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THE FORTY-SIXTH REPORT ON

FOOD PRODUCTS

AND THE THIRTY-FOURTH REPORT ON

DRUG PRODUCTS

1941

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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					
Baking powder	428	....	9	9	1
Beverages	428	18	13	31	1
Canned crab meat	429	1	142	143	0
Cereal products, etc.	430	4	5	9	0
Condiments, relishes, etc.	430	7	18	25	6
Dairy products:					
Milk and cream	431	455	0	455	....
Vitamin D milk	431	....	92	92	16
Homogenized milk	433	....	4	4	0
Lead content of market milk	434	....	41	41	....
Eggs	435	....	1	1	....
Fats and oils:					
Olive oil	435	34	124	158	80
Butter	435	1	4	5	0
Cooking fat	435	....	3	3	....
Flavoring extracts	435	2	6	8	5
Flour sacks (for filth)	436	....	10	10	10
Meat and meat products:					
Italian sausage	436	1	4	5	3
Frankfurts	436	....	1	1	....
Hamburg steak	436	....	7	7	4
Bologna	436	....	1	1	....
Rose hips	436	2	....	2	....
Spray residue	437	2	74	76	0
Syrups, etc.	437	8	4	12	2
Tomato products	437	....	17	17	....
Miscellaneous	438	60	....	60	....
Fortification of foods	438	....	....	....	....
Sugar and its substitutes	439	....	....	....	....
Total		595	580	1175	128
DRUGS AND COSMETICS					
Ammonia, aromatic spirit of	442	....	22	22	3
Aspirin tablets	442	....	20	20	0
Benzoin compound, tincture of	442	....	19	19	0
Camphorated oil	442	....	23	23	1
Citrate of magnesia, solution of	442	....	24	24	1
Hydrochloric acid, dilute	443	....	104	104	33
Hydriodic acid, syrup of	444	....	12	12	2
Iodine, tincture of	444	....	19	19	0
Magnesia, milk of	445	....	18	18	1
Magnesia tablets	445	....	13	13	1
Rhubarb and soda mixture	445	....	52	52	2
Peppermint, essence of	446	....	18	18	0
Sodium bromide, elixir of	447	....	12	12	0
Phenol, glycerite of	447	....	8	8	3
Phenol in glycerin, solution of	447	....	25	25	2

Material	Page	Sampled by or submitted to: The Station	Sampled by or submitted to: The Dairy and Food Commissioner	Total	Adulterated, below standard or questionable
DRUGS AND COSMETICS (Continued)					
Phenobarbital, elixir of	447	....	19	19	1
Mineral oil	447	....	13	13	1
Sweet oil	448	....	10	10	0
Miscellaneous	448	7	1	8	1
Cosmetics	448	....	9	9	1
Warning statements for drugs	450	....	....	....	....
Total		7	441	448	53
Collaborative work		396	....	396	....
Total for all samples		998	1021	2019	181
Babcock glassware, etc.		3593	....	3593	72
Index		....	....	....	....

The Forty-Sixth Report on Food Products and the Thirty-Fourth Report on Drugs

1941

E. M. Bailey

Under the Food, Drug and Cosmetic law of this State the Dairy and Food Commissioner is responsible for the enforcement of the act and largely for its administration. The Commissioner and the Director of this Station are jointly responsible for regulations. The scientific and technical service that the Commissioner may require is furnished by this Station and by the State Department of Health. In practice this Station is called upon for chemical and biochemical examinations and the State Department of Health chiefly for bacteriological work.

This report summarizes examinations of official samples of foods, drugs and cosmetics submitted by the Commissioner, and other work of related interest for the calendar year 1941. It also summarizes collaborative work done for other State and Station departments.

A large volume of inspectional work is done by the Commissioner's staff. Reports of this and of corrective actions taken as a result of laboratory examinations of official samples are not given here since they are taken up in a separate document prepared by the Commissioner.

In the past year 2,019 samples of food, drugs and miscellaneous materials have been examined; and 3,593 pieces of Babcock glassware and thermometers used in pasteurization plants have been checked for certification.

In all of this work the efficient cooperation of the department staff is gratefully acknowledged.

FOODS

BAKING POWDERS

Bicarbonate of soda mixed with some acid-reacting ingredient, with or without starch or flour, is the combination upon which commercial baking powders depend for their leavening properties. The acid-reacting ingredients are tartaric acid or its salts, acid salts of phosphoric acid, compounds of aluminum, or any combination of these substances in suitable proportions.

Baking powder should yield not less than 12 percent of available carbon dioxide.

Nine official samples were examined. Analyses are given in Table 1. Only one sample was deficient; it was probably old stock.

TABLE 1. ANALYSES OF BAKING POWDER

D. C. no.	Dealer and brand	Available CO_2 %
S-216	Atwood Market, Hartford (Hulman & Co.)	12.79
S-218	Columbia Market, Torrington (Mohawk Baking Powder Co.)	13.36
S-236	Di Berardino, Rocky Hill (Stickney & Poor)	7.91
S-206	First National Stores, Newington (R. B. Davis)	13.93
S-207	First National Stores, Newington (Rumford)	14.52
S-208	First National Stores, Newington (General Foods)	13.70
S-209	First National Stores, Newington (Standard Brands)	13.18
S-227	Maple Market, E. Hartford (R. C. Williams & Co., Inc.)	11.69
S-232	Montemurras Market, Meriden (Rumford)	14.15

BEVERAGES

Non-alcoholic

Seven official samples of commercial orange juice were examined for ascorbic acid content. The amount found ranged from 0.41 to 0.67 mgm. per cc., and the average was 0.53. Three of the samples contained added sugar; the others were unsweetened.

Two official samples of orangeade contained respectively 16 and 17 percent of juice, estimated from the ash content.

Two official samples of lemon beverages were suspected of containing harmful ingredients, but none was detected.

Two official samples of ginger ale were examined. One contained an unidentified fungus growth; the other a trace of sediment, but no fungus growth was detected.

Eight samples were examined for the State Park Commission and others.

Alcoholic

Nine samples of home-made wine were examined for causes of alleged illness or to explain off-taste. No evidence of metallic contamination in significant amounts was found. The off-taste was probably due to some abnormal fermentations.

One sample of whiskey was examined but no foreign substance could be found to explain the cause of alleged illness.

CANNED FISH

R. T. MERWIN

Minute crystals of struvite are frequently observed in canned sea food. To the consumer they suggest ground glass, and they cause suspicion and alarm, particularly in times of stress like the present. Their occurrence was noted during the first world war and alarm about them became more general with our entry into the present one. If examined closely with the aid of a magnifying glass or a microscope the crystals are seen to have a definite crystalline structure, whereas ground glass has irregular surfaces and sharp edges. Struvite crystals are soluble in dilute acids, especially hydrochloric acid of about 0.1 percent, which is the acid concentration of normal gastric juice.

Tellers and Packs[1] have reported the occurrence of magnesium ammonium phosphate (struvite) in the flesh of Japanese and Pacific coast crabs. That it is more commonly observed in canned sea foods is perhaps due to the effects of heat processing and subsequent cooling which may facilitate the formation of crystals and enhance their size. Manley[2] has suggested that they are formed by the chilling of the juices (of canned salmon) in cold storage.

It may be remarked in passing that toxicologists[3] point out that ground or powdered glass is not so deadly as commonly supposed. It is, of course, potentially dangerous because it may cause irritation or abrasions of the digestive tract. Infection may then develop and, depending on the size of glass particles, perforation of the walls of the stomach or intestine may occur.

One hundred and forty-two samples of canned crab meat, tuna and smoked salmon were submitted by the Dairy and Food Commissioner. Practically all of these represented Japanese packing.

In testing the meat, all or a part of the can contents was transferred to a beaker. Water was added and the meat agitated to remove adhering crystals. The meat was then removed, the water decanted and the residue of crystals in the beaker examined. Microscopic examination distinguishes struvite crystals from glass; and they will dissolve in dilute hydrochloric acid, whereas glass particles will not. The presence of ammonia, magnesium and phosphate can also be demonstrated by chemical tests. The latter tests were not

[1]Cited by Winton, "Structure and Composition of Foods."
[2]Manley, note Analyst **56**:808, 1931.
[3]Peterson, Haines and Webster, "Legal Medicine and Toxicology."

made in all cases in routine examination because the chief purpose was to detect glass, if present, rather than to identify struvite.

None of the samples contained ground glass.

All of the 135 samples of crab meat contained crystals, small and scattered in some cases, but numerous and conspicuous in many samples. Of the four samples of canned tuna, crystals of struvite were found in only one. No struvite was found in either sample of smoked salmon, but salt crystals were observed in both.

