Co. of Newark, N. J. These are fruit-ade type products for which our regulations provide no numerical minimum of fruit juice. On the basis of ash values for Concord grape juice (0.33 percent), and for red raspberry juice (0.47 percent), as given by Chatfield and McLaughlin, U.S.D.A., Circ. 50, the grape product contained about 17 percent of juice and the raspberry product about 8 percent. The other samples were orange products.

Included in this group are several samples of orange beverages submitted by H. L. Nadeau of the State Park Department.

The brands and approximate juice content (estimated from ash) were as follows:

9019	Green Spot orangeade.....	20%
9020	Bireley's orangeade.....	16%
9021	Hoffman orange beverage.....	12%

The juice content depends on the degree of dilution used by the distributor in making the beverage from the concentrate and is not a basis for judging the relative merits of the several brands of concentrates.

A sample, No. 1000, of Bruce's Concentrated Orange Juice (pasteurized) made by Bruce's Juices, Inc., Tampa, Fla., was examined. It contained 2.53 percent of ash and 3.09 mgm. per gram of ascorbic acid. Both on the basis of ash and ascorbic acid the concentration indicated is about 6:1.

A sample, 7643, of Vitamin C Beverage (V-C-B), a product made by Hilker and Bletsch Co., Cincinnati, Ohio, was examined. This is a powder containing, according to our assay, 0.46 percent of vitamin C (ascorbic acid). When prepared as directed for beverage purposes, 3.5 ozs. to a quart of water, the solution contained 0.48 mgm. of ascorbic acid per cc.

A series of tests was conducted to determine the stability of the ascorbic acid in fresh orange juice, fresh orange juice plus an equal volume of distilled water and fresh juice plus an equal volume of V-C-B solution. The results are summarized in Table 3. They show that fresh orange juice, even when diluted with water, loses very little of its vitamin C at room temperature in 24 hours; that V-C-B solution alone loses about

TABLE 3. STABILITY OF ASCORBIC ACID IN SOLUTIONS

	Ascorbic Acid, Milligram per cc			
	Room Temperature		In Refrigerator	
	Initial	After 24 hrs.	Initial	After 24 hrs.
Fresh orange juice	0.374	0.353	0.374	0.365
Orange juice + water, 1:1	0.191	0.165	0.191	0.194
V-C-B + water, 1:1	0.239	0.060	0.239	0.176
V-C-B + orange juice, 1:1	0.436	0.388	0.436	0.424

three-fourths of its activity in the same time; but that when V-C-B solution is mixed with an equal volume of orange juice, the orange juice stabilizes the V-C-B solution so that there is little loss of vitamin C.

BREAD

Sixteen samples of bread supplied to school cafeterias were submitted by the Board of Education of Hartford. The proximate analyses are given in Table 4 together with an estimation of the milk solids in the loaves. Milk solids were determined by the citric acid method, A.O.A.C. methods of analysis, 1935, p. 224, the results being expressed in terms of the solids of whole milk.

A sample of "Nutty Brown Bread", 9191, made by a local bakery according to a formula in which cottonseed flour and wheat flour constitute the flour ingredient, was analyzed.

An analysis of cottonseed flour given in our Station report for 1913 is as follows:

Moisture 7.4%, ash 5.5%, protein 49.1%, fiber 4%, nitrogen-free extract 21.3%, fat 12.7%. The nitrogen-free extract includes 6% of starch.

An analysis of this bread and a typical analysis of ordinary wheat bread are as follows:

	Sample No. 9191 %	Wheat bread %
Moisture.....	34.68	35.3
Ash.....	2.56	1.1
Protein.....	14.41	9.2
Fiber.....	0.92	0.5
Nitrogen-free extract.....	44.26*	52.6
Fat.....	3.17	1.3

*Includes 33.52% starch

Our information is that in this bread the wheat flour ingredient largely predominated over the cottonseed flour (about 7:1); hence, as the analysis indicates, it has no very marked advantage over ordinary bread for low carbohydrate diets. Whether cottonseed flour could be used as the sole flour ingredient and produce a satisfactory loaf we do not know; but no doubt the proportion of cottonseed flour to wheat flour could be substantially increased if desired.

TABLE 4. ANALYSES OF BREAD

No.	Moisture	Ash	Protein N x 5.7	Fiber	N-free Extract	Fat	Milk Solids
	%	%	%	%	%	%	%
IN AIR-DRY MATERIAL							
7213	White.....2.26	3.56	16.53	0.63	71.37	5.65	11.47
7219	".....2.00	3.76	17.33	0.83	71.34	4.74	10.43
7225	".....2.78	3.50	16.87	0.73	70.99	5.13	10.64
7436	".....2.43	3.46	15.05	0.63	73.59	4.84	9.23
7462	".....3.58	3.36	15.56	0.75	71.99	4.76	14.78
7474	".....4.05	3.31	15.73	0.73	71.05	5.13	9.90
8070	".....3.08	3.40	15.62	0.48	72.40	5.02	.....
8077	".....3.10	3.33	15.56	0.40	72.59	5.02	.....
	Average.....2.91	3.46	16.03	0.65	71.92	5.03	11.08
7214	Whole Wheat.....2.68	3.76	17.04	1.50	70.83	4.19	10.05
7218	".....2.17	3.90	17.10	1.45	71.66	3.72	10.64
7224	".....2.71	3.69	16.93	1.70	70.91	4.06	14.03
7435	".....2.98	3.78	16.99	1.63	70.96	3.66	10.84
7461	".....5.30	3.77	16.42	1.60	69.01	3.90	10.31
7475	".....2.43	3.88	16.99	1.45	71.06	4.19	11.78
8071	".....7.18	3.60	16.42	1.38	67.37	4.05	.....
8078	".....3.50	3.84	17.00	1.53	69.85	4.28	.....
	Average.....3.62	3.78	16.86	1.53	70.21	4.01	11.28
BASIS OF FRESH BREAD							
	White, average.....35.92	2.28	10.58	0.43	47.46	3.33	7.31
	Whole Wheat, average.....36.39	2.49	11.12	1.01	46.34	2.65	7.44

COFFEE

Twelve samples of ground coffee were submitted by the Dairy and Food Commissioner. No evidence of adulterants was detected in any of them. Only microscopic examination was made.

The list by manufacturers or distributors is as follows:

- K-2985, K-2993, La Touraine Coffee Co., Boston—New York.
- K-2986, Brazilian Maid, Vogel Bros., Hartford.
- K-2987, Aroma Coffee Co., Hartford.
- K-2988, Lincoln Coffee Co., Hartford.
- K-2989, Federal, E. S. Kibbee, Hartford.
- K-2990, Sandwich Place, Hartford.
- K-2991, Baronet, Baron Coffee Co., Hartford.
- K-2992, Dannemiller Coffee Co., Brooklyn, N. Y.
- K-2994, K-2995, K-2996, Supreme, K. Liappes & Sons, Hartford.

EGGS

Thirteen samples of eggs were submitted by the Commissioner of Agriculture to be examined for copper content. Some of the samples were single eggs, others were composite samples of five or more eggs. Possible correlation of copper content with an off-odor noted in some of the eggs was the object of the examination.

Copper ranged from 2.1 to 11.4 p.p.m., the amount of copper having no apparent correlation with off-odor.

FLAVORING EXTRACTS

Nine samples of flavoring extracts were submitted by the Dairy and Food Commissioner.

One, S-531, was sold by an itinerate vendor and labelled as "vanilla, tonka and vanillin, non-alcoholic flavor". It was misbranded, however, because it was further labelled as "a true vanilla flavor absolutely pure and full strength".

Two samples, K-3429 and S-640, were vanilla extracts, Safe Seal brand, rather low in lead number but otherwise not clearly substandard, and they were passed.

S-643, Sweet Life brand vanilla extract, showed low or minimum values for lead number, total ash, soluble ash, insoluble ash, alkalinity of ash and alkalinity of soluble ash, and was judged below standard.

S-673, Elm Farm brand vanilla extract, was below the average analytical values for authentic vanilla extract but not below the minimum, and the sample was passed.

The remaining brands, all vanilla extracts, were S-662 Morrow's, S-630 Nation Wide Service, S-638 Ann Page, and S-636 Millbrook. All appeared to be of satisfactory quality and were passed.

FATS AND OILS

Olive Oil, etc.

Twenty-four official samples of edible oils were examined for the Dairy and Food Commissioner. One of these was cottonseed oil and the remainder of them were olive oils.

Eleven were purchased at drug stores and sold as olive oil or "sweet oil". Only one of these was adulterated.

Of thirteen purchased at groceries, nine were adulterated or misbranded.

Adulterated and/or misbranded samples are listed in Table 5.

Fourteen unofficial samples were examined for the Commissioner, health officer and others.

Butter

Four official samples of butter were examined. All satisfied the requirements of the standard for fat, and moisture was not excessive. One, however, was very rancid.

Two samples from stock distributed by State Relief agencies met the standard.

TABLE 5. ADULTERATED AND/OR MISBRANDED OLIVE OIL

No.	Dealer, and Brand if known	Remarks
K-2365	Mrs. Mary Martone, Bridgeport. Nettuno Brand.....	Largely cottonseed oil artificially colored and flavored.
K-4223	Mrs. Donato Martarelli, Chester. Italian Virgin Olive Oil.....	Largely cottonseed oil.
K-2530	Christos Carides, Hartford, no label, sold as olive oil.....	Largely peanut oil, trace of cottonseed oil, artificially colored.
K-2528	Christos Carides, Hartford. Melillo Brand.	Largely peanut oil, artificially colored.
K-3528	New Chicago Market, Hartford. High Grade Vegetable Oil with 20% Olive Oil.....	As labelled but sold for olive oil and in containers imitating style, design and descriptive statements as used for olive oil.
K-2713	Packed by Circle Oil Co. Superfine Brand. Phila., New Haven, New York.....	Largely or entirely cottonseed oil. Deceptive label.
K-4307	Bidarini Bros., Stafford Springs. Lucca Brand.....	Largely cottonseed oil.
K-4308	Bidarini Bros., Stafford Springs.....	Largely cottonseed oil.
K-4306	A. Maruffi, So. Glastonbury. No label. Sold as olive oil.....	Contained sesame oil.
K-2693	West Hartford Pharmacy. Pure Olive Oil..	Contained cottonseed oil and sesame oil.

HONEY

Four samples of honey were submitted by the Dairy and Food Commissioner and all had the composition of genuine honey so far as tests could discover.

Three unofficial samples were examined. One was passed as genuine, but the other two were of doubtful purity.

MAPLE SYRUP

Two official samples of maple syrup were passed as genuine.

MEAT PRODUCTS

W. J. MATHIS, C. E. SHEPARD AND E. M. BAILEY

Frankfurt sausage and other meat products were examined for the Dairy and Food Commissioner. Results are summarized in Table 6, p. 16.

Reference to the summary given in Table 6 shows that in all cases where the absence of filler was specifically claimed the analyses substantiate that claim except in one case, S-557. The claim that meat loaf, S-539, is "pure meat" is not justified; by definition meat loaf is a meat food product consisting of comminuted meat and may contain, in addition to the usual seasoning, cereal products, milk products and eggs. The analysis shows starch in quantity, indicating cereal; the lactose very likely came from milk bread, both proper ingredients.

Where the declaration of cereal and/or skim milk powder was made the analyses again are consistent with such composition except in S-560 where no evidence of filler was found. The amount of such additions is limited by regulation to 3.5 percent. The presence of filler should be declared whenever present.

Soybean flour or meal is not prohibited by our State regulations and its use in frankfurts is not uncommon. Its presence is detected by the urease test and confirmed microscopically by the detection of certain cells characteristic of the soybean. A negative urease test does not necessarily mean that no soybean flour is present; the microscopic examination should be made in all cases. Satisfactory methods for the quantitative estimation of soybean products in meat products are at present lacking.

