Bulletin 363 July, 1934

THE THIRTY-EIGHTH REPORT ON

FOOD PRODUCTS

AND THE TWENTY-SIXTH REPORT ON

DRUG PRODUCTS

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CONTENTS AND SUMMARY

CONTENTS AND SUMMARY—*Concluded*

Material	Page	Sampled by or submitted to: The Station	Sampled by or submitted to: The Dairy and Food Commissioner	Total	Adulterated, below standard or otherwise illegal
Formaldehyde, solution of		....	9	9	0
Hypophosphorous acid		....	2	2	0
Iodine, compound solution of		....	11	11	8
Lactic acid		....	4	4	0
Magnesium citrate, solution of		....	23	23	11
Mercurous chloride, compound pills of		....	8	8	2
Methenamine		....	5	5	0
Potassium arsenite, solution of		....	21	21	5
Sulphuric acid, dilute		....	14	14	5
Theobromine sodio-salicylate		....	4	4	0
Whiskey		2	32	34	8
Witch hazel, extract of		....	8	8	2
Yellow mercuric oxide, ointment of		....	6	6	1
Unclassified drugs, etc.		7	....	7	....
Total for drugs		9	240	249	60
MISCELLANEOUS					
Materials, examined for poisons		67	....	67	....
Tobacco, collaborative work		52	....	52	....
Total for miscellaneous		119	....	119	....
Total for all exclusive of Babcock glassware, etc.		672	856	1528	87
BABCOCK GLASSWARE, ETC.		2164	....	2164	2

THE THIRTY-EIGHTH REPORT ON FOOD PRODUCTS AND THE TWENTY-SIXTH REPORT ON DRUGS

E. M. Bailey

This report summarizes food and drug control work for the year 1933 including samples submitted by the Dairy and Food Commissioner and samples taken by the station agent.

Collaboration with other departments of the Station, chiefly the Department of Soils, has been continued.

Various members of the staff of the department have served as collaborators in the study of analytical methods for the Association of Official Agricultural Chemists, and Dr. Fisher has served that association as an associate referee on drugs. The chemist in charge has served as a member of the Food Standards Committee of the U. S. Department of Agriculture, and as a member of the Council on Pharmacy and Chemistry, and of the Committee on Foods of the American Medical Association.

Grateful acknowledgment is made to the staff of this department for loyal and efficient coöperation in carrying on our work.

FOODS

APPLE BUTTER

Among definitions and standards for food products announced by the Secretary of Agriculture from time to time is a definition for apple butter announced May 15, 1933. No numerical standards are included but the identity of the product is defined thus:

Apple butter is the semi-solid product obtained by cooking to a suitable consistency the strained edible portion of apples with sugar and/or dextrose, with or without one or more of the following: apple juice, boiled cider, spice, salt. In its preparation not less than 5 parts by weight of the strained apples are used to each 2 parts by weight of sugar and/or dextrose. The product has a characteristic apple flavor and is commonly spiced.

Eleven samples of commercial brands of apple butter were collected early in 1933, prior to the announcement of the above definition. Only total solids and insoluble solids were determined. Solids that are insoluble in water represent insoluble material from the fruit and spices used. The remainder of the total solids is largely sugar.

Analyses are given in Table I.

TABLE 1. ANALYSES OF APPLE BUTTER

No.	Manufacturer or Distributor	Total Solids	Insoluble Solids
		%	%
53546	The Great Atlantic & Pacific Tea Co., New York, N. Y. *Sultana*	51.39	2.59
53757	Armour & Co., Chicago, Ill. *"Veribest"*	51.82	2.46
53777	Austin, Nichols & Co., Inc., New York, N. Y. *"Sunbeam"*	48.55	2.10
54104	Curtice Bros. Co., Portchester, N. Y. *"Blue Label"*	42.10	2.45
54105	Curtice Bros. Co., Portchester, N. Y. *"Blue Label"*	41.61	2.79
53776	H. J. Heinz Co., Pittsburgh, Pa. *Heinz*	44.27	2.24
53781	Francis H. Leggett & Co., New York, N. Y. *"Premier"*	53.91	1.92
53778	Preserves & Honey, Inc., New York, N. Y. *"Shady Dell"*	40.99	1.79
53775	Tea Garden Products Co., San Francisco, Calif. *Tea Garden*	55.30	2.47
53543	Tremont Kraut Co., Pittsburgh, Pa. *Snow Drift*	45.21	2.72
53547	R. G. Williams & Co., Inc., New York, N. Y. *Royal Scarlet*	43.97	2.42

BAKING POWDER

One sample of baking powder was examined with the following result:

2708. *Clabber Girl* Double Acting Baking Powder.

Analysis: Total CO_2, 16.25 per cent; residual CO_2, 1.51 per cent; available CO_2, 14.74 per cent. The standard for available carbon dioxide in baking powder is not less than 12 per cent.

CARBONATED BEVERAGES

One hundred and forty-two samples of soft drinks of the soda water type were examined. Artificial color, if present, was declared in all cases with one exception, 54836. Sugar content, required by statute to be not less than 5 per cent, was in excess of that minimum in all samples. One sample, 53893, ginger ale reinforced with vitamin, was labelled "bottled sunshine". While it is doubtful that such a fantastic legend seriously misleads the purchaser, yet the implication that this product has the nutritional effect that exposure to sunshine produces is not warranted. Such implications are not uncommon in connection with foods reinforced with certain vitamins. Two other samples, 54961 and 54844, contained foreign material which suggested lack of care and cleanliness in the bottling establishments. None of the samples was found to contain saccharin.

BEER

W. T. Mathis and E. M. Bailey

Beer is essentially a fermented beverage prepared from an infusion of hops and malted barley, with or without unmalted cereal grains other than barley. The beer of early Teutonic tribes is said to have been a sweet fermented liquor containing honey. The Slavs appear to have used hops to impart a bitter taste and hops finally became a characteristic constituent of beers, although for a time their use was prohibited in England. Barley has been the grain almost universally used in beer-making since the earliest times, and in some parts of Germany the supplementary use of other grains was prohibited by law. In England, however, wheat is used as a supplement to barley, and corn and rice are used in a similar way in American practice. Other starchy cereals are adaptable and are probably used.

Manufacture of beer. The various steps in the manufacture of beer involve many technical details. Volumes have been written on the scientific as well as the practical aspects of these processes. Great stress is laid, particularly in Germany, on the character of water used in mashing and other operations. The choice of grain for malting and for use as supplement to the malt is given careful attention. Mashing operations and fermentation are subject to control depending on the characters desired in the finished products; and storage conditions are important.

The first step is the preparation of the malt. Because of its peculiar advantages barley is chosen. The grain is steeped in water until it is thoroughly moistened in order to facilitate germination. The water is drawn off and the moist grain allowed to sprout or germinate. When the sprout or acrospire has grown to a length just a little shorter than the grain itself, the grain is spread on a perforated floor and artificial heat is applied. This is the process of kiln drying. It serves to remove the excess of moisture, checks the growth of the sprout, and interrupts the action of the enzymes, chiefly diastase and protease, that have been produced in the germination process. The development of these enzymes is the primary object of malting. The kiln dried malted barley is the brewers' malt of commerce. The temperature at which the germinated grain is dried has an important bearing on the character of the beer subsequently produced. Drying at low temperatures produces light colored beers; darker colored products result from kiln drying at higher temperatures which effect partial caramelization of the starch. Many brewers buy their malt already prepared and thus eliminate the malting process in their own plants.