One sample of canned shrimp submitted by a health officer on suspicion of a consumer was found to contain crystals of struvite.

CEREAL PRODUCTS, ETC.

Three official samples of vegetable-noodle soup mixture were examined for fill of container, but none was regarded as slack-filled.

Two official samples, spaghetti and vegetable-noodle soup, were examined for insects but no evidence of infestation was found.

A sample of rye bread was submitted by the Department of Health of New Haven for explanation of red areas in the loaf. Accidental contamination with red coloring matter used for cake icing was no doubt the cause.

Two samples, oatmeal and cookies, were examined for harmful materials with negative results.

A sample of stone-ground whole wheat flour from Winchell Smith Flour Mill, Farmington, Conn., was analyzed as follows:

Moisture 9.94 percent; ash 1.78 percent; protein (N. x 5.7) 15.85 percent; fiber 2.30 percent; carbohydrate other than fiber 68.08 percent; fat (ether extract), 2.05 percent.

CONDIMENTS, RELISHES, ETC.

Fourteen official samples of sweet pickles were tested for saccharin and benzoic acid. No saccharin was found. The presence of benzoate of soda was declared in two samples and was found in one of them. In the other it was not detected; the amount declared was one-hundredth percent.

All excepting three samples bore a statement of ingredients, which the present law requires for all foods, excepting those for which definitions and standards of identity have been prescribed.

Benzoate of soda is sometimes added as a preservative, which is permissible if declared; saccharin, a non-nutritive artificial sweetener and substitute for sugar, is not allowable in foods for ordinary use, whether declared or not.

An official sample of vinegar was passed as to purity; but it was unlabelled. Goods in package form are required to bear a label. This does not apply to bulk goods which are not ordinarily sold in package form and which are wrapped or packaged for the convenience of the customer, or at his direction, at the time and place of sale.

An official sample of horse radish was examined for net weight of contents and found to be short-weight.

Two samples, 688 and E. S. 652, of Mos-Ness French Sauce, Mosness Food Products, Boston, were examined. The product contained 21.55 percent of fat and 16 percent of sugar. The declared ingredients were oil (kind not stated), vinegar, sugar, flavoring, salt and spices, with the additional declaration "non-fattening." The oil was not identified, but it was not a mineral oil. Tests for cottonseed, sesame and peanut oils were negative. From its refraction it was thought to be corn oil. However, the common name of the oil should have been stated on the package. Moreover, the description "non-fattening" is not consistent with a composition of 25 percent digestible oil and 16 percent of sugar yielding 289 calories per 100 grams.

Seven unofficial samples of vinegar were tested.

DAIRY PRODUCTS

Milk and Cream

O. L. Nolan

Four hundred and forty-five samples of milk and ten samples of cream were tested for producers. The milk samples were largely from individual cows and the tests were for purposes of checking production or for herd improvement.

Vitamin D Milk

R. B. Hubbell and E. M. Bailey

The fortification of milk with vitamin D is accomplished in several ways. Concentrates of this vitamin prepared from cod liver oil may be added directly to milk. Examples of such concentrates are "Vitex," prepared by the Zucker process, and "Clo-Dee," made by the Barthen process.

Milk may be irradiated by means of apparatus especially designed for the purpose, this process being under the control of the Wisconsin Alumni Research Foundation. Producers using this process are licensed to do so by the Foundation.

Fortification may be accomplished also by the addition to milk of activated ergosterol. This concentrate is an irradiated plant sterol. Standard Brands, Inc., is licensed by the above-mentioned Foundation in its production for food uses.

Another concentrate used for this purpose is viosterol A. R. P. I. process, which is ergosterol activated by a process controlled by E. I.

TABLE 2. SUMMARY OF ASSAYS OF VITAMIN D MILK

City or town	Dairy	No. of samples tested	Satisfactory	Passed	Below guaranty
Avon	Woodford Farm	1	1	..	..
Bridgeport	Beechmont	2	2	..	..
	Dewhurst	2	2	..	..
	Joshua Kent	2	1	..	1
	F. A. Marsh & Son	2	2	..	..
	Mitchell	2	2	..	..
	Mutual Farm	2	2	..	..
Bristol	E. H. Elton	1	1	..	..
Clinton	Burr	2	2	..	..
Danbury	Rider	2	1	1	..
Derby	Osborndale Farm	2	1	..	1
Fairfield	Wade's	2	1	..	1
Greenwich	Round Hill Farms	2	2	..	..
Hartford	Bryant and Chapman	2	2	..	..
	Cloverdale	1	1	..	..
	Farmers Co-op., Inc.	4	1	2	1
	Highland	1	1	..	..
	Lincoln	1	1	..	..
	R. G. Miller & Sons	1	..	1	..
E. Hartford	J. A. Bergren & Son	2	1	..	1
W. Hartford	A. C. Peterson	1	1	..	..
Kensington	Ferndale	1	..	1	..
Litchfield	Toll Gate Farms	2	1	..	1
Manchester	Dart's	1	..	..	1
	North Elm	1	1	..	..
	West Side	1	1	..	..
Milford	Cold Spring	2	2	..	..
New Britain	United Milk Co.	2	2	..	..
New Haven	Brock-Hall	2	1	1	..
	New Haven	2	1	..	1
	Sagal-Lou	2	2	..	..
	Story	1	1	..	..
North Haven	Knudsen Bros.	3	2	..	1
West Haven	West Haven	2	1	..	1
No. Newington	Spring Brook Farm	1	1	..	..
New London	Radway's	2	2	..	..
New Milford	Sunny Valley Farms	1	..	1	..
Norwalk	Borden	1	1	..	..
	Strawberry Hill	1	1	..	..
Norwich	Browning's	2	2	..	..
Oakville	Overlook Farms, Inc.	1	1	..	..
Plainsboro, N. J.	Walker-Gordon	1	1	..	..
Putnam	Deary Bros.	1	1	..	..
Springdale	Clear View	3	..	3	..
	Maplehurst	2	1	..	1
Stamford	Maplehurst	1	1	..	..
	Sheffield Farms Co.	1	1	..	..
Stratford	Deering	2	1	..	1
Thompsonville	Allen Bros.	1	1	..	..
	Skipton's	1	..	1	..
Torrington	Torrington Creamery	1	1	..	..
Waterbury	Borgeson Bros.	3	..	2	1
	Brock-Hall	1	1	..	..
	Brookside	3	1	..	2
	R. F. Worden	2	1	..	1
Watertown	Overlook Farms	1	..	1	..
		92	62	14	16

DuPont de Nemours and Co. This article is made by American Research Products, Inc., a subsidiary of General Mills, Inc.

Vitamin D may be imparted to milk by feeding cows irradiated yeast mixed in suitable proportions in their feed. Milk so fortified is often called "metabolized" vitamin D milk. Its production is under the joint control of General Mills and the Wisconsin Alumni Research Foundation.

Vitamin D milk produced by irradiation usually contains 135 U. S. P. units of vitamin D per quart, but irradiators capable of producing 400 units per quart are in use. Metabolized vitamin D milk should contain not less than 400 units per quart.

Vitamin D milk containing 135 U. S. P. units of vitamin D per quart will usually prevent clinical rickets when fed in customary quantities to normal infants. Milk containing 400 units is regarded as providing a margin of safety above the usual needs.

During the year, 92 samples of vitamin D milk taken by inspectors of the Dairy and Food Commission from the market supply in various cities and towns of the State have been examined. Eighty-three percent of them fully met the unitages of vitamin D claimed or were sufficiently close to the claimed unitages to be passed. Seventeen percent were definitely below their guaranties. This record is not so satisfactory as in prvious years. For the five-year period, 1935-39 inclusive, 90 percent of all samples passed the test, or were rated as satisfactory. Last year 92 percent were so rated. Results of the assays are reported to the Dairy and Food Commissioner in all cases and corrective measures are taken by that office where necessary.

A summary of the inspection is given in Table 2. The method of assay is the biological test adopted by the Association of Official Agricultural Chemists and by the American Public Health Association.

Homogenized Milk

O. L. NOLAN

Homogenized milk is milk that has been altered by mechanical means so that the fat globules are dispersed into smaller particles and a uniform emulsion maintained for a longer time than usual. Homogenized milk is required to show not more than 10 percent variation in fat content between the top 100 cc. in a quart (top 50 cc. in a pint) and the remainder of the milk after 48 hours.

Several market samples of homogenized milk showed variation of from 2 to 10 percent when so tested.