The presence of soybean flour does not appear seriously to disturb the interpretation of reducing sugar by the yeast method as "lactose". Considering the relatively small amounts of reducing sugar and starch in soybean flour, and the limited quantities likely to be used in frankfurts, the absence of sugars and starch is not inconsistent with the presence of a soybean product, as in S-557. The presence of dextrose in amounts ranging from none to about 0.4 percent is in accord with what may be expected in frankfurt meat. In samples S-355 and S-356, both from the same source, the presence of soybean flour did not result in evaluating any reducing sugar as "lactose". It is likely that in these samples the relatively large amounts of dextrose found came from additions of dextrose, as such (curing agent), rather from the soybean flour. Samples of frankfurt meat examined by us have shown the presence of dextrose when its presence was admitted.

In approximating skim milk powder from the lactose found, the factor 1.8 has been used to allow for such powders as may contain somewhat more than 50 percent of lactose. An allowance of 0.5 percent is made for starch that may be due to seasoning rather than to starchy fillers.

Lactose has been determined by the yeast method as outlined and discussed in previous bulletins (Conn. Exp. Station, Bul. 401, p. 870; Bul. 415, p. 695). The procedure is as follows:

Determination of Lactose in the Presence of Dextrose in Frankfurts

Weigh 12.5 gms. of the sample into a 250 cc beaker, add 100 cc of water; mix thoroughly and boil for 5 minutes. Pour off the extract through a paper pulp mat in a Büchner funnel, using suction. Again boil the residue of the meat in a beaker with 50 cc of water and pour off as before. Wash the residue twice with approximately 40 cc portions of boiling water. Combine the extracts in a 250 cc flask, add 5 cc of 20 percent phosphotungstic acid and cool. Add 2 cc of HCl, dilute to the mark, mix, and filter through a dry paper. Neutralize a 200 cc aliquot of filtrate with NaOH solution and dilute to 250 cc. (Solution A). Use a 50 cc aliquot (2 gms. meat) for the determination of total reducing sugars. (Munson and Walker).

To remove dextrose. Place 10 cc of a 25 percent suspension of washed Fleischmann's yeast* in a 100 cc tube and centrifuge. Pour off the water and dry the walls of the tube with filter paper. Add about 60 cc of Solution A to the yeast in the tube, mix thoroughly, and let stand for 15 minutes, stirring frequently enough to keep the yeast in suspension. (Our determinations stood one hour but it appears that 15 minutes is sufficient). Again centrifuge, pour off the supernatant liquid through a small, dry filter and determine copper reduction on a 50 cc aliquot.

The difference between the two reductions is due to adsorbable sugar (dextrose); the reduction after yeast treatment is due to lactose.

Thirty samples were examined. In 8, filler was present and not declared; in one of them the amount was excessive. In 3 filler was declared, but it was present in considerable excess of the amount permitted by regulation. In several cases the filler declared differed from that found; in one case filler was declared but none found. Possible excesses due to soybean products could not be estimated.

Other Examinations of Meat Products

Ten unofficial samples of frankfurts were examined for excessive water.

Six samples of hamburger were examined for sulphites. These were submitted by the Board of Health, Bridgeport.

One sample of "sausage flour" (filler for sausage) appeared to consist largely of corn starch.

*Wash yeast five times with three times its volume of water, centrifuging each time. The last washing should be clear. Make up a 25 percent suspension and keep at 0 to 4° C. Prepare 24 hours before using, and determine copper reduction blank when used.

TABLE 6. ANALYSES OF MEAT PRODUCTS

No.	Dealer	Product	Filler Claimed	Found			Remarks
				Lactose	Dextrose	Starch	
S-534	Hartford Grote & Weiger. B. Lenhardt. Hartford Provision Co. Hartford Provision Co.	Frankfurt sausage.	No filler used.	%	%	%	As claimed
S-536		Frankfurt sausage.	No filler used.	none	none	trace	As claimed
S-558		Frankfurt sausage.	No filler used.	none	none	trace	As claimed
S-557		Frankfurt sausage.	No filler used.	none	none	none	Filler present, not declared
S-538	B. Lenhardt.	Ham meat.	No filler used.	none	trace	none	As claimed
S-539	B. Lenhardt.	Meat loaf.	Pure meat.	0.49	trace	present	Pass
S-540	B. Lenhardt.	Liver bologna.	No filler used.	none	none	trace	As claimed
S-537	B. Lenhardt.	Bologna sausage.	No filler used.	none	none	trace	As claimed
S-532	Big Lion Food Market. Hartford Provision Co.	Frankfurt sausage.	Skim milk powder.	2.09	0.30	0.47	Total filler 3.7% +
K-2521		Frankfurts.		0.73	0.13	trace	Skim milk powder present, not declared; approx. 1.3%
K-2520	Hartford Provision Co.	Frankfurts.		1.41	0.22	trace	Skim milk powder present, not declared; approx. 2.5%
K-2522	Municipal Store.	Frankfurts W. C.		1.53	0.07	trace	Skim milk powder present, not declared; approx. 2.8%
S-533	Popular Market.	Pork sausage.	Powdered skim milk.	5.53	0.34	trace	Approx. 10.0% skim milk powder

S-529	Stanley Market.	Frankfurt sausage.	Cereal and skim milk powder.	2.13	0.39	0.83	present	Total filler, 4.1% +
S-530	Stanley Market.	Frankfurt sausage.	Cereal and skim milk powder.	1.54	0.32	0.42	present	Total filler, 2.7% +
S-562	Meriden Stanger's, Inc.	Frankfurt sausage.		0.74	none	none	none	Skim milk powder present, not declared; approx. 1.3%
S-351B	New Britain A.Y.O. Packing Co.	Bologna sausage.	Cereal and skim milk powder.	1.87	0.43	1.23	none	Approx. 4.1% total filler
S-352	A.Y.O. Packing Co.	Frankfurt sausage.	Cereal and skim milk powder.	1.97	trace	1.37	none	Total filler approx. 4.4%
S-350	King Cole Market.	Frankfurt sausage.		1.84	trace	trace	none	Skim milk powder present, not declared; approx. 3.3%
S-351A	King Cole Market.	Frankfurt sausage.		4.41	trace	trace	none	Skim milk powder present, not declared; approx. 7.9%
S-355	M. Krawczyk & Sons	Frankfurt sausage.	Skim milk powder.	none	2.15	trace	present	Soybean flour present, not declared. No milk powder.
S-356	M. Krawczyk & Sons	Frankfurt sausage.	Skim milk powder.	trace?	1.80	trace	present	Soybean flour present, not declared. Skim milk powder, probably none.
S-354	Martin Rusol.	Frankfurt sausage.	Cereal and skim milk powder.	2.49	0.62	0.91	none	Total filler approx. 4.9%

TABLE 6—Concluded

No.	Dealer	Product	Filler Claimed	Found				Remarks
				Lactose	Dex-trose	Starch	Soybean product	
S-563	New Haven Growers Outlet, Inc.	Frankfurt sausage.	Skim milk powder.	2.14	0.06	none	none	Approx. 3.8% skim milk powder
S-560	Hertler & Co.	Frankfurt sausage.	Skim milk powder.	none	none	none	none	No evidence of filler
S-564	Popular Food Market.	Frankfurt sausage.	Skim milk powder.	1.20	none	none	none	Approx. 2.2% skim milk powder
S-559	Carl Roessler.	Frankfurt sausage.	.....	1.33	trace	none	present	Skim milk powder and soybean flour present, not declared. Filler 2.4% +
S-565	Vienna Packing Co.	Frankfurt sausage.	Skim milk powder.	2.27	trace	none	none	Approx. 4.1% skim milk powder
S-566	Vienna Packing Co.	Frankfurt sausage.	Skim milk powder.	1.75	trace	none	none	Approx. 3.2% skim milk powder
S-561	Waterbury Everybody's Market.	Frankfurt sausage.	Skim milk powder.	2.73	none	1.42	present	Total filler 5.7% +

MILK AND MILK PRODUCTS

Vitamin D Milk

R. B. HUBBELL AND E. M. BAILEY

There are about 40 milk plants in the State producing vitamin D milk and the volume produced is more than 16,000 quarts per day. The processes employed are irradiation, addition of concentrate from cod liver oil, addition of activated ergosterol and yeast feeding.

Regular biological tests of market samples have been made throughout the year, the samples being submitted by the Dairy and Food Commissioner. The inspection was begun in 1935 and a summary of the results of our tests is as follows:

	Irradiation	C.L.O. Concentrate	Irradiated Ergosterol	Yeast Feeding
1935				
Satisfactory.....	4	2	...	4
Passed.....	2	2	...	...
Below Standard.....	1	1	...	...
1936				
Satisfactory.....	9	20	...	20
Passed.....	...	2	...	4
Below standard.....	...	...	...	7
1937				
Satisfactory.....	9	32	...	24
Passed.....	1	5	...	...
Below standard.....	...	5	...	2
1938				
Satisfactory.....	10	44	3	22
Passed.....	1	2	...	...
Below standard.....	...	5	...	...

In the past year 87 samples have been tested of which 79 met or exceeded the unitage of vitamin D claimed, 3 were on the border line but passed, and 5 were below the unitage claimed.

The above tabulation is a summary of inspection experience and not a basis for judging the relative merits of the several types of fortification.

Plain Milk

Seventeen official samples were examined of which 7 were watered, 1 was below standard and 9 were passed as genuine.

Six hundred and eighty-four samples were tested for dairymen to check on herd production or on the quality of milk from individual cows.

Cream

Nine samples of cream were tested for producers.

SWEET PICKLES

Twenty-two samples of sweet pickles were tested for saccharin and preservative.

Benzoic acid, where found, was properly declared on the label. No saccharin was found in any of the products.

Food products containing saccharin are illegal in this State except in foods for special dietetic purposes, e.g. foods for diabetics, where sugars must be avoided. It has rarely been found in foods in recent years except in the case of a few brands of sweet pickles examined in 1934. Saccharin is an artificial sweetening agent, 500 times sweeter than sugar, has no food value, and is not an allowable substitute for sugar in common foods.

SPRAY RESIDUE

C. E. SHEPARD AND E. M. BAILEY

Fewer samples of apples were examined for spray residue in 1938 than in previous years. The work was begun on September 1, but discontinued after the hurricane and heavy rainfall in that month.

Samples from 27 orchards in the State were tested. No excess of arsenic was found, and only one sample exceeded the new tolerance for lead, 0.025 grain per pound, announced by the Secretary of Agriculture on September 19, 1938.

In the previous year, season of 1937, 113 samples were tested and 9 exceeded the lead tolerance then in effect (0.018 grain per pound); only 1 of them, however, would have exceeded the present limit if it had been in effect at that time.

In 1931-32, of 172 samples examined 21 showed arsenic in excess of the tolerance (.01 grain per lb.). Lead was not determined.

During the period 1933-1938, about 600 samples were tested. The number showing excess of arsenic was negligible. About 60 exceeded the lead tolerance then in effect, .018 gr. per lb.; under the present tolerance (.025) the number would have been substantially less. Over half of the lead excesses occurred in the dry season of 1935.

The spray residue situation in this State has not been serious judging by the results of our examinations, or by federal inspections, so far as we are aware. But precautions should not be relaxed. Late applications of sprays containing lead should be avoided. Dry seasons with conditions unfavorable for natural spray removal are always a possibility.

Thirty-three investigational samples were examined for the Department of Entomology; and one for the Department of Botany.

TOMATO PRODUCTS

Two official samples of tomato puree were examined for us by the Food and Drug Administration, New York Station. Samples were: K-4137 H.H. and P.F. Ellsworth, Windsor; and K-4139 Knowles-Lombard, Guilford. One, K-4137, showed excessive mold count (over 50 percent positive fields).

Two samples of canned tomato juice were examined for vitamin C content. The samples were supplied by courtesy of the Council on Foods of the American Medical Association.