The next essential step is the preparation of the mash. The diastase of malt is sufficient to convert much more than the starch in the malt itself into fermentable sugar, hence the practice of mashing a mixture of malt with raw (unmalted) cereals. The malt and raw grains are crushed, mixed with water, and the "mash" allowed to stand at suitable and controlled temperatures. During this process the cereal starches are converted into fermentable sugars and the proteins are in part transformed into soluble forms such as amides, peptones and albumoses. The liquid portion of the mash is drawn off and the residual mash washed several times with hot water to exhaust it of soluble constituents. The washings are added to the drawn-off liquid and this constitutes the beer wort.

The wort is then boiled, after which hops are added and the boiling continued. Boiling accomplishes several results. The volume of wort is reduced, enzymes are destroyed, certain protein substances not desired in

the finished beer are precipitated, color is enhanced by caramelization of the sugars, hop resins and oil are extracted and impart flavor and aroma to the wort, and, finally, the wort is sterilized.

After cooling and sedimentation the wort is drawn off or filtered and the clear liquor is ready for fermentation. Selected cultures of yeast are used, and the effect sought is the conversion of fermentable carbohydrates into alcohol, a process that is accompanied by a simultaneous evolution of carbonic acid gas (carbon dioxide). The alcohol produced is approximately one-half the weight of the fermentable sugar in the wort. The yeast feeds on the soluble protein substances that remain in the wort. Temperature has a marked effect on the character of the fermentation process. At relatively low temperatures, 10° C or less, the yeast falls to the bottom of the fermentation vat and so-called bottom fermentation proceeds. At higher temperatures, 15° to 22°, the yeast rises to the surface of the wort and top-fermentation takes place. Top fermentation is the more rapid process and requires but a few days; bottom fermentation is slower, requiring from 8 to 16 days. Both of these processes are of the open fermentation type. Fermentation may also be conducted in closed tanks by the vacuum system. By this method the fermenting wort is not in contact with the atmosphere. Only sterilized air is admitted and carbon dioxide is removed as fast as it is formed. The method is rapid and permits of accurate control.

After the principal or primary fermentation has taken place the beer is stored or rested in vats where a secondary fermentation takes place. After this the product is clarified by filtering to remove yeast cells and other materials that would impair its keeping qualities. It is then put into commercial packages. Bottled beer, especially that not intended for immediate consumption, may be pasteurized to increase its stability.

Types of beer. Wahl and Henius have described the characteristics of some of the common types of beer as follows:

Bavarian type lager. Dark in color, malt flavor, sweetish taste; aroma and bitter taste of hops not pronounced; usually lively and sparkling.

Bohemian type lager. Light in color, pronounced hop aroma and bitter taste; malt flavor not pronounced; usually lively and sparkling.

American type lager. Light in color with pronounced hop aroma; less bitter than Bohemian; high degree of brilliancy; lively and sparkling.

Ale. Light in color; hop aroma and bitter taste very marked; alcohol rather high and tart taste in aged product; either lively or still; usually clear.

Stout. Very dark in color, malt flavor and sweet taste; brewed stronger than ale and has tart taste in aged product. Less alcohol than ale; usually lively.

Porter may be described as a mild stout. It contains less alcohol and extract than stout.

Weiss beer. Very light in color; malt and hop flavor not pronounced; quite tart, very lively but not sparkling; usually turbid.

Common or Steam beer. Light in color; hop aroma and bitter taste not pronounced; very lively but not necessarily brilliant.

Commercial products sold under these names vary considerably and these distinctions do not always hold.

Terms used in describing beers. In describing beers the term "body" refers to the amount of solids or extract. "Life" refers to the amount of carbonic acid gas in the product. Beer containing less than 0.25 per cent of carbon dioxide will be "flat." "Color" depends on caramel content; "malt flavor" also depends on this constituent. "Hop flavor" depends upon the content of hop oil. "Bitter", "sweet" and "tart" are terms that refer to hop resin, residual sugar and lactic acid respectively. "Stimulating effect" depends on the alcoholic content. "Brilliance" refers to the degree of transparency. "Stability" is the power or property of retaining characteristic features in the finished product. Yeast cells, bacteria and protein substances do not favor stability; alcohol, carbon dioxide, lactic acid and hop resin are said to enhance stability. Pasteurization favors the stability of bottled beers.

Standards. Beer is officially defined and standardized in the laws or regulations of some countries. A special committee of the U. S. Senate gave consideration to this and related questions in 1899-1900. The conclusions of this committee inclined to the English view which took no exception to the use of raw cereals other than barley as supplements to barley and malt. Testimony before the committee unanimously favored a legal definition and standard for beer and the committee recommended such action. In 1902 the Congress delegated power to the Secretary of Agriculture to establish standards of purity for food products generally. The first pronouncement of standards under this authority was in 1903 but it contained no standards for beer. The circular stated that the schedule for malt liquors was in preparation.

In 1906, however, the Committee on Food Standards of the Association of Official Agricultural Chemists, with which committee the Secretary of Agriculture was authorized to consult, proposed a tentative schedule of definitions and standards for malt liquors, and in 1907-8 this schedule was adopted by the association just named and by the Association of National Food and Dairy Departments upon recommendation of a joint committee of the two associations. The status and the fate of these definitions are obscure. Apparently they were not issued officially by the Secretary; and the present schedule of food definitions and standards contains no schedule for malt liquors. These early definitions are of interest however and they are quoted here:

> "*Malt liquor* is a beverage made by the alcoholic fermentation of an infusion, in potable water, of barley malt and hops, with or without unmalted grains or decorticated and degerminated grains.
>
> "*Beer* is a malt liquor produced by bottom fermentation, and contains, in one hundred (100) cubic centimeters (20° C.), not less than five (5) grams of extractive matter and sixteen one-hundredths (0.16) gram of ash, chiefly potassium phosphate, and not less than two and twenty-five one-hundredths (2.25) grams of alcohol.
>
> "*Lager beer,* stored beer, is beer which has been stored in casks for a period of at least three months, and contains, in one hundred (100) cubic centimeters (20° C.), not less than five (5) grams of extractive matter and sixteen one-hundredths (0.16) gram of ash, chiefly potassium phosphate, and not less than two and fifty one-hundredths (2.50) grams of alcohol.
>
> "*Malt beer* is beer made of an infusion, in potable water, of barley malt and hops, and contains, in one hundred (100) cubic centimeters (20° C.), not less than five (5) grams of extractive matter, not less than two-tenths

(0.2) gram of ash, chiefly potassium phosphate, nor less than two and twenty-five one-hundredths (2.25) grams of alcohol, nor less than four-tenths (0.4) gram of crude protein (nitrogen x 6.25).