	Fat in Top milk	Fat in Bottom milk	Variation %
A.....	4.9	4.4	10
B.....	4.3	3.9	9
C.....	4.5	4.4	2
D.....	4.2	3.9	7

Lead Content of Milk

C. E. Shepard, W. T. Mathis and E. M. Bailey

An inquiry involving the lead content of market milk was referred to this laboratory by the Dairy and Food Commission. Information of a quantitative nature is scanty, so far as our search of the literature revealed, although a good deal of attention has been given to the choice of metals for machinery and utensils used in plants handling and distributing milk. Apparently normal milk, as drawn from the cow's udder, may contain trace amounts of lead. The magnitudes are of the order of a few hundredths of a part per million. Forty-one samples of milk, as distributed to the retail trade in this State, were examined and the lead found ranged from none to 0.4 p. p. m. Amounts less than 0.1 p. p. m. were not determined so that any samples containing less than that amount were rated as containing no lead. The average for the 41 samples was 0.14 p. p. m. These values are of about the same order as have been reported by others[1] and are hardly to be regarded as cause for alarm.

As to the pick-up of lead observed, one source, and probably the chief one, may be the retinned milk can. When the tin surface of milk cans becomes worn it is customary to have the cans retinned. It has been estimated that over half of the cans in current use here are retinned, but this is not an official estimate. Several of such retinned cans were examined and the surface tin found to contain 3 to 8 percent of lead, as contrasted with a new can which contained no lead, so far as the usual macro-analytical methods revealed. Milk placed in cans showing 7 to 8 percent of lead and held under refrigeration with agitation at intervals, showed a negligible pick-up of lead from the new can, only 0.1 p. p. m. after 144 hours. Milk in the retinned cans picked up from 0.7 p. p. m. in 24 hours to 1.3 p. p. m. in 144 hours. About 1.0 p. p. m. was picked up while the acidity of the milk remained within normal limits.

The solder used in both types of cans was the usual lead-tin variety. There was a minimum of solder exposed in the new can, but considerably more in the retinned cans. (These tests were made late in 1940 and early in 1941, before the tin shortage became acute).

There is no objection to the practice of retinning; it is a measure of economy at any time. But the meticulous care exercised by producers and distributors of milk to safeguard it against all possible metallic and other contaminations suggests that specifications for retinning jobs stipulate the use of as good a quality and grade of tin as may be had for the manufacture of new cans. With such a simple and practicable precaution it would appear that such small amounts of lead in market milk as are here indicated would be practically eliminated.

[1]Release by the Food and Drug Administration December 14, 1935. Also unpublished information from private sources.

EGGS

One official sample of eggs was examined. No evidence of oil-treatment of the shells was found. They did not meet the specifications for "fresh" eggs but they were edible.

FATS AND OILS

Olive Oil, Etc.

With importations of European olive oil cut off it was to be expected that stocks of imported olive oil on hand, as well as the domestic supply, would be largely adulterated; and that other domestic vegetable oils, artificially colored and flavored to imitate olive oil, would be marketed as olive oil. Containers in many cases bear the familiar descriptions and designs of those in which the genuine article is packed, but the contents is likely to be cottonseed or other domestic oil, more or less skillfully flavored and colored in semblance of olive oil. A sample of vegetable green color, D-165, suspected of being used for the purpose consisted of, or contained, chlorophyll in a vehicle of vegetable oil; and a sample of flavor, aroma concentrate D-166, was found to contain an ester, probably butyl butyrate, with chlorophyll coloring matter in a vegetable oil base.

Two-thirds of the samples examined were adulterated, or misbranded, or both.

A summary of the results is as follows:

	No. of samples	Adulterated and misbranded	Misbranded	Passed
Labelled or sold as olive oil.....	104	64	4	36
Labelled or sold as other than olive oil	18	1	11	6
Totals	122	65	15	42

Thirty-four samples were examined for health officers and others.

Butter

Four official samples and one unofficial sample of butter were tested and all appeared to be genuine.

Cooking Fat

Three samples of cooking fat used for deep frying were examined. One of the samples was suspected of containing some foreign material and the others were for comparison. No foreign matter was definitely detected but there was some indication of mineral oil, perhaps from accidental contamination with lubricants.

FLAVORING EXTRACTS

Six official samples of vanilla extract or vanilla flavor were examined. One was passed; five were found to be adulterated and mis-

branded. One of the latter group violated the deceptive package provision of the law.

Two unofficial samples were examined.

FOOD CONTAMINATED BY FILTH

Under the present food law food is adulterated if it is "held under unsanitary conditions whereby it may have become contaminated with filth." Food stored in rat-infested premises may become hazardous to health. Ten samples of flour bags were submitted for laboratory examination to support inspection evidence. Stained areas of the bags examined under ultra violet light and chemical tests for urea (urease test and formation of urea oxalate crystals) demonstrated contamination. The flour adhering to the bags in the stained areas also gave positive tests.

MEAT AND MEAT PRODUCTS, ETC.

Fourteen samples of meat products were examined.

Four official samples of Italian sausage were examined for sulphite; it was present in three of them. Salts of sulphurous acid are not permissible preservatives for meat products and their use for such purpose is illegal.

One unofficial sample was tested for sulphite with negative results.

A sample of frankfurt sausage was tested for milk powder. The sample contained 0.3 percent of dextrose but no lactose was present, indicating absence of milk powder.

Seven samples of chopped meat (hamburg) were tested for sulphite; it was found in four of them. These samples were submitted by city health departments.

A sample of bologna was tested for artificial coloring with negative results.

ROSE HIPS

Two samples of rose hips were assayed for ascorbic acid (vitamin C) last year (Bul. **447**:468) and values of .04 and 0.22 milligram per gram were found. The procedure of Bessey and King (J. Biol. Chem. **103**:687. 1933) was employed. Similar assays were later reported by Andross (Analyst **66**:358. 1941) who found 4 to 6 milligrams per gram by the Mack and Tressler modification of the above named procedure (J. Biol. Chem. **118**:735. 1937) for the English varieties examined. By this procedure we found considerably higher values for the same varieties as those examined last year: for Rosa multiflora japonica 0.17 milligram per gram (instead of 0.04), and for Rosa rugosa 1.4 to 6.0 milligrams per gram (instead of 0.22). In England due to war conditions various food preparations made from rose hips are used as sources of vitamin C.

SPRAY RESIDUE

C. E. Shepard

Seventy-four official samples of apples were tested for spray residue during the 1941 harvest season. Only lead was determined. The tolerance of .05 grain per pound, announced by the U. S. Public Health Service in 1940 and adopted by the Food and Drug Administration, was used.

None of the samples exceeded the present official tolerance of .05 grain per pound. The highest lead content found was .039 grain per pound.

Twelve samples exceeded the tolerance of .025 grain per pound which was in effect for several years prior to 1940.

Of about 1000 samples tested in the 10-year period 1931-40, 96 percent met the stricter tolerance of .025 grain per pound. In 1941 only 85 percent of the samples tested met that limit.

A sample of white grapes and a sample of celery were tested for arsenical spray residue. No arsenic was found in either.

SYRUPS, ETC.

Two official samples of syrups were examined. One was sold as pure maple syrup and was not found adulterated. The other, sold as Vermont Brand Waffle Syrup, was misbranded.

An official sample of honey was not found adulterated or misbranded.

An official sample of molasses, for stock feeding, guaranteed to contain not less than 55 percent sugars, was found to contain 56.5 percent total sugars.

Eight miscellaneous samples of honey, maple syrup and a sample of sugar were examined for health officers and others. Complaint was made that the sugar had a peculiar taste; it contained 0.65 percent of common salt.

TOMATO PRODUCTS

Fifteen official samples of canned tomatoes were examined for weight of drained meats and for visible evidence of decayed tomatoes or maggot infestation. The products were packed in Guilford, Orange and Windsor.

No evidence of maggots or of decayed meats was found. The data on drained meats is summarized as follows:

	No. of samples	Drained meats, percent of total contents Max.	Min.	Av.
Guilford	6	70.6	53.8	63.7
Orange	4	47.1	36.4	41.3
Windsor	5	60.0	40.2	52.4

Two samples of puree from the Guilford plant showed mold counts of 31 and 51 percent. Over 40 percent is regarded as excessive, but the number of samples taken was too few to base judgment upon.

MISCELLANEOUS

Sixty samples of food products and other materials were examined for health officers and others. Included were many samples suspected of causing illness.