No.	Brand	Ascorbic acid mgm/gm.
970	Stokes, fortified with pure vitamin C.	0.52
971	Libby, McNeill and Libby, yellow tomato juice.	0.36

VINEGAR

Cider Vinegar

Three samples of cider vinegar were examined and passed as genuine.

One was suspected of contamination with foreign material but no evidence of such contamination could be detected.

One sample was tested for a producer.

Distilled Vinegar

H. J. FISHER

Distilled vinegar, also known as spirit vinegar and grain vinegar, is the product made by the acetous fermentation of dilute distilled alcohol. At one time it was frequently, but incorrectly, sold as "white wine vinegar". True white wine vinegar is made by the acetous fermentation of white wine, and is not a common article of commerce in this country.

Section 2456 of the General Statutes requires that all vinegar must contain at least 4 percent of acetic acid.

Regulations forbid the sale of dilute acetic acid as "vinegar". Distilled vinegar and dilute acetic acid resemble each other so closely in chemical composition, however, that it is not always easy to detect the substitution of one for the other. The fact that commercial acetic acid contained some formic acid was formerly used as a means of identifying dilute acetic acid, but at the present time, when acetic acid, nearly free of formic acid, is more readily available, this test may fail.

Pratolongo (*Ann. Chim. Applicata*, 15:72, 1925) first suggested the use of the "oxygen value" as a means of distinguishing between dilute acetic acid and distilled vinegar. Schmidt (*Zeit. Untersuch. Lebensm.*, 69: 472, 1935) showed that this test was not reliable in the presence of caramel. He proposed a modified method in which the caramel was first removed with decolorizing carbon. A method essentially the same as that of Schmidt is described in the *Report on Food and Drug Products for 1935* of this Station (Conn. Agr. Expt. Sta. Bul. 388, 669, 1936), and has been used since that time in this laboratory. In the examination of market vinegars, however, in only one case has the determination of oxygen value by this method clearly indicated the presence of dilute acetic acid, although there was reason to suspect it in other samples.

Recently Edwards and Nanji (*Analyst*, 63, 410, 1938) have shown that the interference of caramel with the oxygen value determination may be more completely eliminated by distilling the vinegar and making the test upon the distillate. The method in the form in which we have used it is as follows:

Dilute 20 cc of vinegar with 125 cc of water and distil 100 cc. To 25 cc of the distillate add 10 cc of 1:3 H₂SO₄ and 10 cc of N/10 KMnO₄. Allow to stand for exactly 30 minutes, then add 5 cc of 10 percent. KI and titrate with N/50 Na₂S₂O₃, using starch indicator. Run a blank determination using 25 cc of water in place of the vinegar distillate.

If the volume of N/50 Na₂S₂O₃ used in the blank titration is A cc., and that used in titration of the distillate is B cc., then

$$\text{Oxidation value} = 40 (A-B).$$

With cider vinegars, dilute 5 cc of the distillate with 20 cc of water and proceed as above. In this case oxidation value = 200 (A-B).

This method was tested with 4 percent acetic acid and with a sample of distilled vinegar believed to be pure, to both of which caramel color had been added. The dilute acetic acid gave an oxidation value of 18, and the distilled vinegar a value of 830. The average values found by Edwards and Nanji for dilute acetic acid and distilled vinegar were respectively 4 and 153; while their figures were lower than ours, the differences in magnitude between the values for dilute acetic acid and distilled vinegar were very large in both cases. The method appears to be a distinct improvement over the modified Schmidt method.

Oxidation values of two samples of cider vinegar were also determined. One sample, 63042, was prepared in the laboratory by allowing unpreserved sweet cider, known to be authentic, to undergo natural fermentation in glass for three years, and then filtering. This sample had an acidity of 5.79 percent, and gave an oxidation value of 3493. Another sample, P-613, a commercial cider vinegar believed to be pure, whose acidity was 4.99 percent, gave an oxidation value of 3637. Edwards and Nanji report no values for cider vinegar.

Fourteen market samples of distilled vinegar were examined for acidity and oxidation value. None of them gave an oxidation value low enough to indicate dilute acetic acid, but one, S-668, did show an abnormally high value. Three contained appreciably less than 4 percent of acetic acid. Analyses are given in Table 7.

TABLE 7. DISTILLED VINEGAR

No.	Manufacturer and Brand	Dealer	Acetic Acid Percent	Oxidation Value	Remarks
S-671	Sterling Cider Vinegar Co., Sterling, Mass., Sterling.	Joseph Astman, Jr., Hartford.	4.43	873	Pass
S-655	J. P. W. von Laer Co., South Acton, Mass., Barker & Company's.	Big Lion Market, Hartford.	3.99	614	Pass
S-669	I. A. Thompson & Son, Melrose, Conn., Melbrook.	H. Chintz, Hartford.	3.81	375	Low in acidity
S-656	20th Century Cider & Vinegar Co., Brooklyn, N. Y., 20th Century.	DiMuro's Market, Hartford.	4.48	691	Pass
S-657	New England Vinegar Works, Somerville, Mass., Very Fine.	B. Kaplan, Hartford.	4.84	365	Pass
S-670	A. Krasne, New York, Krasdale.	Krasdale Food Store, Hartford.	4.46	703	Pass
S-660	Great Atlantic & Pacific Tea Co., New York, N. Y., Ann Page Rajah.	Atlantic & Pacific Co., Manchester.	4.57	406	Pass
S-665	H. J. Heinz Co., Pittsburg, Pa., Heinz.	J. W. Hale Corp., Manchester.	5.04	622	Pass
S-668	Bronson Mayonnaise Mfg. Co., Philadelphia, Pa., Bronson's Quality.	Mahicus Grocery, Manchester.	4.06	2893	Pass
S-664	Standard Pickling Co., New Britain, Conn., Standard.	Popular Market, Manchester.	3.45	368	Low in acidity
S-667	E. H. Woodworth, South Coventry, Conn., Eclipse.	Tip Top Market, Manchester.	3.75	252	Low in acidity
S-674	Stickney & Poore Spice Co., Boston, Mass.	Adam Kosudziej, New Britain.	4.18	111	Pass
S-650	Wayne County Produce Co., Greenpoint, L. I., Wayne County.	Fulton Market Inc., Wallingford.	4.79	519	Pass
S-658	Silver Lane Pickle Co., East Hartford, Conn., Silver Lane Pickles.	Silver Lane Pickling Co., Silver Lane.	5.05	1149	Pass

MISCELLANEOUS FOODS

Eighty-one samples of miscellaneous foods have been examined for the Dairy and Food Commissioner, health officers and others. The following are of interest and are recorded for reference:

K-3731. *Crab meat*. Crystals found in crab meat often arouse suspicion of something foreign or injurious. As in this case, the crystals are magnesium ammonium phosphate (struvite), and are of natural occurrence, and not harmful.

S-577. *Ye Olde Windsor Mustard*. The article was neither mustard (ground mustard seed), nor prepared mustard, although it resembled the latter. The product contained a large proportion of starchy material, apparently wheat starch or wheat flour, not a proper ingredient of prepared mustard.

9803. *Molasses*. Sample submitted by a physician who was interested in its mineral content. It contained iron (Fe_2O_3) 0.012 percent; calcium (CaO) 0.58 percent; phosphoric acid (P_2O_5) 0.20 percent.

85, 86, 87. *Prunes* from stock in storage on premises that had been fumigated with hydrocyanic acid with adequate ventilation afterwards. The prunes showed no evidence of the fumigant by chemical tests.

8305. *Horseradish*. No evidence of foreign vegetable or other foreign substance was detected. The material was suspected because of an unusual pungent taste.

8097. *Merit Zesto*. "Made by the makers of Merit Lemon Juice Mayonnaise", Hackensack, N. J. Described as "a vegetable extract with yeast concentrate and natural salts added. A vitamin B food with vitamins A and G added".

8098. *Stur-Dee Vegetable Paste*. Stur-Dee Health Products, Inc., Brooklyn, N. Y. Described as a vegetable paste rich in vitamin B; 100 percent pure, no starch, sugar or added salt; no added coloring or preservative.

8512. *Savita*. The Battle Creek Food Co., Battle Creek, Mich. Described as "a yeast and vegetable extract seasoned with salt, rich in vitamin B complex and iron".

8513. *Vegetable Compound*. The Hay Alumni Assoc., Inc., Mount Pocono, Pa. Described as "Purely vegetable containing valuable vitamins with natural salts".

The analyses of the four above named products are as follows:

	8097 %	8098 %	8512 %	8513 %
Moisture.....	15.51	15.85	21.93	15.00
Ash.....	43.50	15.96	26.63	41.15
Protein (N x 6.25).....	33.41	23.94	33.38	34.53
Fiber.....	0.23	0.20	0.10	0.11
N-free extract (by diff.).....	7.23	43.78	17.87	8.92
Fat.....	0.12	0.27	0.09	0.29
Salt (calc. from Cl).....	28.84	15.39	15.53	29.17

Vitamin content was not determined in any of the samples.

The chloride content of sample 8097 is equivalent to nearly 29 percent of common salt; and the same is true of sample 8513 which resembles it closely in other respects.

The analysis of sample 8512 is quite consistent with its declared composition which includes salt added for seasoning. The same amount of salt occurs in 8098 which appears inconsistent with the claim that no salt is added. No starch was found in sample 8098 but sugar was indicated, judging by the usual copper reduction methods before and after inversion. The presence of sugar was not further established.

S-594-598. *Sweet corn* (on cob). Two of the five samples were ordinary flint field corn and not sweet corn as represented.

S-676. *Mixed Candy*. A sample of Christmas candy contributed to a State institution was submitted by the Dairy and Food Commissioner at the request of the donor. The sample was free from any contamination with unwholesome materials and was clean and fit for consumption so far as our tests could discover.

1131. *Cinnamon Rolls*, submitted by a police officer. The rolls were suspected because of a burning sensation produced in the mouth. A cinnamon-sugar mixture used in making rolls of this type was submitted with the sample, but the rolls submitted were found to be sprinkled with ginger instead of cinnamon.

DRUGS*

RUBBING ALCOHOL

C. E. SHEPARD AND E. M. BAILEY

Thirty samples of rubbing alcohol were submitted by the Dairy and Food Commissioner. According to regulations of the Treasury Department these products must be compounded with alcohol specially denatured for the purpose and according to formulae approved by the department. They must contain 70 percent by volume of alcohol or as near to that proportion as is practicable by ordinary commercial methods of compounding. Retail packages are limited to amounts not exceeding one pint and must bear a legend to make clear their non-beverage character.

All of the samples examined appear to conform to the general requirements. No methanol was found and there was no evidence of any substitution of isopropyl alcohol for grain alcohol. The basic formula in most cases was alcohol-acetone to which the other denaturants were added. In some instances acetone was absent or present in trace amounts only, suggesting that some other basic formula, probably one containing methyl propyl ketone and methyl isobutyl ketone, was used. Diethylphthalate was commonly employed as a denaturant in the past, but sucrose octa acetate appears to have largely replaced it.

The samples were labelled "for external use only" and, in nearly all cases with the further statement that "internal use will be followed by severe gastric disturbance".

Analyses are given in Table 8.

*Analyses and other examinations of drugs, except where otherwise indicated, were made by Dr. H. J. Fisher.