"*Ale* is a malt liquor produced by top fermentation, and contains, in one hundred (100) cubic centimeters, (20° C.) not less than two and seventy-five one-hundredths (2.75) grams of alcohol, nor less than five (5) grams of extract, and not less than sixteen one-hundredths (0.16) gram of ash, chiefly potassium phosphate.

"*Porter* and *stout* are varieties of malt liquor made in part from highly roasted malt."

Composition. The chemical composition of beer is very complex. In general the constituents may be grouped as follows:

(a) Volatile, including water, alcohol, acetic and carbonic acids and other volatile acids.

(b) Fixed organic, including sugars, dextrin complexes, glycerol, lactic and succinic acids, proteins and the extractive materials of hops.

(c) Mineral, including chiefly potassium, calcium and magnesium phosphates.

Groups (b) and (c) comprise the solids or extract.

The composition of various types of beer as shown by the usually determined constituents is illustrated by the following data, Table II, taken from Wahl and Henius and from König. As a matter of interest and comparison, averages of recent analyses for the several types of beers represented are inserted, these being taken from Tables III and IV.

TABLE II. COMPARATIVE ANALYSES OF EARLY BEERS AND THOSE OF 1933

	Specific gravity	Alcohol		Extract	Sugar	Protein	Phosphoric acid (P_2O_5)
		By weight	By volume				
		%	%	%	%	%	%
Beer							
Average of 222 lager beers from all parts of U. S. 1873 to 1887	.....	3.85	....	5.79	1.53	0.62	0.095
Average of 210 American lager beers in 1890	.....	4.01	....	5.70	1.20	0.56	.....
Average of 247 American lager beers in 1896	.....	3.82	....	5.29	1.62	0.46	0.068
Average of 258 lager beers (König)	1.0162	3.93	....	5.79	3.73[1]	0.71	0.077
Average of 205 Schenk beers (König)	1.0114	3.36	....	5.34	4.06[1]	0.74	0.055
Average of 84 Bock beers (König)	1.0213	4.69	....	7.21	5.78[1]	0.73	0.089
Average of 26 Weiss beers (König)	1.0137	2.73	....	5.34	4.04[1]	0.58	0.034
Average of 37 domestic light beers in 1933 (before repeal)	1.0156	2.96	3.70	6.38	4.97[1]	0.49	0.058
Average of 8 domestic dark beers in 1933 (before repeal)	1.0154	2.89	3.61	6.28	4.79[1]	0.47	0.057
Average of 7 imported light beers in 1933 (before repeal)	1.0092	2.94	3.68	4.69	3.41[1]	0.36	0.058
Two imported dark beers in 1933 (before repeal)	1.0133	2.97	3.71	5.77	4.38[1]	0.46	0.098
	1.0186	3.20	4.00	7.28	5.69[1]	0.55	0.106
Average of 10 domestic light beers in 1933 (after repeal)	1.0155	3.71	4.64	6.68	5.22[1]	0.50	0.060
Average of 3 domestic dark beers in 1933 (after repeal)	1.0146	3.29	4.11	6.25	4.75[1]	0.51	0.065
Ale							
Average of 9 American stock ales, 1896	.....	5.55	....	5.64	1.81	0.46	0.061
American Cream Ale, 1901	.....	4.75	....	4.45	1.06	0.37	0.040
Bass Ale, 1887	.....	5.66	....	4.42	0.49	0.50	0.056
Bass Ale, 1896	.....	5.58	....	4.32	0.76	....	.....
Bass Ale, 1901	.....	5.18	....	5.76	1.68	0.58	0.060
Average of 38 Ales (König)	1.0141	4.75	....	5.65	1.81[1]	0.61	0.086
Average of 11 domestic ales in 1933 (before repeal)	1.0137	2.95	3.69	5.92	4.53[1]	0.40	0.041
Average of 9 imported ales in 1933 (before repeal)	1.0080	3.01	3.76	4.43	2.99[1]	0.39	0.047
Average of 12 domestic ales in 1933 (after repeal)	1.0154	3.84	4.80	6.70	5.24[1]	0.46	0.056

[1]Includes dextrins; older analyses apparently did not.

TABLE II. COMPARATIVE ANALYSES OF EARLY BEERS AND THOSE OF 1933—*Concluded*

	Specific gravity	Alcohol: By weight	Alcohol: By volume	Extract	Sugar	Protein	Phosphoric acid (P_2O_5)
Miscellaneous		%	%	%	%	%	%
Nurenberger, 1884	.....	4.27	....	6.31	....	1.08	0.103
Nurenberger, 1898	.....	3.88	....	6.80	....	....	.....
Nurenberger, 1895	.....	4.31	....	7.07	2.06	0.51	0.095
Muenchener, Hofbrau, 1846	.....	4.02	....	6.77	0.35	....	.....
Muenchener, Hofbrau, 1866	.....	3.88	....	4.93	....	0.43	.....
Muenchener, Löwenbrau, 1888	.....	3.46	....	5.33	2.60	....	.....
Muenchener, Pschorrbrau, 1901	.....	3.72	....	6.12	1.72	0.41	0.054
Pilsener, 1897	.....	3.82	....	4.82	....	....	.....
Kulmbacher, 1887	.....	4.48	....	6.80	1.77	0.44	0.080
Kulmbacher, 1888	.....	4.18	....	9.71	3.11	....	.....
Average of 40 analyses of Porter (König)	.....	4.75	....	5.65	2.88[1]	0.61	0.086
Weibel's Porter, domestic, 1933 (before repeal)	.....	2.93	3.66	5.92	4.48[1]	0.40	0.047
Average of 2 analyses of Porter, 1933 (after repeal)	.....	4.00	5.01	8.27	6.29[1]	0.62	0.069
Beers apparently not made with malt (Parsons 1902)							
1	.....	1.34	1.68	2.52	....	0.11	0.010
2	.....	2.10	2.63	3.40	....	0.22	0.023
3	.....	1.82	2.27	2.25	....	0.15	0.015
4	.....	1.69	2.11	3.53	....	0.13	0.015
5	.....	1.48	1.85	1.73	....	0.03	0.010
	1.0074						
	1.0098						
	1.0062						
	1.0112						
	1.0041						

[1]Includes dextrins; older analyses apparently did not.

Before the advent of national prohibition, the sale of intoxicating liquor, including beer, was prohibited in certain states or in certain communities of the state under the plan of local option. Because of the language of these laws, some of which presumably are still in effect, it is sometimes necessary to establish to the satisfaction of the court or jury that seized liquor is beer or malt liquor as defined in the statutes. It is necessary to prove the presence of malt, or of malt and hops, in addition to alcohol. Some of the characteristics of all-malt beverages as compared with those made from malt and supplemental raw cereals and brewers' sugar are pointed out in studies made by Tolman and Riley (U. S. Dept. Agr., Bull. 493, 1917). They observed that percentages of ash, protein and phosphoric acid were higher in all-malt beverages than in any such beverages made with mixtures of malt and supplementary cereals. Parsons (Jour. Am. Chem. Soc., *24*, 1170, 1902), studied this problem specifically and concluded that protein and phosphoric acid were valuable indices upon which to judge the character of malt liquors, and that such liquors, as made at that time and before, would not contain less than 0.25 per cent of protein and not less than 0.04 per cent of phosphoric acid. The following figures are taken from data supplied or cited by him and supplemented by similar data taken from Tables III and IV of this report.