FORTIFICATION OF FOODS WITH VITAMINS AND MINERALS

The Council on Foods and Nutrition of the American Medical Association was established over ten years ago for the purpose of evaluating health and nutritional claims in food advertising and of correcting, so far as possible, abuses in that aspect of advertising practice, through constructive criticism and helpful advice. Without legal authority the Council accomplished corrective results through cooperative effort with food manufacturers and advertising agencies. Now, with new federal and state legislation relating to foods and the advertising of them, extravagant and unwarranted claims are largely restrained by statutes. But the Council continues to render a valuable service to the medical profession, to governmental agencies and to the public as a source of authoritative opinion on nutritional problems.

One of these problems of timely interest is the fortification of foods with vitamins and minerals. The Council's views on this topic are summarized in a brief statement which we quote from the Journal of the American Medical Association of April 25, 1942.

> "The principal problems confronting the Council during the year covered by this report again have centered about the question of the fortification of foods with vitamins and minerals, and the council has approved the enrichment of flour and of bread along the lines suggested by the National Research Council and developed by the Food and Drug Administration at public hearings. The Council has aided in the production of advertising material that promotes the use of enriched flour and bread in a truthful manner.
>
> "At the present time the Council believes that it is inexpedient and undesirable to add thiamine or other members of the vitamin B complex to sugar, syrups, candy, carbonated beverages and other products containing appreciable quantities of sugar. On the other hand, the Council favors the addition of vitamin A to oleomargarine and commends the Bureau of Animal Industry for removing its long-time opposition to the presence of vitamins in establishments which prepare oleomargarine from fats of animal origin under federal inspection. In view of the action of the Food and Drug Administration to standardize vitamin A fortified oleomargarine at a level of 9,000 U. S. P. units of vitamin A to the pound, the Council raised its own standard of 7,500 U. S. P. units to this level as well. This amount is considered to be about the average vitamin A value for butter, but summer butter may contain more than 20,000 U. S. P. units of vitamin A to the pound.
>
> "The Council on Foods and Nutrition does not accept any general purpose foods other than milk when they are fortified with vitamin D. Evidence regarding the value of vitamin D fortified cereals is accumulating, however, and the Council is continuing to study this evidence. At the present time it appears that vitamin D is of value only in association with calcium and phosphorus. All evidence shows that the securing of a proper amount of calcium in the diet is fully as important as the vitamin D intake, and the Council has not given favorable consideration to the fortification of milk with more than the present accepted maximum quantity of vitamin D, which is 400 U. S. P. units to the quart. Milk fortified with 600 U. S. P. units of vitamin D to the quart has been marketed, but the Council voted not to accept this product.
>
> "The question of mixed vitamin therapy was considered, and it was recommended to the Council on Pharmacy and Chemistry that favorable consideration be given to those polyvitamin preparations which are otherwise acceptable and which provide in the daily dose the various vitamins in quantities that are related in some uniform simple manner to the daily requirements of each. A general report on the subject has been prepared in cooperation with the Council on Pharmacy and Chemistry.
>
> "In cooperation with the Council on Industrial Health, consideration has been given to the question of indiscriminate vitamin administration to industrial workers. The Council on Foods and Nutrition disapproves this practice, although the value of vitamin therapy under the direction of a physician is recognized."

SUGAR AND ITS SUBSTITUTES

H. J. Fisher[1]

The sugar shortage makes this subject of particular interest at this time. United States consumption of sugar is about three times its production. Due to the war situation sugar is no longer obtainable from many of the major sugar producing areas of the world.

Our chief shortage results from the fact that we will get no sugar from the Philippines and probably not all of the normal Hawaiian supply; about a million tons formerly obtained from these sources will no longer be available. With this reduced supply we must feed about fifty million more people through Lend-Lease. In addition, the increased wartime demand for alcohol must be met in part by turning sugar (mostly in the form of molasses) into alcohol. Large amounts of alcohol are needed in the production of smokeless powder and of butadiene for making synthetic rubber. So the rubber shortage plays a part in producing a sugar shortage.

This shortage cannot be made up in any large part by the increasing use of sugar substitutes, as most of these substitutes already are being used to the extent of their availability. It might appear that production of corn sugar could be expanded, as there is plenty of corn. But all the plants now making corn products are already working at capacity, and additional plants would require both time and scarce construction materials. There is a possibility of increased sugar cane production in the United States, Cuba and Puerto Rico, and such production is now being encouraged. Prior to this year the

[1]Abstract of a paper presented at a meeting of the Connecticut Association of Dairy and Milk Inspectors, May 12, 1942. Credit should be given for some of the data in this article to the "New Hampshire Health News" for April, 1942, and to an article by R. S. and G. W. McBride in "Food Industries" for March, 1942.

amount of cane and beet sugar produced in the United States and the amount that could be imported were rigidly controlled by sugar quotas designed to stabilize the domestic market.

Before discussing the sugars proper the non-nutritive sweeteners, such as saccharin and dulcin, should be mentioned briefly. These are synthetic organic compounds which are several hundred times as sweet as sugar, but which have no nutritional value whatever. Their use in foodstuffs is not allowed by either the federal or state governments except in products for special dietary uses by people such as diabetics whose sugar intake must be restricted. In addition, the Attorney General has recently ruled that, due to the wording of the Connecticut carbonated beverage and ice cream laws, saccharin may not be used in beverages under any conditions and only in ice cream when such ice cream is labelled "Imitation Ice Cream."

The word "sugar" in the general sense applies to a group of related compounds occurring in nature which have a sweet taste. Only three of these are of importance in our present discussion, namely, sucrose, dextrose and levulose. Sucrose is the predominating sugar in practically all vegetable products, so much so that when we refer to "sugar" without qualification we mean sucrose. Plants differ in the amount of sugar they contain; only two are used on any large commercial scale in the production of refined sugar. These are the sugar cane and the sugar beet. In nature sugar does not occur in the crystalline form but is dissolved in the juices of the plant. As these juices are heated and the water is driven off a point is reached at which there is no longer sufficient water left to hold the sugar in solution. The result is that when the partially evaporated juice is cooled the sugar separates out in solid form and can be filtered off from the residual syrup. In principle this is all that sugar refining amounts to. Sugar separated from the syrupy juice by a single filtration such as described would not be wholly pure because the crystals would retain some of the syrup mechanically; it would be raw sugar such as we meet in some grades of brown sugar. Further crystallization in the same manner leads to the pure white, refined sugar.

The same process applied to other plant juices yields the same product. If maple sugar were refined to the same point as cane or beet sugar it would be indistinguishable from and completely identical with refined cane or beet sugar.

The syrup from which the sucrose has separated contains some sucrose still in solution plus practically all of the other sugars which occur in the plant juice, besides non-sugar impurities. In the case of cane and beet juices this product is known as "molasses." It occurs in various grades, some of which are edible. It is the impurities rather than the sugar that give molasses its distinctive flavor.

In treating plant juices, instead of evaporating to the point at which sugar can be crystallized out and removed, the evaporation may be stopped at a point at which all the sugar still remains in solution

as a syrup, or it may be continued to complete dryness. The first step results in such products as sugar cane, maple and sorghum syrups. Each of these, due to the impurities present, has its own distinctive flavor, but the sweetness of each is due primarily to the same sugar, sucrose. If the juice is completely evaporated, a solid product is obtained containing all of the sucrose plus all of the impurities. Maple sugar and some brown sugars are in this class.

In the presence of acids or of certain enzymes sucrose is broken down into an equal mixture of two simpler sugars, dextrose and levulose. Of these two sugars, levulose is considerably sweeter than sucrose, and dextrose somewhat less so. The result is that the product of the acid treatment of sugar syrup, which is known as "invert sugar syrup," is sweeter than the original sugar syrup. Fairly large amounts of this invert sugar syrup are used commercially as sweetening agents. Honey is a natural invert sugar syrup in which the "inversion" of the sugar present in flower nectar has been brought about in the body of the bee. Because of difficulties in crystallization, invert sugar occurs on the market only in the form of a syrup and not in crystalline form.

Corn is an important source of sweetening products. The term "corn sugar" is a misnomer, however. Such sugar as naturally occurs in corn is mostly sucrose as with other vegetable products. The so-called "corn sugar" is not produced from corn in the manner described for cane and beet but is made by the chemical treatment of corn starch. When starch is treated with acid under temperature conditions more drastic than those used for the inversion of sucrose it is gradually broken down into simpler compounds, first dextrin and finally dextrose. The cruder products of incomplete conversion to dextrose were first put on the market under the name of "glucose." Various grades of refined products up to pure white crystalline dextrose are now available. For reasons of consumer appeal the more or less purified dextrose syrups are usually sold under the name of "corn syrup;" it must be understood however that "corn syrup" is not a syrup made from corn in the same manner as maple syrup is made from maple sap. "Corn syrup" and dextrose as now made are however perfectly wholesome sweetening agents which on an equal sugar content basis have the same nutritive value as refined cane sugar although they are not so sweet.