TABLE 8. ANALYSES OF RUBBING ALCOHOL

D.C. No.	Brand	Alcohol		Solids gm./ 100 cc	Denaturants indicated
		Declared	Found		
		%	%		
K-2683	Adde, Adde, Inc., Baltimore, Md.	70	71.12	0.34	Acetone, trace; sucrose octa acetate
K-2697	Adde, Hospital brand, Adde, Inc., Baltimore, Md.	70	75.84	0.37	Acetone, trace; sucrose octa acetate
K-2673	Alcolol, Abbott Laboratories, Chicago, Ill.	70	72.08	0.97	Acetone, boric acid; sucrose octa acetate
K-2892	Alcorub, Vadsco Sales Corp., New York, N. Y.	70	69.20	2.38	Acetone; boric acid; sucrose octa acetate; zinc sulphocarbonate
K-2672	Alcolane, Sharpe and Dohme, Philadelphia, Pa.	70	68.40	0.90	Acetone; boric acid; diethylphthalate; sucrose octa acetate
K-2671	Alkol, American Druggists Syndicate, New York, N. Y.	70	73.40	1.71	Acetone; boric acid; sucrose octa acetate; zinc sulphocarbonate
K-2899	Big Chief, Conn. Wholesale Drug and Perfumery Co., West Haven, Conn.	70	72.24	0.34	Acetone, trace; sucrose octa acetate
K-2691	B.L., Brown Laboratories, Philadelphia, Pa.	70	69.68	0.92	Acetone; boric acid; sucrose octa acetate
K-2869	Diamond, Diamond Drug and Magnesia Co., Cambridge, Mass.	70	72.40	0.36	Acetone, trace; sucrose octa acetate
K-2854	Distillers Scientific, Chemical Brands, Inc., Brooklyn, N. Y.	70	67.36	1.05	Acetone; boric acid; sucrose octa acetate
K-2811	Ex-Int., Good Products Co., Inc. Bridgeport, Conn.	70	74.32	0.09	Acetone, trace; boric acid trace; sucrose octa acetate; diethylphthalate, trace.
K-2724	Finch's, Finch's Drug Stores, Greenwich, Conn.	70	68.92	1.16	Acetone; diethylphthalate; sucrose octa acetate
K-2802	Harry's, Minard Co., Framingham, Mass.	70	70.92	1.50	Acetone; boric acid; sucrose octa acetate; zinc sulphocarbonate
K-2812	Hospital, Standard Chemical, Inc., Baltimore, Md.	70	70.16	1.05	Acetone; boric acid; sucrose octa acetate
K-2684	Hy's, Royal Mfg. Co., New York, N. Y.	70	76.36	0.29	Acetone, trace; sucrose octa acetate
K-2660	McKesson's, McKesson and Robbins, Bridgeport, Conn.	70	70.92	0.38	Acetone, trace; sucrose octa acetate
K-2843	Martin's, Minard Co., Framingham, Mass.	70	76.64	0.31	Acetone, trace; sucrose octa acetate
K-2908	Mifflin, Mifflin Chemical Corp., Philadelphia, Pa.	70	70.84	0.38	Sucrose octa acetate
K-2661	National Pharmacy Co., New York, N. Y.	70	71.56	0.37	Acetone, trace; sucrose octa acetate
K-2888	Nor-co-Int., Norwich Pharmaceutical Co., Norwich, N. Y.	70	71.48	0.36	Acetone, trace; sucrose octa acetate.
K-2807	Nyal, Nyal Co., Detroit, Mich.	70	68.36	0.66	Acetone; diethylphthalate; sucrose octa acetate
K-2743	Puracol, Puracol Products, New York, N. Y.	70	72.68	0.36	Acetone, trace; sucrose octa acetate
K-2753	Puretest, United Drug Co., Boston, Mass.	70	66.80	1.06	Acetone; boric acid; sucrose octa acetate; zinc sulphocarbonate
K-2806	Punch, H. E. Shaw Co., Worcester and Springfield, Mass., New Haven, Conn.	70	68.60	1.00	Acetone; boric acid; sucrose octa acetate
K-2893	Quality, Graeber Pharmacies, Meriden, Conn.	70	70.48	1.03	Acetone; boric acid; quassia ¹
K-2659	Standard Drug Co., Newark, N. J.	70	70.28	0.36	Acetone, trace; sucrose octa acetate
K-2862	Standard Drug Co., Newark, N. J.	70	71.04	0.38	Acetone, trace; sucrose octa acetate
K-2731	Superior, Superior Drug Co., Inc., Stamford, Conn.	70	73.12	0.39	Acetone, trace; sucrose octa acetate; diethylphthalate, trace ²
K-2744	Whelan, Laboratories, Inc., New York, N. Y.	70	71.52	0.37	Acetone, trace; sucrose octa acetate
K-2871	White Cross, Arthur Drug Stores, Inc., Hartford, Conn.	70	74.32	0.22	Acetone, trace; sucrose octa acetate

ARGYROL—10% SOLUTION

Argyrol is a preparation of colloidal silver which belongs in the classification of mild silver protein. According to the U.S.P. specifications for this type of silver protein, its silver content should be not less than 19 nor more than 25 percent. There is a class of colloidal silver preparations known as strong silver protein in which the proportion of silver is less, 7.5 to 8.5 percent. These silver proteins are used chiefly on mucous membranes for antiseptic effects where it is desired to avoid astringent and caustic action such as would result from the use of silver nitrate.

Commercial preparations of each of these types of silver protein are known by trade or brand names, of which Argyrol is one. The brands of the respective classes conform to the general specifications as to silver content and do not differ essentially in their therapeutic effects, but they may show some differences in composition depending chiefly on the character of the protein or nitrogenous material with which the silver is combined. Thus from previous analyses made in this laboratory¹ it appears that Argyrol may be expected to show ash/silver and nitrogen/silver ratios of about the order of 1.74 and 0.42 respectively.

All of the samples examined, nine in number, were within the U.S.P. limits as to silver content for mild silver protein; but one, K-2875, was somewhat too strong for a 10 percent solution, and appeared, moreover, to have been prepared from some mild silver protein preparation other than Argyrol. Analyses are given in Table 9.

¹Conn. Agr. Exp. Sta., Bul., 276, p. 375 (1925).

TABLE 9. ANALYSES OF 10% ARGYROL

No.	Druggist	Solids gm./100 cc	Ash gm./100 cc	Silver gm./100 cc	Nitrogen gm./100 cc	Ratios		Silver in Solids %
						Ash Silver	Nitrogen Silver	
K-2729	Greenwich Finch's Drug Store Veaudrey & Co, Inc.	9.61	3.45	1.91	0.93	1.81	0.49	19.88
K-2762		10.11	3.65	2.00	0.99	1.83	0.49	19.78
K-2809	Hamden Strand Pharmacy	10.26	3.71	2.03	1.01	1.83	0.50	19.75
K-2883	Hartford Arsenal Pharmacy Griswold Drug Co. Highland Court Pharmacy Stoughton Drug Co.	9.94	3.59	1.95	1.03	1.84	0.53	19.58
K-2863		10.67	3.89	2.11	1.05	1.84	0.50	19.79
K-2875		11.76	3.82	2.37	1.41	1.62	0.62	20.12
K-2677		9.47	3.39	1.86	0.92	1.83	0.50	19.60
K-2890	Kensington Kensington Pharmacy	9.79	3.54	1.97	0.96	1.80	0.49	20.12
K-2895	Meriden Graeber Pharmacy	9.49	3.48	1.88	0.94	1.85	0.50	19.80

EPSOM SALT

Thirty-seven samples of Epsom salt were examined. The U.S.P. requires that this drug contain not less than 45 percent nor more than 52 percent of water; and, in the anhydrous condition, not less than 99.5 percent of magnesium sulfate, $MgSO_4$. In addition it must be neutral to litmus and pass tests as to chlorides, heavy metals and arsenic.

All samples passed the chloride test; they either contained none, or less than the amount allowed by official specifications. All samples likewise passed the test for heavy metals. The tolerance for arsenic is "not to exceed 1 part in 100,000". Most of the samples contained barely detectable traces of arsenic; the highest amount found was negligible, 0.15 p.p.m.

All samples were neutral to litmus except K-2629 which was acid. This sample, however, is not pure Epsom salt but is labelled as "Epsom salt special" and further labelled as "pure magnesium sulfate rendered practically bitterless. A palatable, slightly effervescent preparation of Epsom salt".

Its estimated composition from our analysis is as follows:

Magnesium sulfate (anhydrous).....	29.77%
Magnesium carbonate.....	0.84
Citric acid (anhydrous).....	3.33
Sucrose.....	46.66
Water.....	16.35
Lemon oil and undetermined.....	3.05

This preparation appears to be in the same category with citrate of magnesia substitutes, and a clear statement of its composition should be given on the label to show wherein it differs from the U.S.P. article.

Analyses are given in Table 10.

TABLE 10. ANALYSES OF EPSOM SALT

No.	Druggist	Manufacturer or Distributor	Water	MgSO ₄ (dry basis)
			%	%
	Greenwich			
K-2722	Finch's Drug Store.....	Regal Drug, New Haven.....	46.48	100.4
K-2751	Greenwich Drug Store, Inc.....	United Drug Co., Boston.....	50.23	101.0
K-2735	Masi's.....	The Drackett Co., Cincinnati.	47.65	100.2
K-2736	Masi's.....	Superior Drug Co., Inc., Stamford.....	48.43	100.3
K-2740	Whelan Drug.....	Whelan Laboratories, Inc., New York.....	49.02	100.3
K-2741	Whelan Drug.....	Whelan Laboratories, Inc., New York.....	50.77	99.8
	Hamden			
K-2805	Bershtein's News Stand	A. Sherman Mfg. Co., Stamford.....	45.38	99.8

TABLE 10—Continued

No.	Druggist	Manufacturer or Distributor	Water	MgSO ₄ (dry basis)
			%	%
	Hartford			
K-2874	Highland Court Pharmacy.....	Frederick Stearns & Co., Detroit.....	41.82	99.0
K-2650	Iversyd Drug Co.....	McKesson & Robbins, Inc., Bridgeport.....	49.55	100.3
K-2652	Iversyd Drug Co.....	McKesson & Robbins, Inc., Bridgeport.....	47.78	99.9
K-2651	Iversyd Drug Co.....	Moon & Co., Worcester.....	48.88	100.3
K-2679	Quality Drug Co.....	Royal Mfg. Co., New York...	50.56	100.0
K-2669	Stoughton Drug Co....	D. G. Stoughton Drug Co. Hartford.....	49.71	100.1
	Meriden			
K-2896	Carroll Cut Rate.....	Dr. Higgins Laboratories, New York.....	50.66	100.2
	New Haven			
K-2910	Allen's Perfumers & Druggists.....	Johnson Products Co., New Haven.....	49.42	100.1
K-2627	Apothecaries Hall.....	McKesson & Robbins, Bridge- port.....	46.80	100.1
K-2628	Apothecaries Hall.....	E. R. Squibb & Sons, New York.....	44.99	100.2
K-2629	Apothecaries Hall.....	E. R. Squibb & Sons, New York.....	16.35 ¹	35.59
K-2610	Cedar Hill Pharmacy..	Unknown.....	47.15	99.9
K-2618	J. P. Deegan.....	Arno Drug Co., New York...	46.25	100.0
K-2617	J. P. Deegan.....	Bedesee Pharmacal Co., New York.....	49.31	99.8
K-2616	J. P. Deegan.....	Deegan-Hope Drug Co., New Haven.....	50.09	100.0
K-2619	J. P. Deegan.....	Em-Dee Products Co., New York.....	45.90	99.9
K-2614	East Rock Pharmacy..	McKesson & Robbins, Bridge- port.....	46.69	99.8
K-2613	East Rock Pharmacy	E. R. Squibb & Sons, New York.....	41.82	99.9
K-2623	Eld Pharmacy.....	Royal Mfg. Co., Brooklyn...	45.94	100.4
K-2621	Humphrey Pharmacy..	Exeller Chemical Co., Brook- lyn.....	50.72	100.2
K-2632	Whitney Pharmacy....	Purepac Corporation, New York.....	50.76	98.8
K-2633	Whitney Pharmacy....	E. R. Squibb & Sons, New York.....	50.22	99.8
K-2634	Whitney Pharmacy....	E. R. Squibb & Sons, New York.....	50.33	100.1
K-2625	Wood's Drug Store....	McKesson & Robbins, New Haven.....	48.23	100.0
	Wallingford			
K-2606	Modern Drug Store....	Exeller Chemical Co., Brook- lyn.....	51.24	100.1

¹Epsom Salt Special. See Text.