"Protein" and Phosphoric Acid in Malt Liquors

Description			Protein (N x 6.25) %	Phosphoric acid, (P_2O_5) %
American malt liquors, old analyses				
28 analyses	(Crampton)	maximum	0.763	0.104
		minimum	0.400	0.056
		average	0.563	0.077
76 analyses	(Parsons)	maximum	0.614	0.095
		minimum	0.290	0.045
		average	0.470	0.061
Beer apparently not made with malt, old analyses				
5 analyses	(Parsons)	maximum	0.215	0.023
		minimum	0.031	0.010
		average	0.129	0.015
American beers, light and dark, 1933 (before repeal)				
45 analyses		maximum	0.65	0.092
		minimum	0.39	0.049
		average	0.47	0.057
American beers, light and dark, 1933 (after repeal)				
13 analyses		maximum	0.60	0.080
		minimum	0.38	0.039
		average	0.50	0.061
Imported beers, light and dark, 1933 (before repeal)				
9 analyses		maximum	0.55	0.106
		minimum	0.22	0.037
		average	0.39	0.068

	American ale, 1931 (before repeal)		
12 analyses	maximum	0.48	0.054
	minimum	0.33	0.027
	average	0.40	0.041
	American ale, 1933 (after repeal)		
12 analyses	maximum	0.62	0.075
	minimum	0.29	0.031
	average	0.46	0.056
	Imported ale, 1933 (before repeal)		
9 analyses	maximum	0.53	0.094
	minimum	0.24	0.026
	average	0.39	0.047

It should be understood that "protein" is nitrogenous material expressed in the conventional manner. Bearing in mind the limit of 0.25 per cent suggested by Parsons, it is seen that domestic beers as sold in this State in 1933 are all in excess of that minimum; and that the range of protein values is not very different from that shown by older analyses. Among the imported beers sold here one falls very slightly below 0.25 per cent. Ales, both domestic and imported, exceed the minimum value except in one case in which the variation is negligible.

As regards phosphoric acid also the minimum of 0.04 per cent, postulated on the basis of old analyses, is practically justified according to analyses of products sold in this State in 1933. One imported beer contained 0.037 per cent P_2O_5 and this same product, No. 55753, was slightly under the minimum value for protein. Among ales, six domestic products (one in the repeal group) contained less than 0.04 per cent P_2O_5, and three imported ales had less than that figure. Values distinctly less than 0.04 per cent P_2O_5, accompanied by protein values below the average and approaching those values herein cited for non-malt beverages, appear to warrant the conclusion that little if any malt was used in their manufacture.

When beers are made without the use of malt, raw cereals cannot be employed because malt is necessary to convert their starch into fermentable carbohydrate. The "wort" in such cases is a direct solution of a sugar, dextrose, derived from starch by acid hydrolysis. Fermentation of such a "wort" is not possible without the presence of some albuminous or protein material to serve as a food for yeast during the fermentation process, hence some suitable nitrogenous material must be added. To a large extent this accounts for the "protein" found in non-malt beers.

The total amount of ash found in malt and non-malt beverages is small, being of an order of magnitude of about 0.25 per cent and 0.15 per cent respectively. Qualitatively, however, the ash in the two types of beverages is notably different, the malt product ash being conspicuous for its potassium phosphate, while the non-malt ash is relatively higher in sodium, sulphates and chlorides. The comparison is well illustrated by the following data:

Ash Constituents of Malt and Non-Malt Beers

	Malt beer		*Non-malt beer*
	(Blyth) %	(König) %	(Parsons) %
Potassium (K_2O)	37.22	33.67	12.93
Sodium (Na_2O)	8.04	8.94	19.61
Calcium (CaO)	1.93	2.78	....
Magnesium (MgO)	5.51	6.24	....
Iron (Fe_2O_3)	trace	0.48	....
Sulphuric acid (SO_3)	1.44	3.47	10.81
Phosphoric acid (P_2O_5)	32.09	31.35	10.71
Chlorine (Cl)	2.91	2.93	21.76
Silica (SiO_2)	10.82	9.29	7.50

Hops are the accepted source of bitter principles for the manufacture of beer. Commercial preparations of lupulin, derived from hops, are sometimes used in conjunction with whole hops. As already pointed out, hops is one of the characteristic ingredients of beer as defined in the statutes of some states. Hop bitters may be distinguished from other bitter principles such as aloes, gentian and quassia that have at times been used in beer, because they may be removed from the liquor by treatment with lead acetate. When beer has been so treated and excess lead has been removed, absence of a bitter taste in the filtrate is taken as positive evidence that foreign bitters are not present. Hop bitters are said to be desirable because they do not leave the unpleasant, bitter after-taste which characterizes so-called hop substitutes.

The summary given in Table II also furnishes data on other features of the composition of present-day beers as compared with earlier brews. It should be noted here that results are expressed uniformly in percentages although the 1933 analyses, except in the case of alcohol, are in terms of grams per 100 cc. instead of true percentages. For practical purposes, however, the figures may be regarded as comparable. In the 1933 analyses, alcohol was determined by volume. Approximately equivalent figures on the weight basis are inserted for comparison with older analyses. Sugar, as given in most of the older analyses cited, is probably expressed as maltose and does not include dextrins. In analyses cited from König "sugar" means maltose, dextrin and gum. In the 1933 analyses sugar means total reducing sugars after hydrolysis expressed as dextrose and the figures are closely comparable with the "sugar" as contemplated by König. Since dextrin complexes are present in beer in amounts considerably exceeding those of maltose the disparity between results for "sugar" as shown by newer and some of the older analyses is explained.

Because of the legal limitations upon alcoholic content it is obvious why various types of beer as made before repeal do not show the range observed in products as formerly manufactured. The effort apparently was to approach the legal limit as closely as possible without exceeding it, regardless of the type of beer. The legal limit for alcohol in beer at the time these analyses in Table II were made was 3.2 per cent by weight, equivalent to 4.0 per cent by volume. It is not difficult to find in older analyses alcohol contents of 3.2 per cent or less, by weight; but probably

the bulk of production formerly would average 0.5 to 0.75 per cent more than the legal maximum of 3.2 per cent.

On the basis of averages it is clear that there is no significant difference as regards body (extract) between domestic light and dark beers. Imported dark beers as sold in this State before repeal show a more pronounced difference in this respect, but the number of samples represented is too small to make the comparison very significant. In general the extract of present day beers, both before and after repeal, is within the range shown by older analyses.

The domestic ales examined are higher in extract than imported ales, and the sugars correspondingly higher; but again both are within the range shown by older analyses.

Detailed analyses of 78 samples of malt liquors, as sold just prior to repeal, are given in Table III; and analyses of 27 samples as sold after repeal are given in Table IV.

CONCLUSIONS

The alcoholic content of the malt liquors examined prior to repeal was generally within the legal limit of 4 per cent by volume and did not appreciably exceed that limit in any case. On the other hand, none of the samples approached the low alcoholic content of "near beer." Since repeal the alcoholic strength has been somewhat increased.