As was stated before, in all these natural sweetening agents there are only three pure sugars to which they owe their sweetness—sucrose, dextrose and levulose. Of these levulose is the sweetest, sucrose the next and dextrose the least sweet. Ordinary refined sugar is pure sucrose; the highest grade of refined corn suagar is pure dextrose. Pure levulose is not yet an article of commerce, but half of the sugars in honey and invert sugar are levulose, and it is because of this that these products are sweeter than cane sugar. Just as starch on treatment with acids can be converted into pure dextrose, however, there are certain plants—Jerusalem artichoke, dahlia bulbs and chicory—

which contain a substance known as "inulin" which with the same type of treatment can be converted to pure levulose. This is not yet done on a commercial scale, but is a possibility for the future.

DRUGS

H. J. Fisher, W. T. Mathis and D. C. Walden

AROMATIC SPIRIT OF AMMONIA

According to the U. S. Pharmacopoeia standard this preparation should contain in each 100 cc. not less than 1.7 and not more than 2.1 grams of ammonia, and not less than 3.5 and not more than 4.5 grams of ammonium carbonate. The alcoholic content should be from 62 to 68 percent by volume.

Twenty-two official samples were examined. Nineteen were within the limits fixed by the standard, or within 10 percent of such limits.

One sample, was high in ammonia, and two samples were low in both ammonia and ammonium carbonate.

ASPIRIN TABLETS

Twenty official samples, all 5-grain tablets, were examined. In none of the samples did the variation from the declared 5-grain dosage exceed 6 percent (0.2 grain). In no case was the U. S. P. limit of free salicylic acid exceeded.

COMPOUND TINCTURE OF BENZOIN

This preparation is a tincture of benzoin, aloe, storax and tolu balsam. It contains from 74 to 80 percent of alcohol by volume.

Nineteen official samples were examined for alcohol content only. Five were within the specified limits and fourteen were sufficently near to be passed. With one exception the lowest percentage found was 71; one sample contained 68 percent.

CAMPHOR LINIMENT (CAMPHORATED OIL)

This preparation is powdered camphor dissolved in cottonseed oil. Each 100 grams of the liniment should contain not less than 19 nor more than 21 grams of camphor.

Of 23 samples tested 19 were within the limits specified for camphor content and three were passed. One sample contained 15.6 percent of camphor.

SOLUTION OF CITRATE OF MAGNESIA

The U. S. Pharmacopoeia requires this solution to contain in each 100 cc. not less than 1.6 nor more than 1.9 grams of magnesium oxide. The formula requires 9.1 grams of citric acid in each 100 cc. It should be practically free from sulphate and chloride.

Of 24 official samples, 18 were within the limits specified and 5 were passed. Only one sample was definitely below standard; it contained 0.74 grams magnesium oxide and 5.09 grams of citric acid in 100 cc.

All samples were practically free from sulphate and chloride.

Surveys in the past have shown rather high percentages of substandard samples; for example:

Year	No. of samples	Below standard	Percent below standard
1939	41	8	20
1938	25	5	20
1937	20	5	20
1933	23	11	48
1941	23	1	4

DILUTE HYDROCHLORIC ACID

This preparation is concentrated hydrochloric acid diluted with water so that each 100 cc. of dilute solution contains not less than 9.5 nor more than 10.5 grams of hydrochloric acid. Formerly, U. S. P. X, this dilution was made on a weight/volume basis whereas now the directions call for a specified volume (236 cc.), of concentrated acid to be diluted to 1 liter. Surveys in the past have shown that a large proportion of samples were too concentrated to fall within the limits named above and the explanation appeared to be that the dilution was made on the volume basis, neglecting the specific gravity factor of the concentrated acid, instead of the weight/volume basis. For example, in 1930 of 27 samples tested nearly one-half of them were outside the official limits, most of them being too concentrated. With that source of error eliminated in the present directions there is still evidence of carelessness in making this simple dilution.

Of 104 samples tested 36 were within the official limits, 35 were within 10 percent of such limits, and in 32 the variations exceeded 10 percent. One sample sold for dilute hydrochloric acid and so labelled was not that article but syrup of hydriodic acid of standard hydriodic acid content.

This article may not be important as a medicinal agent, but reasonably good pharmaceutic technique should produce a dilution well within the official limits which provide ample tolerance.

Of the samples showing wide variations 18 were too strong and 14 were too much diluted. The first group varied from 11.75 to 15.28 grams per 100 cc., the latter from 2.34 to 8.39. Thus for an article supposed to contain 10 grams of hydrochloric acid per 100 cc., the inspector obtained concentrations ranging from 2.3 to 15.3 grams per 100 cc.

To save space, only samples showing excessive variations are listed.

TABLE 3. SUMMARY OF SAMPLES OF DILUTE HYDROCHLORIC ACID NOT U. S. PHARMACOPOEIA STANDARD

Town	Pharmacy	HCl gms./100 cc.
Baltic	Baltic Pharmacy	6.34
Bantam	Bantam Pharmacy	13.22
Bridgeport	Carlson's Pharmacy	14.32
	Waldorf Pharmacy	12.40
	Wooman's Drug Store	5.16
Canaan	Farnum's Drug Store	11.78
Clinton	Clinton Pharmacy	11.78
Danielson	Marin's Pharmacy	7.81
Darien	Gilbert Pharmacy	5.74
Fairfield	Hertz Drug Store, Inc.	11.85
Glastonbury	Franklin Pharmacy	12.15
Greenwich	Whelan Drug Co., Inc.	6.97
Hamden	Ridgeview Pharmacy	7.01
Hartford	Blue Hills Pharmacy	12.88
	Champlain Drug Co.	3.32
	Jaivin's Drug Store	14.35
	Laschuer, A.	2.84
	Lea's Pharmacy, Inc.	14.22
	Zelos Pharmacy	12.88
Middletown	Park View Pharmacy	11.75
Milford	Howe's Drug Store	5.22
New Canaan	Cody, J. J.	14.85
New Haven	Garden Drug Store	13.84
	Kane, J. H.	8.36
Norwalk	Foley's Drug Store	8.33
	Mead, H. A.	2.34
Plantsville	Hallahan, F. J.	13.80
Rockville	Metcalf's Drug Store	13.93
Southport	Switzer, L. B.	8.33
Wallingford	Liberty Pharmacy	12.60
Waterbury	Kunkel Pharmacy	7.60
Westport	Dorain's Drug Store, Inc.	15.28

SYRUP OF HYDRIODIC ACID

This preparation is syrup of dilute hydriodic acid, sugar (sucrose) and water. It should contain not less than 1.3 and not more than 1.5 grams of hydriodic acid in each 100 cc.

Twelve official samples were examined. Eight were without the limits specified, two were passed and two varied from the standard by more than 10 percent. One of the latter contained 2.01 grams of hydriodic acid per 100 cc., and the other contained 2.55 grams per 100 cc.

All samples passed U. S. P. tests of identity and purity.

TINCTURE OF IODINE

The U. S. P. specifications for this article require in each 100 cc. not less than 6.5 nor more than 7.5 grams of iodine, and not less than 4.5 nor more than 5.5 grams of potassium iodide.

Of 19 samples tested 15 were within the limits specified and in the remaining samples variations did not exceed 10 percent and they were passed.

MILK OF MAGNESIA

This preparation is a water suspension of magnesium hydroxide and should contain not less than 7 nor more than 8.5 percent of magnesium hydroxide.

Eighteen samples were examined, 16 of which were within the above limits, one passed, and one varied only slightly more than 10 percent.

MAGNESIA TABLETS

Neither "magnesia tablets" nor "milk of magnesia tablets" is an official article in the U. S. Pharmacopoeia or the National Formulary. Like "milk of magnesia," however, they contain magnesium hydroxide as the active ingredient. In milk of magnesia the magnesium hydroxide is suspended in water; in the tablets the magnesium hydroxide is compressed into tablet form with starch or other excipient. Some excipient is generally necessary for dispensing drugs in tablet or pill form.

All but two of the products tested (13), were claimed to contain, or to represent, or to be equivalent to or have the therapeutic equivalent of, one teaspoonful of milk of magnesia per tablet. In one sample the claimed equivalent was one tablespoonful per tablet; and for another the claim was 4.63 grains per tablet.

One teaspoonful of milk of magnesia contains 0.28 to 0.34 gram of magnesium hydroxide and all of the products so labelled came within those limits. The sample represented as containing the equivalent of one tablespoonful (1.12 to 1.36 grams), contained 0.978 gram per tablet, slightly less that the minimum claimed.