TABLE 10—Concluded

No.	Druggist	Manufacturer or Distributor	Water	MgSO ₄ (dry basis)
			%	%
K-2605	Wallingford—Con'd. Modern Drug Store....	E. R. Squibb & Sons, New York.....	49.61	99.8
K-2607					Modern Drug Store....	E. R. Squibb & Sons, New York.....	50.77	100.0
K-2841	Waterbury Martin's Drug Store....	Saxon Laboratories, Duquesne, Pa.....	50.91	99.7
K-2853					Tocchio & Kellie.....	Meyers Supply Co., Waterbury.....	42.84	100.4
K-2689	West Hartford West Hartford Pharmacy.....	Purepac Corporation, New York.....	50.28	100.1

GLYCERIN

The U.S.P. specifications for this article were met in all of the eight samples examined except K-2723, which was substantially below the required specific gravity at 25°, 1.249.

All samples were colorless and neutral to litmus. Tests for oxalate, chloride, sulfate and heavy metals were negative in all cases.

Warming with 10 percent KOH solution produced no color change or odor of ammonia in any sample. Carbonizable substances were not in excess of the amount allowable according to the color standard specified; and arsenic was not in excess of 1 part in 100,000, the tolerance fixed by specification. The highest arsenic content found was 1.08 p.p.m.

The U.S.P. assay for fatty acids and esters has been expressed in the tabulation in terms of Saponification No. The value should not exceed 0.56.

Analyses are given in Table 11.

TABLE 11. ANALYSES OF GLYCERIN

No.	Dealer	Manufacturer	Specific gravity at 25°	Residue on free combustion %	Ash %	Saponification No.	Remarks	
							Low specific grav. Below standard O. K.	Pass O. K.
K-2723	Greenwich Finch's Drug Store.....	Regal Drug Co., New Haven.....	1.2326	0.008	0.003	0.15	O. K.	O. K.
K-2750	Greenwich Drug Store, Inc....	United Drug Co., Boston, Mass....	1.2529	0.012	0.004	0.14	O. K.	O. K.
K-2742	Whelan Drug Co.....	Whelan Laboratories, Inc., New York, N. Y.....	1.2422	0.015	0.005	0.00	Pass	O. K.
K-2903	Meriden Carroll Cut Rate (B. Ollin)...	Higgins' Laboratories, New York, N. Y.....	1.2549	0.012	0.003	0.08	O. K.	O. K.
K-2609	New Haven Cedar Hill Pharmacy.....	Colgate-Peet-Palmolive, Jersey City, N. J.....	1.2558	0.010	0.003	0.25	O. K.	O. K.
K-2612	East Rock Pharmacy.....	Colgate-Peet-Palmolive, Jersey City, N. J.....	1.2557	0.016	0.006	0.33	Pass	O. K.
K-2631	Whitney Pharmacy.....	Harshaw Chem. Co., Cleveland, Ohio.....	1.2500	0.013	0.003	0.19	O. K.	O. K.
K-2604	Wallingford Modern Drug Store.....	Colgate-Peet-Palmolive, Jersey City, N. J.....	1.2537	0.012	0.006	0.17	O. K.	O. K.

SOLUTION OF MAGNESIUM CITRATE

The U.S.P. requires that this preparation contain in each 100 cc not less than 1.6 gms. nor more than 1.9 gms. of magnesium oxide. It should also contain in the same volume not less than 9.11 gms. of citric acid; and it should be free from sulfate.

Twenty-five samples were examined of which five were below standard in one or more particulars. One, K-2867, was labelled "Citratated Effervescing Solution of Magnesium Citrate and Magnesium Sulphate" but the legend "Citrate Magnesia" was blown in the bottle. The latter legend would indicate that the product is a U.S.P. XI article which it is not; and the label does not show the standard of strength of the product. The product is labelled as containing one-quarter grain of benzoic acid per fluid ounce. From our analysis, the formula in grams per fluid ounce is essentially as follows:

Magnesium sulfate.....	16.43
Magnesium carbonate.....	7.58
Citric acid.....	15.29

Benzoic acid was not determined.

Analyses are given in Table 12.

TABLE 12. ANALYSES OF SOLUTION OF MAGNESIUM CITRATE

No.	Druggist	Manufacturer or Distributor	Magnesium Oxide gm/100 cc	Total citric acid gm/100 cc	Sulphate	Remarks
K-2764	Cos Cob C. Nathan.....	Gelb Bros. & Zuckerman, Stamford.....	1.60	9.16	trace	Pass
K-2721 K-2730	Greenwich Finch's Drug Store... Gracie's Stationery Store.....	Klawson Co., Norwalk..... Sterling Magnesia Co., Inc., Newark.....	1.60 1.68 1.28	8.61 8.95 8.47	none none trace	Pass Pass Pass
K-2734	Masi's.....	Stamford Drug Co., Stamford.....	1.28	8.47	trace	Below standard in magnesium oxide
K-2695	Hartford Louis Champeau.....	Sterling Magnesia Co., Inc., New York.....	1.63	8.42	very faint trace	Pass
K-2861 K-2867	Griswold Drug Co..... Growers Outlet.....	Own make..... Diamond Drug & Magnesia Co., Cambridge, Mass.....	1.75 1.26	10.27 3.35	none 1.17 as SO ₃	Pass O. K. See text, page 31.
K-2649 K-2678 K-2668	Iversyd Drug Co..... Quality Drug Co..... Stoughton Drug Co.....	National Magnesia Co., Inc., New York..... D. A. Rosow, Hartford..... Klawson Co.....	1.82 1.56 1.58	9.46 8.66 8.66	faint trace none none	Pass Pass Pass
K-2891	Meriden Graeber Pharmacy.....	Own make.....	1.34	6.42	none	Below standard in magnesium oxide and total citric acid
S-573	Middletown Karron Cut Rate Store	National Magnesia Co., Inc., New York.....	1.76	10.04	none	O. K.

TABLE 12—Concluded

No.	Druggist	Manufacturer or Distributor	Magnesium Oxide gm/100 cc	Total citric acid gm/100 cc	Sulphate	Remarks
K-2909	New Haven Allen's Cut Rate Drugs	Johnson Products Co., New Haven	1.61	8.76	faint trace	Pass
K-2626	Apothecaries Hall	Regal Drug, New Haven	1.66	9.00	very faint trace	Pass
K-2808	Cedar Hill Pharmacy	Own make	1.65	8.80	none	Pass
K-2615	J. P. Deegan	Own make	1.34	6.31	none	Below standard in magnesium oxide and total citric acid
K-2611	East Rock Pharmacy	Own make	1.67	9.18	none	O. K.
K-2622	Eld Pharmacy	Royal Mfg. Co., New York	1.54	8.61	trace	Pass
K-2620	Humphrey Pharmacy	Own make	1.65	9.48	none	O. K.
K-2630	Whitney Pharmacy	Regal Drug, New Haven	1.62	8.83	faint trace	Pass
K-2624	Wood's Drug Store	Own make	1.76	9.37	none	O. K.
K-2603	Wallingford Modern Drug Store	National Magnesia Co., Inc., Brooklyn	1.68	9.65	trace	Pass
K-2848	Waterbury Kunkel Pharmacy	Own make	1.32	6.32	none	Below standard in magnesium oxide and total citric acid
K-2852	Tocchio & Kellie	Meyers Supply Co., Waterbury	1.59	8.67	none	Pass
K-2688	West Hartford West Hartford Pharmacy	D. A. Rosow, Hartford	1.60	8.48	none	Pass

MINERAL OIL

White mineral oil or liquid petrolatum is a mixture of liquid hydrocarbons obtained from petroleum. The U.S.P. limits for specific gravity of this article are 0.828 to 0.905 at 25° C. The specifications for viscosity, which are expressed as kinematic viscosity in the U.S.P., are equivalent in terms of Saybolt units to not less than 175 seconds at 100° F for heavy oil and not more than 170 seconds for light oil.

In addition to these determinations the samples were examined for other characters as given in the Pharmacopoeia. All samples were neutral to litmus and tests for sulfur compounds were negative in all cases, meeting the specifications in these respects.

Carbonizable substances did not exceed the limits indicated by the U.S.P. color standard. Samples K-2655, K-2870, K-2878, K-2886 and K-2887 gave fairly pronounced brownish-yellow colors; with all others there was only a very slight color development.

Samples cooled four hours in ice water either remained clear or gave only a slight cloudiness, excepting K-2680 in which there was a separation of a slight but definite precipitate.

Several samples are shown by viscosity values to be light oils; these, when not labelled "heavy oil", were passed. However, all samples were labelled to indicate their use in conditions of constipation for which, according to the "Dispensatory" and "Useful Drugs", heavy oils are preferred. Light oils are better adapted for use as nasal sprays.

Many samples were labelled "Russian oil". The Russian origin of some of them may be doubted but it is not capable of disproof.

Twenty-nine samples were examined; four did not fully comply with U.S.P. or their own declared specifications.

Analyses are given in Table 13.

TABLE 13. ANALYSES OF MINERAL OIL

No.	Druggist	Manufacturer or Distributor and Brand	Specific Gravity, 25° C.	Saybolt Viscosity 100° F., seconds	Type of Oil	Remarks
K-2757	Greenwich Gray's Cut Rate.....	Norwich Pharmacal Co., Norwich, N. Y., Norwich Russian Imported	0.879	350	Heavy	Pass
K-2752	Greenwich Drug Store, Inc.....	United Drug Co., Boston, Mass., Puretest Russian Type.....	0.890	366	Heavy	O. K.
K-2760	Veaudrey & Co., Inc.....	Prospect Drug Co., New York, Imported Russian.....	0.845	100	Light	Pass
K-2746	Whelan Drug Co.....	Whelan Laboratories, Inc., New York, Imported Russian Extra Heavy.....	0.881	360	Heavy	O. K.
K-2810	Hamden Centerville Drug Shop.....	Good Products Co., Inc., Bridgeport, Harsa Extra Heavy Genuine Russian.....	0.882	355	Heavy	O. K.
K-2800	Highwood Pharmacy.....	Lubol Importing Co., New York, N. Y., Lubol Russian.....	0.834	88	Light	Pass
K-2801	Highwood Pharmacy.....	Regal Drug Co., New Haven., Genuine Russian Imported.....	0.879 ¹	372 ²	Heavy	Does not meet label specifications for gravity and viscosity
K-2797	Peoples Pharmacy.....	Conn. Chemical Co., New Haven., Quality Brand Imported Russian, Heavy.....	0.860 ³	100	Light	Not heavy oil as labelled; does not meet declared gravity
K-2796	Peoples Pharmacy.....	Rawson Drug Co., Long Island City, N. Y., Genuine Russian Imported	0.860	99	Light	Pass