Some earlier beers, particularly weissbeers, normally contained alcohol in amounts less than, or not greatly exceeding, 3.2 per cent by weight.

Extract in so-called 3.2 beer was of an order of magnitude within the range shown by older analyses of malt liquors. The same is true of domestic repeal beer.

Except in a few instances the character of composition indicates that the products examined were made with substantial amounts of malt.

There is no evidence that bitter principles other than those from hops were used.

TABLE III. ANALYSES OF MALT BEVERAGES (SAMPLES TAKEN SHORTLY BEFORE REPEAL)

No.	Brand and Manufacturer	Specific gravity	Alcohol by volume	Extract	Sugars as dextrose	Protein N x 6.25	P_2O_5
			%	Gms/100 cc	Gms/100 cc	Gms/100 cc	Gms/100 cc
	Beer, domestic, light						
55341	*Budweiser.* Anheuser-Busch, Inc., St. Louis, Mo.	1.0160	4.03	6.60	5.14	0.49	0.062
55782	*Budweiser.* Anheuser-Busch, Inc., St. Louis, Mo.	1.0184	3.85	7.14	5.85	0.41	0.056
55539	*Burgomaster.* Fitzgerald Bros. Brewing Co., Troy, N. Y.	1.0127	3.81	5.66	4.25	0.43	0.053
49990	*Connecticut Valley.* Conn. Valley Brewing Corp., Meriden, Conn.	1.0138	3.64	5.88	4.61	0.48	0.051
55767	*Connecticut Valley.* Conn. Valley Brewing Corp., Meriden, Conn.	1.0140	3.88	6.00	4.81	0.46	0.050
49987	*Ebling's Extra.* The Ebling Brewery Co., Inc., New York, N. Y.	1.0135	3.92	5.90	4.28	0.52	0.062
55540	*Edelbrau German Lager.* Edelbrau Brewing Co., Brooklyn, N. Y.	1.0129	4.03	5.77	3.86	0.59	0.072
55785	*Feigenspan's P.O.N.* Christian Feigenspan Brewing Co., Newark, N. J.	1.0173	3.56	6.74	5.46	0.42	0.060
55345	*Fidelio.* Fidelio Brewery, New York, N. Y.	1.0217	3.73	7.95	6.19	0.62	0.057
55779	*Fidelio.* Fidelio Brewery, New York, N. Y.	1.0177	3.90	6.98	5.65	0.53	0.051
55784	*Friedrick's Lager.* The Philadelphia Brewing Co., Philadelphia, Pa.	1.0137	4.00	5.97	4.63	0.48	0.064
55756	*Goldenrod Lager.* Hittleman Goldenrod Brewery, Inc., Brooklyn, N. Y.	1.0144	3.91	6.13	4.44	0.62	0.092
55338	*Horton's Pilsner.* Pilsner Brewing Co., New York, N. Y.	1.0146	3.70	6.11	4.80	0.41	0.060
49974	*King's Pilsner Style.* King's Brewery, Inc., Brooklyn, N. Y.	1.0146	3.56	6.05	4.80	0.39	0.054
55778	*King's Pilsner Style.* King's Brewery, Inc., Brooklyn, N. Y.	1.0145	3.51	6.02	4.80	0.39	0.052
55769	*Krueger's Special.* G. Krueger Brewing Co., Newark, N. J.	1.0193	3.61	7.24	5.82	0.53	0.055
55757	*Liberty.* American Brewing Co., Rochester, N. Y.	1.0167	3.78	6.67	5.21	0.48	0.049
55549	*Lion Pilsner.* Lion Brewery, New York, N. Y.	1.0149	3.50	6.12	4.90	0.45	0.054
49958	*Loewer's Pilsner Style Lager.* Loewer's Gambrinus Brewery Co., New York, N. Y.	1.0157	3.48	6.32	4.99	0.50	0.062
55541	*Michel Pilsner Style.* Michel Brewing Co., Brooklyn, N. Y.	1.0169	3.01	6.45	4.76	0.41	0.050
55783	*Blatz Old Heidelberg.* Blatz Brewing Co., Milwaukee, Wisconsin	1.0140	3.63	5.92	4.41	0.54	0.061
55333	*Pabst Blue Ribbon.* Pabst Corp., Milwaukee, Wisconsin	1.0168	3.89	6.75	5.35	0.51	0.061
55775	*Pabst Blue Ribbon Premier.* Pabst Corp., Milwaukee, Wisconsin	1.0163	3.81	6.59	5.22	0.56	0.058
55768	*Wm. Peter Palisade.* Wm. Peter Brewing Corp., Union City, N. Y.	1.0205	3.19	7.44	6.12	0.56	0.066
55340	*Piel's Real Lager.* Piel Bros. Inc., Brooklyn, N. Y.	1.0100	3.90	5.02	3.58	0.43	0.056
49988	*Piel's Real Lager.* Piel Bros. Inc., Brooklyn, N. Y.	1.0102	3.90	5.03	3.75	0.43	0.052
55335	*Rheingold.* Liebmann Breweries, Inc., New York, N. Y.	1.0156	3.64	6.34	4.87	0.50	0.061
55777	*Rheingold.* Liebmann Breweries, Inc., New York, N. Y.	1.0154	3.90	6.38	4.91	0.51	0.060