Tests for calcium showed none or trace amounts, and no evidence of carbonates was found. Magnesium hydroxide calculated from titration by the Pharmacopoeial assay was in substantial agreement with values calculated from total magnesium oxide.

While the name "magnesia tablets" is rather more appropriate than "milk of magnesia tablets" the latter name appears to involve no misrepresentation as to kind and amount of active medicament present. The relation of the tablets to the official liquid preparation is, essentially, that in the U. S. P. article the diluent is water, while in tablets the diluent is starch and/or other excipient.

MIXTURE OF RHUBARB AND SODA

This is a National Formulary preparation for which no standard is fixed except for alcoholic content which should be from 2 to 4 percent by volume. From the formula, by calculation, the bicarbonate of soda content should be 3.5 grams per 100 cc. It contains fluid extract of rhubarb which acts as a mild cathartic, and the bicarbonate serves as an antacid.

The directions for preparing the mixture do not specify temperatures at which the mixture shall be made or the finished product kept. Sodium bicarbonate dissolves in water at 60° F, without loss of carbon dioxide, but at higher temperatures it gradually loses CO_2, and becomes converted to the normal carbonate at the temperature of boiling water. Under the normal circumstances of preparing and dispensing this article more or less transformation of the bicarbonate is to be expected, but the therapeutic effects of the mixture are probably not materially changed.

In testing the mixture if the bicarbonate of soda content is calculated from the alkalinity of the ash or from the total titration, the proportion of bicarbonate of soda originally present will be indicated; but if calculated from the CO_2 content it will show the original proportion only if the mixture was prepared and held at temperatures close to 60° F. This is shown by a few illustrations taken from the samples examined.

	Bicarbonate of soda, gms./100 cc.		
Sample	Calc. from CO_2	Calc. from total titration	Calc. from alk. of ash
A	3.28	3.47	3.49
B	2.78	....	3.29
C	2.67	....	3.03

Sample A contained the formula proportion of bicarbonate of soda and had lost but little CO_2 since it was prepared. Sample B contained substantially the formula proportion originally, but shows considerable conversion to normal carbonate. Sample C was somewhat low in bicarbonate originally and there was some loss of CO_2 since.

Fifty-two samples were submitted by the Dairy and Food Commissioner. In the absence of any official specifications except alcohol range, we have passed all so far as bicarbonate content is concerned, since the changes in this respect are probably no greater than are to be expected under usual conditions, and since the efficacy of the article is probably not appreciably, if at all, modified.

Of the 52 samples, three were special mixtures. Practically all of the others contained between 3 and 4 grams of bicarbonate of soda per 100 cc. as analyzed; four samples contained less than 3 grams per 100 cc., but the formula proportion was present originally. Two contained somewhat less than the formula proportion originally.

Two samples were low in alcohol.

ESSENCE OF PEPPERMINT

Essence of Peppermint contains from 9 to 11 percent by volume of oil of peppermint.

Of 18 official samples five were within the above limits and the remainder were passed. None were deficient in peppermint oil.

ELIXIR OF SODIUM BROMIDE

This is a National Formulary preparation and should contain in each 100 cc., not less than 17 nor more than 18 grams of sodium bromide.

Twelve official samples were tested of which four were within the limits specified and the remaining eight sufficiently close to be passed.

GLYCERITE OF PHENOL

This is a National Formulary preparation for which no standard is fixed. According to the formula however, it should contain, by calculation, 18.7 to 19.2 grams of phenol in each 100 cc.

Eight official samples were examined of which three were within 10 percent of the calculated limits and three were not. The samples ranged from 14.6 to 17.8 grams of phenol per 100 cc. and so approximated the phenol concentration required. Two samples were labelled 10 percent and 5 percent respectively. One of these labelled 10 percent contained only 2.09 grams per 100 cc. The other labelled 5 percent contained 4.5 grams per 100 cc. and was passed.

SOLUTION OF PHENOL IN GLYCERIN, 1 PERCENT

This is not an official preparation. One percent solution was called for and the samples obtained were so labelled. A satisfactory degree of accuracy in compounding such a preparation, especially when a small volume (say 1 ounce), is called for, would be within the limits of 0.75 - 1.25 grams of phenol per 100 cc., and probably limits of 0.5 - 1.5 would be reasonably good. A 1 percent solution prepared in the laboratory without extraordinary care tested between 1.1 and 1.2 percent.

Of 25 samples examined three ranged from 0.99 to 1.01 grams per 100 cc., 20 ranged from 0.5 - 1.5; and only two contained less than 0.5 grams per 100 cc.

ELIXIR OF PHENOBARBITAL

This is a National Formulary preparation and should contain in each 100 cc. not less than 0.38 gram nor more than 0.42 gram of phenobarbital. It should contain from 17 to 20 percent of alcohol by volume.

Nineteen official samples were examined. Two were strictly within the limits given above for active ingredient and 16 were passed. One varied from the above limits by slightly more than 10 percent.

The extreme limits of phenobarbital found were 0.36 to 0.48 gram per 100 cc. Alcohol varied from 17 to 22 percent by volume.

WHITE MINERAL OIL

This oil, otherwise known as "liquid petrolatum," was formerly either heavy or light oil, but the name is correctly applied now only

to the heavy oil. (Second supplement to U. S. P. XI, p. 89.) If the light oil is sold under the above names it must be labelled as light oil.

Thirteen samples were examined and 12 found to conform to the specifications for heavy oil. One sample was light oil and not so marked, but the sample was old stock and the manufacturer submitted a label showing that the correction had already been made for the article as currently sold.

SWEET OIL

Sweet oil of the U. S. Pharmacopoeia is olive oil.

Ten official samples of sweet oil collected from pharmacists, showed no evidence of substitution of other vegetable oils for olive oil.

MISCELLANEOUS DRUGS, ETC.

Grove's Emulsified Nose Drops: Grove Laboratories, Inc., St. Louis, Mo. This preparation contains chlorbutanol 3.22 grains per fluid ounce according to declaration. It contains mineral oil and should bear cautionary labelling as to the use of oily inhalants.

Seven unofficial samples were examined for identity or dosage.

COSMETICS

Willat Wave De Luxe Curling Solution. Heatless Permanent Wave Co., San Francisco, Calif. A sample of this preparation was submitted by the Dairy and Food Commissioner in April, 1941. Report of a fatality following the use of this solution and thought to have been caused by it (Jour. Am. Medical Assn., April, 1941) prompted immediate steps to prevent further use of it in beauty parlors in this State pending confirmation of its dangerous character. Such confirmation by the Food and Drug Administration following shortly thereafter, its sale and use was permanently prohibited.

Analysis: total solids, gms./100 cc., 0.041; ash 0.019; total sulphur 5.41; ammonia 2.84.

Calculated composition: ammonium acid sulphide (NH_4HS), gms./100 cc., 8.52 (calc. from NH_3), 8.59 (calc. from total S), free sulphur 0.02; hydrogen sulphide 0.05; ash 0.02.

The evidence was that the solution may be absorbed through the skin in poisonous amounts.

Willat Wave De Luxe Neutralizing Solution. This preparation was essentially a hydrogen peroxide solution, 6.89 grams per 100 cc., containing a little solid matter, presumably stabilizer, not identified. Other ingredients, if present, not detected.

Willat Wave De Luxe Shampoo Hair Conditioner. This was a straw-colored liquid with an odor of bay rum and alkaline to litmus.

Analysis: solids, gms./100 cc., 16.02; ash 4.03; free caustic alkali 0.03; free carbonate alkalinity, none; total alkali, calc. as K_2CO_3 3.98; alcohol, percent by volume 0.53.

Calculated composition: soap (potassium) 15.94; free potassium hydroxide 0.03; non-soap ash 0.05.

These two solutions were of the same manufacture as the curling solution, but containing nothing injurious so far as our analysis could discover.

Ame Naturol. Ame Cosmetic Co., New Haven. This is a perfumed mixture of about 33 percent mineral oil and 67 percent of dilute alcoholic liquid containing arsenic, boric acid, eosine dye and brucine. The brucine is probably a denaturant in the alcohol. Severe rash was alleged to have followed the use of this preparation. Arsenic is used in the treatment of skin disorders under medical advice and direction, but its indiscriminate use is not to be recommended. Whether in this case the skin irritation was due to arsenic or to some other ingredient to which the user was especially sensitive is not clear, but arsenic can produce such effect. Combinations of arsenic appear in some formulas for hair and scalp lotions, and its presence in commercial preparations of this type has been reported. The status of arsenic under the section of the Food, Drug and Cosmetic Act relating to adulterated cosmetics has not been fixed by any official decisions so far as we are aware, but its potentialities for harm would appear to constitute adulteration.