K-2870	Hartford Arthur Drug Stores, Inc.....	Arthur Drug Stores, Inc., Genuine Russian Extra Heavy.....	0.879	362	Heavy	O. K.
K-2696	Louis Champeau.....	Homestead Laboratories, Hartford, Genuine Imported Russian, Extra Heavy.....	0.880	350	Heavy	O. K.
K-2658	Iversyd Drug Co.....	Bedesee Pharmacal Co., New York, N. Y., Jayzon's Genuine Russian	0.879 ³	354	Heavy	Does not meet declared gravity
K-2655	Iversyd Drug Co.....	McKesson & Robbins, Inc., Bridgeport, McKesson's Albolene.....	0.888	368	Heavy	Pass
K-2657	Iversyd Drug Co.....	Moore & Co., Worcester, Mass., Iversyd Russian Extra Heavy.....	0.872	250	Heavy	O. K.
K-2656	Iversyd Drug Co.....	National Pharmacy Co., New York, Russian.....	0.886	350	Heavy	O. K.
K-2654	Iversyd Drug Co.....	E. R. Squibb & Sons, New York, Squibb Heavy Californian.....	0.879	319	Heavy	O. K.
K-2653	Iversyd Drug Co.....	Stanco Incorporated, Bayway, N. J., Nujol.....	0.875	234	Heavy	O. K.
K-2878	A. Laschener.....	Reese Laboratories, New York, Imported Russian.....	0.863	111	Light	Pass
K-2681	Quality Drug Co.....	American Pharmacal Co., New York, Extra Heavy Genuine Imported Pure Russian.....	0.880	376	Heavy	O. K.
K-2680	Quality Drug Co.....	Fulton Laboratories, Brooklyn, N. Y., Genuine Imported Russian.....	0.875	361	Heavy	Does not pass U.S.P. test for moisture and solid paraffins
K-2670	Stoughton Drug Co.....	Parke Davis & Co., Detroit, Mich., Heavy.....	0.885	375	Heavy	O. K.
K-2886	Kensington Kensington Pharmacy.....	Supreme Pharmaceutical Co., New York, Supreme Genuine Imported Pure Russian.....	0.861	91	Light	Pass
K-2887	Kensington Pharmacy.....	Socony Vacuum, New York, Extra Heavy.....	0.873	221	Heavy	Pass

1. Declared 0.885—0.90. 2. Declared 325—330. 3. Declared 0.885—0.890

TABLE 13—Concluded

No.	Druggist	Manufacturer or Distributor and Brand	Specific Gravity, 25° C	Saybolt Viscosity 100° F, seconds	Type of Oil	Remarks
K-2898	Meriden Carroll Cut Rate.....	Dr. Higgins Laboratories, New York, Dr. Higgins Imported Russian... Viviny Laboratories, New York... Pierce's.....	0.879	337	Heavy	O. K.
K-2897	Carroll Cut Rate.....		0.841	92	Light	Pass
K-2911	New Haven Allen's Perfumers & Drug- gists.....	Lund's Importation Co., New York, Lund's Russian.....	0.883	347	Heavy	O. K.
K-2912	Allen's Perfumers & Drug- gists.....	Mearl Laboratories, Hamden, Mearl	0.844	95	Light	Pass
K-2842	Waterbury Martin's Drug Store.....	Saxon Laboratories, Duquesne, Pa., Saxon Russian Imported Extra Heavy.....	0.880	356	Heavy	O. K.
K-2690	West Hartford West Hartford Pharmacy	Purepac Corp., New York, Purepac Genuine Russian Extra Heavy...	0.880	355	Heavy	O. K.

SODIUM BICARBONATE

Fourteen samples of sodium bicarbonate were examined. All passed the U.S.P. tests for solubility, absence of ammonium salts and heavy metals. No measurable amounts of arsenic were detected; all samples with one exception passed the U.S.P. specification for carbonate. Sample K-2682 did not meet this test but conformed to the above specifications in all other respects.

Summary is given in Table 14.

TABLE 14. ANALYSES OF SODIUM BICARBONATE

No.	Dealer	Manufacturer	Remarks
K-2725	Greenwich Finch's Drug Store.....	Bedesee Pharmacal Co., New York, N. Y.....	O. K.
K-2726	Finch's Drug Store.....	Regal Drug Co., New Haven.....	O. K.
K-2732	Gracie's Stationery Store.	Superior Drug Co., Inc., Stamford.	O. K.
K-2754	Greenwich Drug Store, Inc.....	United Drug Co., Boston, Mass...	O. K.
K-2737	Masi's.....	Exeller Chemical Co., Brooklyn, N. Y.....	O. K.
K-2745	Whelan Drug Co.....	Whelan Laboratories, Inc., New York, N. Y.....	O. K.
K-2662	Hartford Iversyd Drug Co.....	McKesson & Robbins, Inc., B'gpt.	O. K.
K-2663	Iversyd Drug Co.....	Iversyd Drug Stores, Hartford....	O. K.
K-2682	Quality Drug Co.....	Royal Manufacturing Co., New York, N. Y.....	Does not pass test for carbonate. See Text.
K-2674	Stoughton Drug Co.....	E. R. Squibb & Sons, New York, N. Y.....	O. K.
K-2675	Stoughton Drug Co.....	Merck & Co., Inc., Rahway, N. J..	O. K.
K-2900	Meriden Carroll Cut Rate (B. Ollin)	Higgins' Laboratories, New York, N. Y.....	O. K.
K-2916	New Haven Allen's Perfumers & Drug- gists.....	Johnson Products Co., New Haven	O. K.
K-2845	Waterbury Martin's Drug Store.....	Benedict Laboratories, Waterbury	O. K.
K-2692	West Hartford West Hartford Pharmacy.	Purepac Corp., New York, N. Y...	O. K.

SPIRIT OF NITROUS ETHER

The U.S.P. requires this article to contain not less than 3.50 nor more than 4.50 percent of ethyl nitrite. It directs also that this preparation should be preserved in small, well-filled and tightly-stoppered bottles, in a cool, dark place, remote from fire. Experience has shown that this drug when so kept will retain its strength without serious impairment for a considerable time. Failure to observe the precautions noted no doubt accounts for most of the deficiencies found.

Sample K-2905 was erroneously labelled as containing 18 minims of alcohol whereas it was probably intended to read 18 minims of ethyl nitrite per fluid ounce.

Twenty-six official samples were examined of which 14 varied substantially from the U.S.P. limits. Thirteen of these variations were deficiencies. Two samples were examined for dealers.

Results are summarized in Table 15.

TURPENTINE

Two samples of turpentine, S-569—570, were examined. They were sold by Sears Roebuck & Co., Hartford. Both were passed as genuine.

	S-569	S-570
Sp. gr. 15.5° C.....	0.864	0.864
Ref. Index 20° C.....	1.468	1.467
Unpolymerized, by vol. %.....	0.8	0.8
Initial B.P. degrees C.....	156	157
Distilled below 170° C., %.....	93.8	95.0

WITCH HAZEL

Thirty-three samples of witch hazel were examined. The alcoholic strength was satisfactory or passable in all cases except one; and there was no evidence of the presence of wood alcohol, acetone, isopropyl alcohol or diethylphthalate in any of them. All samples were labelled 14 percent alcohol except No. K-2901 which was labelled 15 percent.

The results are summarized in Table 16, page 45.

TABLE 15. ANALYSES OF SPIRIT OF NITROUS ETHER

No.	Druggist	Manufacturer	Ethyl Nitrite %	Remarks
K-2765	Cos Cob White's Drug Store	McKesson & Robbins, Bridgeport	3.67	O. K.
K-2728	Greenwich Finch's Drug Store	E. R. Squibb & Sons, New York	2.35	Below standard
K-2758	Gray's Cut Rate	McKesson & Robbins, Bridgeport	4.20	O. K.
K-2755	Greenwich Drug Store, Inc.	United Drug Co., Boston	2.54	Below standard
K-2763	Veaudrey & Co., Inc.	McKesson & Robbins, Bridgeport	4.00	O. K.
K-2749	Whelan Drug Co.	Whelan Laboratories, Inc., New York	4.01	O. K.
K-2815	Hamden Centerville Drug Shop	Own make	4.92	Pass
K-2799	People's Pharmacy	C. S. Leete, Inc., New Haven	2.67	Below standard
K-2872	Hartford Arthur Drug Stores, Inc.	Own make	4.03	O. K.
K-2698	Louis Champeau	Sisson Drug Co., Hartford	2.91	Below standard
K-2864	Griswold Drug Co.	Own make	5.30	Too strong
K-2876	Highland Court Pharmacy	Own make	0.45	Below standard
K-2880	A. Laschener	Union Pharmacal Co., Inc., New York	3.59	O. K.
K-2687	Quality Drug Co.	Own make	2.17	Below standard
K-2676	Stoughton Drug Co.	D. J. Stoughton Co., Hartford	2.91	Below standard
K-3200	Goldenberg Drug Co.	Sisson Drug Co., Hartford	2.80	Below standard
K-2889	Kensington Kensington Pharmacy	Benedict Laboratories, Waterbury	2.89	Below standard

TABLE 15—Concluded

No.	Druggist	Manufacturer	Percent Ethyl Nitrite	Remarks
K-2905 K-2894	Meriden Carroll Cut Rate Graeber Pharmacy	Dr. Higgins Laboratories, New Haven Own make	4.13 3.77	O. K. O. K.
S-575	Middletown Karron Cut Rate Store	Exeller Chemical Co., Brooklyn, N. Y.	1.65	Below standard
K-2918	New Haven Allen's Perfumers & Druggists	Johnson Products Co., New Haven	3.68	O. K.
K-2885	Newington Newington Pharmacy, Inc.	Furwin Sales Co., Hartford	3.75	O. K.
K-2849 K-2847 K-2851	Waterbury Kunkel Pharmacy Martin's Drug Store Simonson Drug Co.	Royal Mfg. Co., New York Benedict Laboratories, Waterbury Brewer & Co., Worcester, Mass.	2.44 4.10 0.18	Below standard O. K. Below standard
K-2694	West Hartford West Hartford Pharmacy	D. A. Rosow, Hartford	1.57	Below standard

TABLE 16. ANALYSES OF WITCH HAZEL

No.	Dealer	Manufacturer	Alcohol by volume	Remarks
K-2813	Centerville Centerville Drug Shop.....	Good Products Co., Inc., Bridgeport.....	% 14.31	O. K.
K-2727 K-2733 K-2759 K-2756 N-2738 K-2739	Greenwich Finch's Drug Store..... Grace's Stationery Store..... Gray's Cut Rate..... Greenwich Drug Store, Inc..... Masi's..... Masi's.....	E. E. Dickenson Co., Essex..... Superior Pharmaceutical Co., Inc., Stamford..... Stamford Drug Co., Stamford..... United Drug Co., Boston, Mass..... Lorraine Laboratories, New York, N. Y..... Gold Mark Laboratories, New York, N. Y.....	14.36 14.18 13.86 14.31 14.12 10.58	O. K. O. K. Pass O. K. O. K. Below standard in alcohol
K-2761 K-2747 K-2748	Hamden Veaudrey & Co., Inc..... Whelan Drug..... Whelan Drug.....	Majestic Drug Co., New York, N. Y..... Perrey Laboratories, West New York, N. J..... E. E. Dickenson Co., Essex.....	14.51 14.36 14.01	O. K. O. K. O. K.
K-2803	Hamden Highwood Pharmacy.....	Atlas Drug & Chemical Co., Inc., New York, N. Y.....	14.33 14.18	O. K. O. K.
K-2798	Hamden People's Pharmacy.....	Supersal Co., Long Island City, N. Y.....	14.15 14.22	O. K. O. K.
K-2881 K-2882 K-2868	Hartford Arsenal Pharmacy..... Arsenal Pharmacy..... Growers Outlet.....	General Drug & Oil Co., Boston, Mass..... Moorac Perfumerie, New York, N. Y..... Diamond Drug & Magnesia Co., Cambridge, Mass.....	13.73 14.40 14.18 14.25 14.40	Pass O. K. O. K. O. K. O. K.
K-2665 K-2666 K-2667 K-2879	Hartford Iversyd Drug Co..... Iversyd Drug Co..... Iversyd Drug Co..... A. Laschener.....	Bedesee Pharmaceutical Co., New York, N. Y..... National Pharmacy Co., New York, N. Y..... E. E. Dickenson Co., Essex..... Certified Pharmaceutical Co., New York, N. Y.....	14.40 14.25 14.40	O. K. O. K. O. K. O. K.