TABLE III. ANALYSES OF MALT BEVERAGES (SAMPLES TAKEN SHORTLY BEFORE REPEAL) —*Continued*

No.	Brand and Manufacturer	Specific gravity	Alcohol by volume	Extract	Sugars as dextrose	Protein N x 6.25	P_2O_5
			%	Gms/100 cc	Gms/100 cc	Gms/100 cc	Gms/100 cc
49971	*R & H Pilsner.* Rubsom & Horrmann Brewing Co., Stapleton, S. I., N. Y.	1.0187	3.69	7.15	5.53	0.65	0.069
55750	*R & H Pilsner.* Rubsom & Horrmann Brewing Co., Stapleton, S. I., N. Y.	1.0167	3.58	6.61	5.16	0.59	0.061
55334	*Ruppert's Knickerbocker.* Jacob Ruppert, New York, N. Y.	1.0164	3.88	6.63	5.33	0.46	0.064
55776	*Ruppert's Knickerbocker.* Jacob Ruppert, New York, N. Y.	1.0152	3.70	6.27	5.22	0.42	0.056
55336	*Schlitz.* Jos. Schlitz Brewing Co., Milwaukee, Wisconsin	1.0193	3.37	7.23	5.92	0.48	0.054
55766	*Utica Club Pilsner.* West End Brewing Co., Utica, N. Y.	1.0192	3.42	7.20	5.70	0.48	0.055
55770	*Valley Forge Special.* Adam Scheidt Brewing Co., Norristown, Pa.	1.0143	3.74	6.03	4.59	0.45	0.051
55751	*Wehle Lager.* The Wehle Brewing Co., West Haven, Conn.	1.0143	3.64	6.00	4.50	0.46	0.054
56503	*Weibel's Lager.* The Weibel Brewing Co., New Haven, Conn.	1.0135	3.65	5.79	4.31	0.41	0.054
	Maximum	1.0217	4.03	7.95	6.19	0.65	0.092
	Minimum	1.0100	3.01	5.02	3.58	0.39	0.049
	Average	1.0156	3.70	6.38	4.97	0.49	0.058
	Beer, domestic, dark						
49986	*Ebling's Extra.* The Ebling Brewing Co., Inc., New York, N. Y.	1.0154	3.71	6.33	4.80	0.42	0.052
55542	*Ebling's Extra.* The Ebling Brewing Co., Inc., New York, N. Y.	1.0160	3.41	6.35	4.64	0.47	0.055
49973	*King's Wurzburger.* King's Brewery, Inc., Brooklyn, N. Y.	1.0152	3.59	6.21	4.94	0.39	0.052
55339	*King's Wurzburger.* King's Brewery, Inc., Brooklyn, N. Y.	1.0148	3.58	6.11	4.72	0.40	0.053
49989	*Piel's Real Lager.* Piel Bros., Inc., Brooklyn, N. Y.	1.0098	3.82	4.89	3.66	0.40	0.053
49972	*R & H Wurzburger.* Rubsom & Horrmann, Stapleton, S. I., N. Y.	1.0200	3.61	7.45	5.83	0.63	0.066
55344	*Schaefer's.* E. & M. Schaefer, New York, N. Y.	1.0189	3.40	7.10	5.57	0.48	0.052
55343	*Trommer's Malt.* John T. Trommer, Inc., Brooklyn, N. Y.	1.0133	3.79	5.78	4.13	0.56	0.071
	Maximum	1.0200	3.82	7.45	5.83	0.63	0.071
	Minimum	1.0098	3.41	4.89	3.66	0.39	0.052
	Average	1.0154	3.61	6.28	4.79	0.47	0.057

TABLE III. ANALYSES OF MALT BEVERAGES (SAMPLES TAKEN SHORTLY BEFORE REPEAL) —*Continued*

No.	Brand and Manufacturer	Specific gravity	Alcohol by volume	Extract	Sugars as dextrose	Protein N x 6.25	P_2O_5
			%	Gms/100 cc	Gms/100 cc	Gms/100 cc	Gms/100 cc
	Ale, domestic						
55347	*Aetna Special Dinner.* Aetna Brewing Co., Hartford, Conn.	1.0130	3.70	5.68	4.35	0.46	0.043
49991	*Connecticut Valley.* Connecticut Valley Brewing Co., Meriden, Conn.	1.0147	3.71	6.13	4.82	0.48	0.054
55799	*Graham's XXX.* Huguenot Bottling Co., New Rochelle, N. Y.	1.0127	3.63	5.58	4.42	0.34	0.028
55543	*Hull's Cream.* Hull's Brewery, New Haven, Conn.	1.0129	3.56	5.61	4.22	0.33	0.027
55786	*Kingsbury's Pale.* Manitowoc Products Co., Manitowoc, Wis.	1.0189	3.96	7.32	5.72	0.44	0.053
55548	*Narragansett Banquet.* Narragansett Brewing Co., Cranston, R. I.	1.0095	3.68	4.77	3.55	0.36	0.036
55780	*Pickwick.* Haffenreffer & Co., Inc., Boston, Mass.	1.0165	3.81	6.63	5.04	0.48	0.049
55337	*Pickwick.* Haffenreffer & Co., Inc., Boston, Mass.	1.0176	3.44	6.78	5.18	0.43	0.050
55758	*Red Fox.* Largay Brewing Co., Waterbury, Conn.	1.0085	3.71	4.53	3.30	0.37	0.040
55537	*Weibel's.* The Weibel Brewing Co., New Haven, Conn.	1.0164	3.63	6.54	4.92	0.37	0.032
55538	*Wehle Colonial.* Wehle Brewing Co., West Haven, Conn.	1.0103	3.79	5.01	3.58	0.39	0.042
56509	*Cremo.* Cremo Brewing Co., New Britain, Conn.	1.0163	3.67	6.55	5.24	0.39	0.037
	Maximum	1.0189	3.96	7.32	5.72	0.48	0.054
	Minimum	1.0085	3.44	4.53	3.30	0.33	0.027
	Average	1.0139	3.69	5.92	4.53	0.40	0.041
	Beer, imported, light						
55754	*Bacardi Pilsner.* Cia Ron Bacardi S.A., Santiago De Cuba	1.0093	3.79	4.77	3.52	0.37	0.066
55753	*Bill Kristall Pilsner.* Bill-Brauerei, A.G., Hamburg, Germany	1.0059	3.57	3.79	2.38	0.22	0.037
55796	*Canada's Best Lager.* Cosgrave's Export Brewery, Toronto, Canada	1.0125	3.66	5.53	3.90	0.55	0.061
55332	*Carlsberg.* Copenhagen, Denmark	1.0099	3.74	4.88	3.69	0.29	0.046
55765	*Frydenlund's M.L. Lager.* Frydenlund's Brewery, Oslo, Norway	1.0078	3.74	4.34	3.22	0.33	0.071
55794	*Heineken's Dutch.* Heineken's Breweries, Rotterdam, Holland	1.0066	3.68	4.00	2.90	0.29	0.054
55761	*Wurzburger-Schlossbrau.* Wurzburg Hofbrau Brewery, Bavaria, Germany	1.0126	3.56	5.54	4.23	0.47	0.072
	Maximum	1.0125	3.79	5.53	4.23	0.55	0.071
	Minimum	1.0059	3.56	3.79	2.38	0.22	0.037
	Average	1.0092	3.68	4.69	3.41	0.36	0.058