Analysis: solids (at 100° C.) 1.22 gms./100 cc.; ash 0.58; alkalinity of ash, calc. as $Na_2B_4O_7$, 0.09; As_2O_3, by bromate titrations, 0.2; oil, by ether extraction, 32.59; alcohol by vol. 10.59 percent.

Herpicide Antiseptic Shampoo. The Herpicide Co. Inc., New York. This is essentially a perfumed 26 percent soap solution in 35 percent alcohol, containing salicylic and boric acids. Brucine present, probably as a denaturant. Other ingredients, if present, were not detected. No free alkali was found.

Analysis: solids (at 100° C.) 26.81 gms./100 cc.; ash 6.69; alkalinity of ash (as K_2CO_3) 6.67; soap, calc. as potassium oleate, 25.70; alcohol by volume 34.64 percent; arsenic none or trace.

Three samples of products used in a beauty parlor for, or in connection with, permanent waving were submitted by the Dairy and Food Commissioner. They are supplied to cosmeticians by Sales Affiliates, Inc., New York City.

Zotos Cream Oil Zotion. This is a perfumed white emulsion alkaline to phenolphthalein with odor of sulphur dioxide on acidification. Tests for borate, ammonium compounds, potassium, glycerin and morpholine were negative. Sodium, oil and ethanolamine present. Other ingredients, if present, not detected.

Analysis: water and volatile at 100° C. 84.88 percent; ash 0.25 percent; oil 2.38 percent; fatty acid 0.11 percent; ethanolamine (calc. from alkalinity) 5.40 percent.

The products appear to consist essentially of a water-oil emulsion of ethanolamine and sodium sulphite.

Zotos Zotion. Qualitative tests same as above.

Analysis: water and volatile 89.49 percent; ash 0.26 percent; oil 0.71 percent; fatty acid 0.03 percent; ethanolamine, calculated from alkalinity, 4.95 percent.

The preparation is of essentially the same character as the one above described. Both were for use on fine hair.

Zotos Vapets. Permanent wave pads. Perforated foil pads containing a brown-colored powder. The powder consists of, or contains, aluminum turnings, potassium chlorate, cuprous oxide and talcum. This is a device for supplying heat due to the interaction of the chemicals under the conditions of treatment. The products are for use only in beauty parlors by experienced manipulators and with proper precautions.

Circlette Permanent Wave Fluid. Distributed by Heatless Permanent Wave Co., San Francisco. This is a violet-red liquid with a garlic-like odor.

Qualitative tests indicated it to be a water solution containing ammonia, sodium thioglycollic acid and ethanolamine. No significant amounts of other constituents were detected.

Quantitatively the solution contained 0.69 grams per 100 cc. of ammonia; 1.59 grams per 100 cc. total nitrogen; 8.48 grams per 100 cc. of thioglycollic acid, and 0.56 grams per 100 cc. of ash. Thioglycollic acid was determined by the method of Hoshall (Jour. A. O. A. C. **23**, p. 729, 1940). Monoethanolamine, calculated from non-ammonia nitrogen, 4.45 grams per 100 cc.

On the basis of this analysis the calculated composition of the sample is: Monoethanolamine thioglycollate 11.16 grams per 100 cc.; ammonium thioglycollate 1.23; sodium thioglycollate 0.90; free ammonia 0.50.

Salts and derivatives of thioglycollic acid are the active ingredients of a number of commercial depilatory preparations. They are said to be superior to other hair-removers and to produce no readily apparent skin irritations. Such agents would obviously be unsuited to the purpose of permanent waving unless the concentration were well below that which produces depilatory effects, which we understand to be the case in this instance.

WARNING STATEMENTS IN LABELLING OF CERTAIN DRUGS

Section 901 e, (f) (2) of the 1939 supplement to the General Statutes provides that a drug shall be deemed to be misbranded "unless its labelling shall bear such adequate warnings against use in those pathological conditions or by children where its use may be dangerous to health, or against unsafe dosage or methods or duration of administration or application, in such manner and form as shall be necessary for the protection of users."

The responsibility for suitable warning statements rests with the manufacturer or distributor of drugs, but in response to requests for suggestions as to acceptable statements the Dairy and Food Commissioner issued the following notice to druggists and drug manufacturers. The suggested statements are in substantial accord with statements suggested by the Food and Drug Administration under the corresponding section of the federal act. The list is not complete and the manufacturer or distributor is not relieved of responsibility under the section referred to in the case of drug preparations not included.

I. Cathartic or laxative drugs (except castor oil and phenolphthalein) which act as irritants to the gastro-intestinal tract or stimulate intestinal peristalsis:
"Warning: Not to be used when abdominal pain (stomach-ache, cramps, colic), nausea, vomiting (stomach sickness) or other symptoms of appendicitis are present.
"Frequent or continued use of this preparation may result in dependence on laxatives."

II. Castor Oil:
"Warning: Not to be used when abdominal pain (stomach-ache, cramps, colic), nausea, vomiting (stomach sickness) or other symptoms of appendicitis are present.
"Frequent or continued use of this preparation may result in dependence on laxatives.
"Do not use during pregnancy except on competent advice."

III. Phenolphthalein:
"Warning: Not to be used when abdominal pain (stomach-ache, cramps, colic), nausea, vomiting (stomach sickness) or other symptoms of appendicitis are present.
"Frequent or continued use of this preparation may result in dependence on laxatives.
"Important: If a skin rash appears, discontinue use."

IV. Roughage materials (so-called) intended for use in constipation:
"Important: All varieties of constipation are not benefited by this preparation. It should be particularly avoided in cases such as spastic constipation in which abdominal discomfort or pain may be present."

V. Mineral oil for oral administration:
"Important: Do not take directly before or after meals."
Note: There will be no objection to an explanation added to the above statement indicating that mineral oil may interfere with the absorption of pro-vitamin A, carotene, and other substances.

VI. Sodium perborate intended for local use in the mouth and throat:
"Warning: This preparation may cause irritation and inflamation of the gums, tongue and mucous membranes of the mouth. It should be discontinued at the first sign of irritation or soreness. In case of doubt, consult your physician or dentist."

VII. Nose drops, inhalants and sprays:
1. Those that contain oil as a vehicle or base:
"Caution: Frequent or excessive use of this preparation may cause injury to the lungs. Do not use at all in infants and younger children except on competent advice."
2. Those that contain ephedrine, epinephrine, amphetamine (benzedrine), prepadrine, neosynephrin and other vaso-constricting drugs of similar activity:
"Caution: Frequent or continued use may cause nervousness, restlessness or sleeplessness. Individuals suffering from high blood pressure, heart disease, diabetes, or thyroid trouble should not use this preparation except on competent advice."

Note: The above warning may also be appropriate for the same ingredients intended for internal administration. However, amphetamine (benzedrine) indiscriminately distributed and intended for its systemic effect is dangerous.

VIII. Resins, oleoresins, and volatile oils intended for their effect upon the urinary tract:
"Warning: If disturbance of the stomach or bowels or skin rash is noticed, discontinue use."

IX. Atropine, hyoscyamine, scopolamine and pharmacologically related drugs:
"Caution: Frequent or continued use of this preparation should be avoided. Use cautiously if dryness of the throat occurs: discontinue if rapid pulse or blurring of vision appears.
"Warning: This preparation should not be taken by elderly people except on competent advice."

X. Iodine or iodides: (Internal use)
"Warning: Do not use in cases of lung disease, chronic cough or goiter (thyroid disease) except upon the advice of a physician.
"If a skin rash appears, discontinue use."

XI. Carbolic acid in preparations for external application:
Note: Products containing more than 2 percent of carbolic acid are not considered safe for indiscriminate distribution.
"Warning: When applied to fingers and toes, do not use a bandage.
"Apply according to directions for use, and in no case to large areas of the body."

XII. Cresols, creosote, guaiacol and similar substances intended for use as douches.
Note: Preparations intended for use after dilution should bear adequate directions for preparing solution and thorough mixing before pouring into douch bag.
"Warning: The use of solutions stronger than those recommended may result in severe local irritation or burns or serious poisoning."

XIII. Cresols, creosote, guaiacol and similar substances intended for surface application:
"Warning: Do not apply to large areas of the body."

XIV. Nux vomica and strychnine:
"Warning: Do not take more than the dosage recommended. Frequent or continued use is to be avoided and its use for children and elderly persons may be especially dangerous."