TABLE 16—Concluded

No.	Dealer	Manufacturer	Alcohol by volume	Remarks
Hartford—Continued				
K-2884	L. W. Leit.....	Zenith Drug, Inc., New York, N. Y.....	14.58	O. K.
K-2866	Patsy's Grocery.....	Soothol Products, Brooklyn N. Y.....	14.40	O. K.
K-2685	Quality Drug Co.....	Reo Chemical Corp., Elizabeth, N. J.....	14.22	O. K.
K-2686	Quality Drug Co.....	Meecker Pharmacal Co., Newark, N. J.....	14.18	O. K.
Meriden				
K-2901	Carroll Cut Rate.....	Carroll Stores of America, New York, N. Y.....	14.33 ¹	Pass
K-2902	Carroll Cut Rate.....	Vining Perfumers, New York, N. Y.....	14.12	O. K.
Middletown				
S-574	Karron Cut Rate Store.....	Good Products Co., Inc., Bridgeport.....	14.58	O. K.
New Haven				
K-2913	Allen's Perfumers & Druggists.....	Mearl Laboratories, Hamden.....	14.40	O. K.
K-2914	Allen's Perfumers & Druggists.....	Accuracy Products, New York, N. Y.....	14.22	O. K.
K-2915	Allen's Perfumers & Druggists.....	Dunhill Laboratories, Hamden.....	14.15	O. K.
K-2906	J. J. Newberry Co.....	Salem Chemical & Supply Co., Salem, Mass.....	14.15	O. K.
K-2907	J. J. Newberry Co.....	Mifflin Chemical Corp., Philadelphia, Pa.....	13.86	Pass
Waterbury				
K-2844	Martin's Drug Store.....	Saxon Laboratories, Duquesne, Pa.....	14.33	O. K.
K-2855	Tocchio & Kellie.....	Premier Drug Products, New York, N. Y.....	12.88	Pass

¹ Labelled 15%

WHISKEY, ETC.

W. T. MATHIS AND E. M. BAILEY

There are no special provisions in the Liquor Control Act of this State concerning composition, standards, or labelling of alcoholic liquors. Whiskey and brandy designed for medicinal purposes, and so labelled, are subject to the specifications of the U.S. Pharmacopoeia. Whiskey, brandy and other alcoholics for beverage purposes are subject to the general provisions of the food and drug statutes as to adulteration and misbranding so far as they apply.

Forty-seven samples were examined for the Dairy and Food Commissioner during the year and the results are given in Table 17, page 48.

There was no evidence found of methanol or other denaturants or of foreign deleterious substances.

The alcoholic strength was in most cases a little under that indicated by the proof declared but reasonably close to such declaration.

It was impossible to say whether the ages claimed for the articles or for the several components of blends were correct, but in general they seemed reasonable so far as could be judged by the contents of acids and esters and the relation between them. The limits for acids and esters as fixed by the U.S. Pharmacopoeia for medicinal whiskey are, stated in terms of grams per 100 litres, 36 to 120 for acids and 30 to 123 for esters.

No evidence of color other than caramel was found; and there was no clear indication of caramel except in the blended whiskeys and in one sample of brandy. Samples showing less than 10 percent of color insoluble in amyl alcohol are regarded as free from caramel color. In whiskey other than "straight whiskey," and in brandy and rum, caramel color is permissible without declaration; other artificial colors require declaration.

Sample P-530 is not "Cognac" but probably it would be satisfactory if labelled as "Cognac type".

The term "proof", as applied to alcoholic liquors, indicates the percentage of alcohol in the product. In American practice, absolute (100 percent) alcohol is 200° proof; in British practice it is 175.25° proof. So in this country an alcoholic liquor labelled as 100 proof contains 50 percent of alcohol by volume, but on the British scale the same proof would indicate about 57 percent of alcohol.

"Neutral spirits" or "alcohol" are terms that identify distilled spirits distilled from any fermented saccharine material at or above 190° proof. "Whiskey" is distilled at lower proof (not exceeding 190), and only from a fermented mash of grain. If whiskey bears the name of a grain, e.g. "rye", such grain must predominate in the mash from which the distillate is obtained. "Straight whiskey" differs from "whiskey" in being distilled at not exceeding 160° proof, and in other particulars specified in government regulations. Prior to bottling, whiskeys may not be reduced to less than 80° proof.

"Age" contemplates storage in oak containers, which are charred for American type whiskeys, except corn whiskey.

"Brandy" or "grape brandy" is the distillate from wine or wines. Apple or peach or cherry brandies are distillates from the juice or mash of

(Continued on page 52)

TABLE 17. ANALYSES OF ALCOHOLIC LIQUORS

No.	Brand, Distiller, Bottler or Distributor	Proof declared	Alcohol by vol. % found	Solids gm./100 cc	Color insoluble in amy. alc. %	Acidity as acetic acid gm./100 liters	Esters gm./100 liters	Tannin	Denaturants, metals	Age declared
P-299	<i>Whiskey</i> Black Crow. Berkshire Products Co., Hartford.	80	39.40	0.08	2.4	11.9	15.8	present	none	Not stated
P-292	<i>Rye Whiskey</i> Straight Course. King Cole Stores, Hartford.	90	44.44	0.09	1.6	21.4	16.7	present	none	1 yr. 6 mos.
P-294	<i>Ye Old Castle.</i> King Cole Stores, Hartford	80	39.80	0.06	2.0	15.5	15.0	present	none	1 yr. 6 mos.
P-301	<i>Oak Tavern.</i> General Distillers Corp., Hartford.	90	44.04	0.09	1.2	21.4	14.1	present	none	8 mos
P-296	<i>Bourbon Whiskey</i> Hilltop. Atlas Distillery Products, Hartford.	80	39.80	0.06	1.2	11.9	16.7	present	none	Not stated
P-302	<i>Pearl Harbor.</i> General Distilleries Corp., Hartford.	80	39.12	0.07	4.0	14.3	12.3	present	none	Not stated
P-304	<i>Five Anchors.</i> Atlas Distillery Products, Hartford.	80	38.92	0.11	4.0	17.9	7.9	present	none	6 mos.
P-307	<i>Broad Brook.</i> Atlas Distillery Products, Hartford.	90	44.44	0.12	2.0	23.8	13.2	present	none	9 mos.
P-308	<i>Chester Club.</i> Beaumart, Inc., Bridgeport	90	44.32	0.08	5.6	22.6	19.4	present	none	1 yr. 6 mos.
P-524	<i>Old Walker.</i> United Importers & Distributors, New Haven.	80	39.40	0.06	4.0	14.8	17.6	trace?	none	Not stated
P-523	<i>Prince Regent.</i> Beaumart, Inc., Bridgeport	90	44.24	0.08	3.6	20.8	26.4	present	none	1 yr. 6 mos.
P-522	<i>Old Colonial.</i> Beaumart, Inc., Bridgeport.	80	40.08	0.08	4.0	16.3	27.3	present	none	Not stated
P-295	<i>Straight Whiskey</i> Black Satin. General Distilleries Corp., Hartford.	90	44.44	0.13	1.2	33.3	20.2	present	none	1 yr. 6 mos.
P-306	<i>Pine Ridge.</i> Atlas Distillery Products, Hartford.	90	43.80	0.10	3.2	23.8	13.2	present	none	1 yr. 6 mos.
P-309	<i>Herald Square.</i> Beaumart, Inc., Bridgeport	90	44.20	0.07	2.4	19.0	17.6	present	none	1 yr. 6 mos.
P-310	<i>Monogram.</i> Beaumart, Inc., Bridgeport.	90	43.64	0.12	4.0	28.6	21.1	present	none	2 yrs.
P-311	<i>Col. Allister.</i> United Importers & Distributors, New Haven.	90	43.68	0.09	4.0	20.2	17.6	present	none	1 yr.
P-535	<i>Penn.</i> United Importers & Distributors, New Haven.	90	44.68	0.08	4.0	23.7	27.3	present	none	1 yr. 6 mos.
P-533	<i>Economy.</i> United Importers & Distributors, New Haven.	80	39.64	0.12	2.0	23.7	26.4	present	none	1 yr.
P-531	<i>Old Prescription.</i> Beaumart, Inc., Bridgeport.	90	44.16	0.11	2.0	26.7	24.7	present	none	1 yr. 9 mos.
P-519	<i>Kenbrook.</i> United Importers & Distributors, New Haven.	90	44.52	0.14	4.8	50.5	37.0	present	none	2 yrs.
P-300	<i>Crow's Nest.</i> (St. rye) General Distilleries Corp., Hartford.	90	44.00	0.16	3.2	59.5	42.2	present	none	2 yrs. 4 mos.
P-532	<i>Baltimore.</i> (St. rye) United Importers & Distributors, New Haven.	90	45.00	0.15	4.0	59.4	43.1	present	none	2 yrs. 6 mos.
P-305	<i>Goldenrod.</i> (St. bourbon) Atlas Distillery Products, Hartford.	90	43.56	0.13	2.8	35.7	20.2	present	none	2 yrs.
P-517	<i>Rose of Kentucky.</i> (St. bourbon). United Importers & Distributors, New Haven.	90	44.56	0.13	5.2	48.0	50.2	present	none	1 yr. 6 mos.
P-525	<i>Slade House.</i> (St. bourbon). United Importers & Distributors, New Haven.	90	44.56	0.14	3.2	65.3	51.9	present	none	3 yrs.
P-534	<i>Old Kentucky.</i> (St. bourbon). United Importers & Distributors, New Haven.	80	39.16	0.07	2.0	19.3	25.5	present	none	1 yr.
P-291	<i>Blended Whiskey</i> Five Knights. Beaumart, Inc., Bridgeport.	90	44.60	0.56	47.7	15.5	13.2	present	none	7% 7 yrs., 18% 1 yr. 3 mos., 75% neutr spts.
P-297	<i>Berkshires No. 9.</i> Berkshire Products Co., Hartford.	90	44.84	0.72	40.0	50.0	28.0	present	none	50% 18 mos., 50% neutr spts.

TABLE 17—Concluded

No.	Brand, Distiller, Bottler or Distributor	Proof declared	Alcohol by vol. % found	Solids gm./100 cc	Color insoluble in amy. alc. %	Acidity as acetic acid gm./100 liters	Esters gm./100 liters	Tannin	Denaturants, metals	Age declared
P-298	<i>Blended Whiskey—Continued</i> <i>Old Johnny Barleycorn</i> . Berkshire Products Co., Hartford.....	90	44.40	0.34	24.0	36.9	29.9	present	none	47% 2 yrs., 4% 8 yrs., 49% neutr. sps.
P-303	<i>Four Horsemen</i> . General Distilleries Corp., Hartford.....	85	41.80	0.18	60.0	9.5	7.0	trace	none	20% 18 mos., 80% neutr. sps.
P-336	<i>Silver Stream</i> . Royal Wine & Liquor Co., Bridgeport.....	86	42.72	1.17	68.0	22.6	5.3	trace	none	20% 18 mos., 80% neutr. sps.
P-337	<i>Royal Towers</i> . Royal Wine & Liquor Co., Bridgeport.....	90	43.12	1.04	50.0	23.8	11.4	trace	none	20% 2 yrs., 8% 13 yrs., 72% neutr. sps.
P-515	<i>Monogram</i> . United Importers & Distributors, New Haven.....	90	44.40	0.56	66.0	23.7	23.8	trace	none	5% 5 yrs. (label indistinct)
P-516	<i>Silver Dale</i> . United Importers & Distributors, New Haven.....	90	46.20	1.13	48.0	31.2	28.2	present	none	51% 6 yrs., 49% neutr. sps.
P-518	<i>Pinochle Club</i> . United Importers & Distributors, New Haven.....	90	44.24	0.51	56.0	32.7	24.7	present	none	8% 8 yrs., 25% 2 yrs., 67% neutr. sps.
P-521	<i>Old Colby "78"</i> . United Importers & Distributors, New Haven.....	90	45.44	0.67	48.0	23.7	26.4	present	none	10% 6 yrs., 41% 2 yrs., 49% neutr. sps.
P-334	<i>John Alden</i> . (Blend of st. rye). Esbeco Distilling Corp., Stamford.....	90	43.68	0.38	21.0	60.7	35.2	present	none	23 mos.
P-293	<i>Brandy</i> <i>Cognac type</i> . Beaumart, Inc., Bridgeport.	90	44.60	0.11	1.2	47.6	57.2	present	none	2 yrs.
P-335	<i>Old Fairfield Apple</i> . Connecticut Distillers, Inc., Westport.....	90	44.20	0.07	8.0	60.7	85.4	present	none	Not stated
P-529	<i>Perry's Apple</i> . Francis, Burr, Perry, et al., Fairfield.....	90	43.64	0.08	4.0	52.0	125.0	present	none	Not stated
P-530	<i>Chateau</i> . Cognac. United Importers and Distributors, New Haven.....	84	41.64	0.11	36.0	44.6	41.4	present	none	4 yrs.
P-290	<i>Rum</i> <i>Don Ricardo</i> . Beaumart, Inc., Bridgeport.	90	44.44	0.06	4.0	9.5	7.0	present	none	Not stated
P-526	<i>Gin</i> <i>King Louis</i> . St. Louis Liquor Shoppe, New Haven.....	90	44.16	0.004	.....	1.5	7.0	.....	none	.....
P-527	<i>Raleigh</i> . United Importers & Distributors, New Haven.....	80	39.92	0.006	.....	1.5	7.0	.....	none	.....
P-528	<i>Royal Cabinet</i> . United Importers & Distributors, New Haven.....	85	41.60	0.007	.....	1.5	11.4	.....	none	.....
P-520	<i>Grain Alcohol</i> <i>U.S.P.</i> United Importers & Distributors, New Haven.....	190	93.32	none	.....	1.5	22.9	.....	none	.....

the fruits indicated. "Cognac" or "cognac brandy" is brandy distilled in the Cognac region of France.