TABLE III. ANALYSES OF MALT BEVERAGES (SAMPLES TAKEN SHORTLY BEFORE REPEAL)—*Concluded*

No.	Brand and Manufacturer	Specific gravity	Alcohol by volume	Extract	Sugars as dextrose	Protein N x 6.25	P_2O_5
			%	Gms/100 cc	Gms/100 cc	Gms/100 cc	Gms/100 cc
	Beer, imported, dark						
55764	*Erstes Kulmbacher.* Kulmbacher Brauerei, Bayern, Germany	1.0133	3.71	5.77	4.38	0.46	0.098
55544	*Pschorr-Brau.* Pschorrbrau, A.G., Munich, Germany	1.0186	4.02	7.28	5.69	0.55	0.106
	Ale, imported						
55795	*Auld Style Scotch.* Cosgrave Export Brewery Co., Toronto, Canada	1.0111	3.77	5.22	3.62	0.53	0.059
55331	*Bass.* Bass & Co., Burton-on-Trent, England	1.0067	3.81	4.08	2.60	0.26	0.028
55752	*Black Horse.* Dawes Breweries, Montreal, P.Q., Canada	1.0037	3.80	3.31	1.88	0.39	0.041
49992	*Bull Dog.* Robert Porter & Co,. Ltd., London, England	1.0082	3.73	4.43	2.94	0.45	0.094
55762	*Carling's Red Cap.* Carling Breweries, Ltd., London, Canada	1.0071	3.84	4.22	2.83	0.44	0.045
55797	*Copland's Stock.* The Copland Brewing Co., Toronto, Canada	1.0103	3.84	5.04	3.68	0.52	0.052
55545	*McEwans' Pale.* Wm. McEwans & Co., Ltd., Edinburgh, Scotland	1.0117	3.82	5.40	4.05	0.29	0.040
55546	*Oland's Red Ball Export. India Pale.* Oland's Brewery, Ltd., St. Johns, N.B., Canada	1.0077	3.79	4.34	2.80	0.40	0.038
55763	*Whitbread's Pale.* Whitbread & Co., Ltd., London, England	1.0060	3.48	3.79	2.55	0.24	0.026
	Maximum	1.0117	3.84	5.40	4.05	0.53	0.094
	Minimum	1.0037	3.48	3.31	1.88	0.24	0.026
	Average	1.0080	3.76	4.43	2.99	0.39	0.047
	Miscellaneous						
55547	*Boston Stout.* Commercial Brewing Co., Boston, Mass.	1.0185	3.94	7.20	5.07	0.67	0.068
55798	*Jeffrey's Stout.* Jeffrey's, Edinburgh, Scotland	1.0108	3.86	5.16	3.33	0.43	0.043
56504	*Weibel's Porter.* The Weibel Brewing Co., New Haven, Conn.	1.0139	3.66	5.92	4.48	0.40	0.047

TABLE IV. ANALYSES OF MALT BEVERAGES (SAMPLES TAKEN AFTER REPEAL)

No.	Brand and Manufacturer	Specific gravity	Alcohol by volume	Extract	Sugars as dextrose	Protein N x 6.25	P_2O_5
			%	Gms/100 cc	Gms/100 cc	Gms/100 cc	Gms/100 cc
	Light Beer						
57208	*Utica Club.* West End Brewing Co., Utica, N. Y.	1.0136	4.67	6.18	4.63	0.50	0.064
57209	*Schlitz.* Schlitz Brewing Co., Milwaukee, Wis.	1.0161	4.02	6.62	5.28	0.50	0.059
57211	*Beverwyck.* Beverwyck Breweries, Inc., New York, N. Y.	1.0150	4.43	6.47	5.26	0.38	0.048
56532	*Colonial.* Wehle Brewing Co., West Haven, Conn.	1.0177	5.23	7.45	5.90	0.43	0.068
56534	*Weibel's.* Weibel Brewing Co., New Haven, Conn.	1.0155	4.41	6.58	5.06	0.45	0.050
56537	*Old Brewster.* Aetna Brewing Co., Hartford, Conn.	1.0129	5.10	6.16	4.68	0.56	0.066
56539	*King's.* King's Brewery, Inc., Brooklyn, N. Y.	1.0139	4.27	6.12	4.72	0.46	0.066
56540	*Fidelio.* Fidelio Brewery, New York, N. Y.	1.0165	4.22	6.80	5.36	0.60	0.058
56541	*Rheingold.* Liebmann Breweries, Inc., Brooklyn, N. Y.	1.0157	4.94	6.85	5.22	0.59	0.080
56542	*Knickerbocker.* Jacob Ruppert, New York, N. Y.	1.0182	5.12	7.54	6.11	0.51	0.039
	Maximum	1.0182	5.23	7.54	6.11	0.60	0.080
	Minimum	1.0129	4.02	6.12	4.63	0.38	0.039
	Average	1.0155	4.64	6.68	5.22	0.50	0.060
	Dark Beer						
56549	*Ebling's Extra.* Ebling Brewing Co., Inc., New York, N. Y.	1.0142	3.69	5.99	4.50	0.48	0.062
57207	*Utica Club Wurzburger.* West End Brewing Co., Utica, N. Y.	1.0167	4.33	6.86	5.24	0.54	0.067
57211	*Beverwyck.* Beverwyck Breweries, Inc., New York, N. Y.	1.0130	4.30	5.90	4.50	0.52	0.065
	Maximum	1.0160	4.33	6.86	5.24	0.54	0.067
	Minimum	1.0130	3.69	5.90	4.50	0.48	0.062
	Average	1.0146	4.11	6.25	4.75	0.51	0.065

TABLE IV. ANALYSES OF MALT BEVERAGES (SAMPLES TAKEN AFTER REPEAL)—*Concluded*

No.	Brand and Manufacturer	Specific gravity	Alcohol by volume	Extract	Sugars as dextrose	Protein N x 6.25	P_2O_5
			%	Gms/100 cc	Gms/100 cc	Gms/100 cc	Gms/100 cc
	Ale						
57206	*Old England.* Old England Brewing Co., Derby, Conn.	1.0186	6.02	7.97	6.27	0.49	0.056
57215	*Fitzgerald's.* Fitzgerald Bros. Brewing Co., Troy, N. Y.	1.0125	4.71	5.92	4.60	0.39	0.059
57219	*Horton's Cream.* Horton Pilsener Brewing Co., New York, N. Y.	1.0107	5.36	5.68	4.28	0.51	0.065
57220	*Olde Maestro.* Elm City Brewing Co., New Haven, Conn.	1.0120	3.92	5.50	4.38	0.29	0.043
57221	*Hull's Cream.* Hull Brewing Co., New Haven, Conn.	1.0217	4.10	8.11	6.92	0.37	0.031
57223	*Utica Club Sparkling.* West End Brewing Co., Utica, N. Y.	1.0147	4.41	6.38	4.99	0.42	0.047
57224	*Utica Club Stock.* West End Brewing Co., Utica, N. Y.	1.0181	5.31	7.58	5.90	0.58	0.060
57225	*India Pale.* West End Brewing Co., Utica, N. Y.	1.0156	5.78	7.10	5.25	0.62	0.071
56533	*Colonial.* Wehle Brewing Co., West Haven, Conn.	1.0123	4.62	5.84	4.32	0.49	0.054
56535	*Weibel's Extra Light.* Weibel Brewing Co., New Haven, Conn.	1.0173	3.85	6.89	5.40	0.38	0.044
56538	*Special Dinner.* Aetna Brewing Co., Hartford, Conn.	1.0129	5.04	6.15	4.66	0.55	0.066
56543	*Cremo.* Cremo Brewing Co., New Britain, Conn.	1.0183	4.43	7.33	5.91	0.39	0.075
	Maximum	1.0217	6.02	8.11	6.92	0.62	0.075
	Minimum	1.0107	3.85	5.50	4.28	0.29	0.031
	Average	1.0154	4.80	6.70	5.24	0.46	0.056
	Porter						
57226	*Utica Club.* West End Brewing Co., Utica, N. Y.	1.0204	5.55	8.26	6.07	0.77	0.084
56536	*Extra.* Weibel Brewing Co., New Haven, Conn.	1.0218	4.47	8.27	6.51	0.47	0.054
	Average	1.0211	5.01	8.27	6.29	0.62	0.069

COFFEE

A sample of ground coffee was examined but no evidence of chicory or other material foreign to coffee was found.

A sample of liquid coffee, thought to contain some foreign material of an abrasive nature, was submitted, but no foreign substances were detected.