XV. Acetanilid:
"Warning: Frequent or continued use may be dangerous, causing serious blood disturbances, anemia, collapse, or a dependence on the drug. Do not take more than the dose recommended. Not to be given to children."

XVI. Acetophenetidin:
"Warning: Frequent or continued use may be dangerous, causing serious blood disturbances.
"Do not take more than the dosage recommended."

XVII. Antipyrine:
"Warning: Frequent or continued use may be dangerous, causing serious blood disturbances.
"Do not take more than the dosage recommended."

XVIII. Bromides:
"Warning: Frequent or continued use may lead to mental derangement, skin eruptions or other serious effects.
"Do not take more than the dosage recommended.
"Not to be taken by those suffering from kidney disease."

XIX. Chlorates in mouth washes and gargles:
"Caution: Avoid swallowing."

XX. Arsenic preparations except those employed as chemotherapeutic agents for specific diseases such as syphilis, amebic dysentery, etc.:
"Caution: Continued or prolonged use may result in serious injury."

XXI. Quinine, cinchonine and cinchonidine:
"Caution: Discontinue use if deafness, skin rash, visual disturbances (eye trouble) or other serious symptoms appear."

XXII. Silver preparations:
"Caution: Prolonged or frequent use of this preparation may result in permanent discoloration of the skin and mucous membranes."

XXIII. Preparations sold under representations relating to coughs due to colds:
"Important: Persistant coughs may indicate the presence of a serious condition. Do not use this preparation if there is a high fever or the cough has persisted for 10 days without securing medical advice."

XXIV. Mercury:
1. Intended for administration by mouth or as a douche:
"Warning: The prolonged or frequent use of this preparation or the use of amounts in excess of the prescribed directions may cause serious mercury poisoning."
2. Intended for application to the skin:
"Warning: This preparation may cause irritation of the skin, and the application to large areas may cause serious mercury poisoning."
Note: This warning is not applicable to mercury bleach creams.

XXV. Rubefacients and counter-irritants such as ammonia, arnica, cantharides, cayenne pepper (capsicum), chloroform, ether, kerosene, methyl salicylate, pepper, mustard, or turpentine oil intended for surface application:
"Caution: This preparation may cause excessive irritation of the skin particularly if applied with rubbing. Avoid getting it into the eyes or on mucous membranes.

XXVI. Goa Powder and chrysarobin:
"Caution: The use of this product over large skin areas may cause kidney irritation.
"Warning: Keep away from the eyes."

XXVII. Digitalis, strophanthus, and pharmacologically related drugs in therapeutically effective proportions:
Note: Potent doses of these drugs have cumulative action and may lead to disastrous effects upon the heart and circulation. They should be used only under the direct supervision of a qualified physician. They should not be sold at retail except on prescription.

XXVIII. Anthelmintics:
Note: The following preparations in therapeutically potent doses are not safe for indiscriminate distribution and should only be used under the direct supervision of a physician:
1. Carbon tetrachloride:

Note: Specific adequate directions for administration of a saline cathartic after use of this drug should be given:
"Warning: Avoid casor oil or other preparations or foods containing oil or fat while this drug is being administered. The use of this preparation in debilitated children and persons addicted to alcohol is dangerous."

2. Tetrachlorethylene:
Note: Specific adequate directions for the administration of a saline cathartic should be given.

3. Aspidium (Male Fern):
Note: Specific adequate directions for administration of a saline cathartic should be given:
"Warning: Avoid castor oil or other preparations or foods containing oil or fat while this drug is being administered."

4. Santonin:
"Very important: Shake vigorously before using. Failure to do so may result in serious injury.
"Caution: The use of more than the prescribed dose is dangerous.
"Avoid castor oil or other preparations or foods containing oil or fat while this drug is being administered.
"The prescribed dose should not be repeated within 7 days."

5. Chenopodium oil:
Note: Specific adequate directions for administration of a cathartic, preferably castor oil, should be given.

6. Thymol:
Note: Specific adequate directions for administration of a saline cathartic should be given.
"Warning: Avoid alcohol or any preparation containing alcohol before or during administration of this drug."

Index to Foregoing Warning Statements

	No.
Acetanilid	XV
Acetophenetidin	XVI
Ammonia	XXV
Anthelmintics	XXVIII
Carbon tetrachloride	(1)
Tetrachlorethylene	(2)
Aspidium (male fern)	(3)
Santonin	(4)
Chenopodium oil	(5)
Thymol	(6)
Antipyrine	XVII
Arnica	XXV
Arsenic preparations	XX
Aspidium (male fern)	XXVIII
Atropine and related drugs	IX
Bromides	XVIII
Cantharides	XXV
Capsicum	XXV
Carbon tetrachloride	XXVIII
Carbolic acid	XI
Castor Oil	II
Cathartic drugs	I
Cayenne pepper	XXV
Chenopodium oil	XXVIII
Chlorates in mouth washes and gargles	XIX
Chloroform	XXV
Chrysarobin	XXVI
Cinchonidine	XXI
Cinchonine	XXI
Coughs	XXIII
Creosote	XII, XIII
Cresols	XII, XIII
Digitalis or related drugs	XXVII
Douches	XII, XXIV
Ether	XXV
Goa powder	XXVI
Guaiacol	XII, XIII
Hyoscyamine	IX
Inhalants	VII
Iodine or Iodides	X
Irritants	I, XXV
Kerosene	XXV
Laxative drugs	I
Male fern	XXVIII
Mercury	XXIV
Methyl salicylate	XXV
Mineral oil	V
Mustard	XXV
Nose drops	VII
Nux Vomica	XIV
Oleoresins	VIII
Ouabain	XXVII
Pepper	XXV
Phenolphthalein	III
Quinine	XXI
Resins	VIII
Roughage material	IV
Rubefacients	XXV
Santonin	XXVIII
Scopolamine	IX
Silver preparations	XXII
Sodium perborate	VI
Sprays, nose	VII
Squill	XXVII
Strophanthus	XXVII
Strychnine	XIV
Surface application	XXV
Tetrachlorethylene	XXVIII
Thymol	XXVIII
Turpentine oil	XXV
Urinary tract	VIII
Volatile oils	VIII

COLLABORATION WITH OTHER DEPARTMENTS

Analytical work done for other State and Station departments, not included in other reports from this department is summarized as follows:

State Supervisor of Purchases, foods, etc.	35	samples
Department of Health (Yale), lead and arsenic tests	9	"
U. S. Geological Survey, water samples	127	"
State Department of Health, narcotic control	20	"
Station departments:		
Entomology, soils for lead	110	"
Soils	49	"
Botany	16	"
Tobacco Substation	30	"
Total	396	"

BABCOCK GLASSWARE, ETC.

Under the provisions of Sections 2463 and 2488 of the General Statutes, glassware used in testing milk and cream, and thermometers used in milk-pasteurizing plants have been examined as follows:

	Pieces	Imperfect or Inaccurate
Babcock glassware	3,207	72
Thermometers	386	0
Total	3,593	72

INDEX

	Page
Ame Naturol	449
Ammonia, aromatic spirit of	442
Aspirin tablets	442
Babcock glassware	455
Baking powder	428
Benzoin compound, Tincture of	442
Beverages	428
Camphorated oil	442
Canned fish	429
Cereal products, etc.	430
Circlette permanent wave fluid	450
Citrate of magnesia, solution of	442
Collaborative work	455
Condiments, relishes, etc.	430
Cosmetics	448
Dairy products:	
Milk and cream	431
Vitamin D milk	431
Homogenized milk	433
Lead content of market milk	434
Eggs	435
Fats and oils	435
Flavoring extracts	435
Food contamination by filth	436
Fortification of food	438
Grove's Emulsified Nose Drops	448
Herpicide Antiseptic Shampoo	449
Hydriodic acid, syrup of	454
Hydrochloric acid, dilute	443
Iodine, tincture of	444
Magnesia, milk of	445
Magnesia tablets	445
Meat and meat products, etc.	436
Mineral oil	447
Miscellaneous drugs	448
Miscellaneous foods	438
Peppermint, essence of	446
Phenobarbital, elixir of	447
Phenol in glycerin, solution of	447
Phenol, glycerite of	447
Rhubarb and soda mixture	445
Rose hips	436
Sodium bromide, elixir of	447
Sugar and its substitutes	439
Spray residue	437
Syrups, etc.	437
Sweet oil	448
Tomato products	437
Warning statement for drugs	450
Willat Wave De Luxe Curling Solution	448
Willat Wave De Luxe Neutralizing Solution	448
Willat Wave De Luxe Shampoo Hair Conditioner	448
Zotos Cream Oil Zotion	449
Zotos Vapets	450
Zotos Zotion	449