"Rum" is the alcoholic distillate from the fermented juice of sugar-cane products. It possesses the aroma, taste and other characters of rum, and prior to bottling may not be reduced to less than 80° proof.

"Gin" may be "distilled" or "compound". Distilled gin is obtained by distillation or redistillation of neutral spirits over or with juniper or other aromatics. Compound gin is a mixture of neutral spirits with distilled gin or gin essence.

MISCELLANEOUS DRUGS, ETC.

Forty-three samples of drugs and related materials were examined chiefly for the Dairy and Food Commissioner and local departments of health. Among them were the following:

9610. *Leaven's Laxative Remedy*. Sold by Geo. Leavens Co., Danielson, Conn. Sample was submitted by State Department of Health, Narcotics Division.

Qualitative analysis: Opium alkaloids, rhubarb, peppermint, alcohol, sodium carbonate, and sugar in quantity. Other medicaments, if present, not identified.

Quantitative analysis: Total solids 50.46 gm. per 100 cc; ash 0.09; sucrose 48.30; total sugars 48.37; alcohol, by volume, 1.15 percent.

A preparation of the same name and from the same source, S-579, was submitted by the Dairy and Food Commissioner.

Quantitative analysis: Sucrose 45.33 gm. per 100 cc; total sugars 45.53; alcohol, by volume, 1.54 percent; morphine gm. per 100 cc 0.0074.

Qualitatively the preparation was substantially the same as indicated above.

Assuming opium to contain 10 percent of morphine, there was approximately 0.34 grain of opium present per fluid ounce. It was labelled as containing 0.5 grain of opium per fluid ounce and 2 percent alcohol by volume.

The presence and amount of alcohol and opium were declared as required under Sec. 2437 of the State Food and Drug Statute. However, the remedy was labelled as a sure cure for a number of symptoms and disorders, among them "all derangements of the bowels", an improper and objectionable claim.

8263. *Seazone*. Submitted by Department of Health, Bridgeport. Product used for sterilizing pasteurization equipment. Sample contained 10.43 percent "active" chlorine. Sample appeared to be a preparation of chloramine T, and on the basis of 12.59 percent active chlorine in that article the sample contained 82.85 percent of chloramine T.

9082. *The Williams' Treatment*. Dr. D. A. Williams Co., East Hampton, Conn. The medicine is essentially a solution containing 25.19 gms. of potassium acetate and a little (0.28 gm.) potassium carbonate in 100 cc, flavored with oil of sassafras and probably colored with caramel.

The preparation is represented to be a treatment "for rheumatism, kidney and bladder disorders when caused by uric acid excess", and is a remedy of the mail order variety. There appear to be recognized actions and uses of potassium acetate in medicine, but the question of when and how to use a drug is as important as the choice of the drug itself. Patients suffering from serious disorders are ill-advised to attempt treatment of such by secret medicaments and under conditions that involve some degree of self-diagnosis. A discussion of this remedy appeared in the *Journal of the American Medical Association*, May 31, 1919.

S-567. *Kreml Hair Tonic*. R. B. Semler, Inc., New York. The preparation was examined as follows:

Solids 0.52 gm. per 100 cc.; ash none; petroleum ether extract 6.20; saponification No. of neutral ether extract 13; alcohol by volume 27.94 percent. Tests for salicylic acid, phenols, cantharidin, arsenic, heavy metals, boric acid, methanol, isopropyl alcohol, acetone and diethylphthalate were negative. Brucine present. Other medicaments or denaturants, if present, not detected.

The preparation appears to be a perfumed suspension of mineral oil in dilute alcohol denatured with brucine.

S-589. *Serutan*. Aid to elimination. Healthaid, Inc. of New Jersey, Jersey City.

Examination: ash 3.56 percent. Starch present in quantity. No phenolphthalein, emodin-bearing drugs, calomel, Rochelle salt or Epsom salt detected. Microscopically the material showed the structure of psyllium seed with seed coats partly or largely removed. Starchy material present, unidentified as to source.

The article appeared to consist of, or contain, psyllium with starchy material. No evidence of mineral laxatives or of other common cathartic drugs was found. (See also Conn. Exp. Sta. Bul. 415, p. 716).

Mineral Water. Chemical examinations of several samples of mineral waters were made for the Dairy and Food Commissioner. The brands were—

P-488 Min-Aqua Co., Inc., Caldwell, N. J.

P-495 Munkacsy's, Reliable Coffee Co., Bridgeport, Conn.

P-498 Knights' Mineral Water Co., Caldwell, N. J.

P-503, Caldwell Alkaline Mineral Water Co., Caldwell, N. J.

P-540 Maselli Mineral Water Co., Bloomfield, Conn.

The analyses are given in Table 18. The declared analysis is not correct for P-503. Total solids are only about one-half as much as claimed and some of the individual mineral constituents are correspondingly low. The iron content of P-498 is approximately as claimed but not high enough to warrant emphasis as an iron-containing or chalybeate water.

448. *White port wine*. A sample of wine suspected of causing illness was submitted by a local health officer. The sample contained 3.5 p.p.m. of lead, and 39 p.p.m. of cadmium. No arsenic was found and there was no evidence of alkaloidal poisons. There is not much information concerning the physiological effects of cadmium except that in general they resemble those of zinc. It is not clear that cadmium in the amount found would be significant as a probable cause of acute symptoms. An original bottle, P-617, of the same brand and from the same source was obtained and analysis showed no evidence of cadmium.

TABLE 18. ANALYSES OF MINERAL WATER

	P-488		P-495		P-498		P-503		P-540	
	Found	Declared	Found	Declared	Found	Declared	Found	Declared	Found	Declared
pH.....	7.20	p.p.m.	7.14	p.p.m.	7.11	p.p.m.	8.3	p.p.m.	7.65	p.p.m.
Total solids.....	1070	1800	1594	2968	2588	2968	494	968	1622	968
Non-volatile solids.....	942	1594		2588		432	784	432	1394	784
Alkalinity to methyl orange as CaCO ₃	85	71	71	61	61	56	97	97	92	82
Total hardness.....	558	975	975	1391	1391	1550	264	264	880	871
Chloride.....	14	28	28	57	57	60	3	3	48	15
Sulphate.....	603	1080	1080	1753	1753	1510	242	242	568	522
SiO ₂	21.3	2	19.3	26.8	26.8	0.5	16.8	22.3	15	22.3
Fe + Al.....	0.8	0.7	0.7	0.5	0.5		1.3	trace	2.8	trace
Ca.....	136	229	229	359	359		52	84	251	84
Mg.....	56	98	98	120	120		32	56	62	56
Na.....	65	131	131	237	237		42	10	111	10
K.....	2.2	3.0	3.0	3.4	3.4		1.5		5.5	
Li.....	0.06	0.06	0.06	0.13	0.13		0.09			
<i>Calculated Composition:</i>										
LiCl.....	0.4	0.3	0.4	0.8	0.8		0.5			
KCl.....	4.1	15	6.7	6.5	6.5		2.9		11	
NaCl.....	19	20	42	87	87		2.1		71	
Na ₂ SO ₄	179	180	353	627	627		127		258	
MgSO ₄	276	320	485	596	596		159		305	
CaSO ₄	371	420	643	1210	1210		41		205	
CaCO ₃	67	75	99	6.7	6.7		101		475	
SiO ₂	21	2	19	27	27		17		15	
Fe ₂ O ₃ + Al ₂ O ₃	1.2		1.0	0.7	0.7		1.3		4.0	

MISCELLANEOUS

COLLABORATIVE WORK

A very considerable amount of analytical work for other State and Station departments is done in this laboratory each year. For the current year (1938) work of this sort that is not referred to elsewhere in this bulletin, or in other bulletins of this department, is summarized in the subjoined tabulation. Some of it does not belong in the category of food and drug examination, and hence is not strictly pertinent to the subject matter of this report, but it is included in the summary as a matter of record.

Agency	No. of samples
State Purchasing Department (foods).....	9
State Department of Health (narcotics).....	16
Northeastern Forest Experiment Station (water).....	2
Connecticut State College (nutrition studies).....	18
Station Departments:	
Botany.....	31
Entomology (exclusive of spray residue studies cited elsewhere in this report).....	6
Forestry (zinc solutions used in treatment of wood).....	97
Soils (lysimeter samples, tobacco investigations).....	53
Tobacco Substation (tobacco investigation).....	18
Total.....	250

BABCOCK GLASSWARE, ETC.

Babcock glassware, and thermometers for checking pasteurization temperatures, have been tested as follows:

Babcock glassware, pieces.....	1,918
Thermometers.....	118
Total.....	2,036

I N D E X

Alcohol, rubbing	25-27	Magnesium citrate	34, 35, 36
Alcoholic liquors	47	Maple syrup	13
Argyrol, 10%	28, 29	Meat products, etc.	14-18
Babcock glassware	55	Merit Zesto	24
Beverages, etc.	5-10	Milk and milk products:	
Brandy—see alcoholic liquors		vitamin D milk	19
Bread:		plain milk	19
Nutty Brown Bread	10	cream	19
cottonseed flour	10	Mineral oil	37-40
Bruce's Orange Juice Conc. (see beverages)		Mineral water	53, 54
Coffee	11	Miscellaneous drugs	52
Collaborative work	55	Miscellaneous foods	24
Crab meat	24	Nitrous ether, spirit of	42, 43, 44
Eggs	12	Pickles, sweet	20
Epsom Salt	30	Rum—see alcoholic liquors	
Fats and oils:		Savita	24
butter	12, 13	Seazone	52
olive oil	12, 13	Sodium bicarbonate	41
Flavoring extracts	12	Spray residue	20
Glycerin	32, 33	Stur-Dee Vegetable Paste	24
Grain alcohol (see alcoholic liquors)		Serutan	53
Honey	13	Tomato products:	
Kreml Hair Tonic	53	tomato puree	20
Lactose and dextrose in frankfurts, determination of	14, 15	tomato juice	21
Leaven's Laxative Remedy	52	Turpentine	42
		Vegetable Compound	24
		Vinegar, distilled	21-23
		V-C-B—see beverages	
		Whiskey, etc.—see alcoholic liquors	
		Williams' Treatment, The	52, 53
		Witch hazel	42, 45, 46
		Ye Olde Windsor Mustard	24