EGGS AND EGG PRODUCTS

Only eight official samples of shell eggs were examined. Six of these were sold as "fresh" eggs and five were of that character. One sample conformed to the specifications for fresh eggs but there was evidence that the specimens submitted had been preserved by dipping in oil. Two samples were not sold as fresh eggs. One of these was apparently a mixture of fresh and cold storage eggs and the other probably cold storage eggs.

A sample of noodles labelled Ken-Mac Egg Noodles was submitted by a health officer who suspected that the product was artificially colored. The noodles were of a very pronounced yellow color but no evidence of artificial color was found. It is possible by the use of commercial egg yolk to obtain a pronounced yellow color in egg noodles. Analysis of the sample showed moisture, 10.10 per cent; lipoids, 5.71 per cent; lipoid P_2O_5, 0.129 per cent; estimated egg solids, 7.02 per cent.

FATS AND OILS

BUTTER

Six official samples of butter were examined and all met the standard requirement of 80 per cent milk fat. Two samples examined for purchasers were found to be genuine butter.

OLIVE OIL

Twenty-five official samples of olive oil were examined. Of these eight were adulterated with cottonseed oil and two were short of the declared volume of contents. A summary of the inspection is given in Table V.

Five samples were examined for health officers and purchasers.

TABLE V. INSPECTION OF OLIVE OIL

D.C. No.	Dealer	Brand	Remarks
	Bridgeport		
56517	Washington Market	De Loro, Cream Italian	Pass
	Bristol		
56522	A. Mancini	Sopraffino D'oro	Pass
	Elmwood		
56502	Mrs. Rose Merlino	Italia, Superfine	Cottonseed oil and coal-tar dye present
	Naugatuck		
56510	R. Sabia	Italia	Cottonseed oil and coal-tar dye present
56511	Arnaldo Novi	Grande Italia	Pass
	New Britain		
49955	Cassarino & Carpinte		Pass
56514	Cassarino & Carpinte	Serto	Pass
53739	Federal Grocery Co., Inc.	Silvana	Pass
56512	Italian Olive Oil Co.	Virgin	Pass
56513	New Britain Macaroni Co.	Triestella	Short volume
56525	New Britain Macaroni Co.	Triestella	Short volume
56526	New Britain Macaroni Co.	Triestella	Pass
56515	Victoria Italia Importing Co.	Campagnolia	Pass
56516	Victoria Italia Importing Co.	Re-Gabbo	Pass
	New Haven		
56523	Joseph Abramovitz	High Star	Pass
56527	Cimino Bros., Inc.	Virgin	Cottonseed oil and coal-tar dye present
56528	Cimino Bros., Inc.	Paradise	Cottonseed oil and coal-tar dye present
56529	J. Minervino	Extra Sublime	Pass
56530	Morris Rosner	Purissimo Marca Reginella	Pass
56524		Sublime	Cottonseed oil present
	New London		
54135	Diamond Bellassi		Pass
53447	The Genova Importing Co.	Bulk	Cottonseed oil present
53774	The Genova Importing Co.	Bulk	Cottonseed oil present
	Waterbury		
53449	Milano Importing Co.	Bulk	Pass
	West Haven		
56531	E. Caccovale	Adriatic Star	Cottonseed oil and coal-tar dye present

FRUITS AND FRUIT JUICES

SWEET CIDER

One sample submitted by a purchaser was analyzed in some detail; determinations were made on the filtered liquid.

Analysis: Solids (in vacuo at 70° C) 12.72 per cent; ash 0.25 per cent; sucrose 2.80 per cent; invert sugar 8.26 per cent; total sugars 11.06 per cent; alcohol by volume 0.10 per cent; sodium benzoate present.

The results are within the limits for pure apple juice. The preservative, sodium benzoate, was added to retard fermentation.

Six official samples were examined. Solids ranged from 10.09 per cent to 13.42 per cent, and the ash content from 0.24 to 0.30 per cent. Three of the samples were examined for arsenic. In two no arsenic was found. The third contained 0.08 parts per million, which is far below the tolerance set by the U. S. Department of Agriculture (1.4 p.p.m.).

HONEY

Two samples of honey were examined for a producer. Both were within the limits for floral honey and no evidence of appreciable contamination with honeydew honey was found.

A sample of "honey butter" was examined with the following results:

54136. Moisture 11.01 per cent; ash 0.16 per cent; direct polarization at 20° — 12.6; direct at 87° + 10.3; invert polarization at 20° — 16.5; invert at 87° + 8.8; reducing sugars before inversion 69.75 per cent; after inversion 75.54 per cent; tests for glucose and invert sugar, negative. The calculated composition is sucrose, 5.50 per cent; levulose, 37.24 per cent; dextrose, 33.70 per cent.

The product is within the limits of composition of pure honey except that the solids are higher than usual. This may be the result of concentration to give the product a "butter" consistency. The sample was purchased from M. J. Burnham, So. Main St., West Hartford and manufactured by Allen Latham, Norwichtown, Conn.

ICE CREAM

D. C. Walden, H. C. Yale, O. L. Nolan and E. M. Bailey

The statutes relating to ice cream were revised by the Connecticut Legislature of 1933 as appears in Public Acts, Chapter 308.

The changes of interest from the standpoint of chemical control are: The provision raising the milk fat content of plain ice creams from 8 to 10 per cent, and of fruit and nut ice creams from 6 to 8 per cent; and the new provision for the control of overrun which requires that in no case shall any ice cream contain less than 1.6 pounds of food solids per gallon. This is equivalent to a total weight per gallon of about 4.6 pounds and represents approximately 100 per cent overrun in case of ice cream with 35 per cent solids.

"Overrun" means the difference in volume between the ice cream mix and the finished product. It is customary in commercial practice to find that a gallon of mix represents about two gallons of ice cream, the extra volume being secured by the process of incorporating air. Occasionally one hears complaints, facetious or otherwise, that profit accrues to ice

cream manufacturers from this device for selling air. It must be remembered, however, that ice cream would not be the product that the consumer expects to buy unless a suitable volume of air had been incorporated. Frozen ice cream mix would not be ice cream. On the other hand excessive overrun is undesirable and the limit set in the present statute seems fair. The device adopted does not fix a definite figure for overrun. It allows for variation depending upon the solids (body) of the product. If solids are sufficiently in excess of 35 per cent, a greater overrun than 100 per cent may be represented and yet meet the requirement of food solids per gallon. This requirement could not be met, however, in case of an ice cream with less than 35 per cent of solids except by keeping the overrun well under 100 per cent.

Whether ice cream meets the statute requirement for food solids is difficult to determine exactly by objective examination of samples in the laboratory, because ready means of determining exact volumes are not at hand. Therefore we have not attempted to determine the overrun in bulk samples. In the case of packaged goods we have assumed that the volumes indicated on the containers were correct. Results showing a greater weight than 1.6 pounds of food solids per gallon mean, therefore, either that overrun was less than the limit permitted, or that the package contained more than the professed volume.

The results of the inspection are given in Table VI. One hundred and fifty samples were examined for the Dairy and Food Commissioner and thirteen for individuals.

A summary of 87 samples sold in manufacturers' packages, and for which the declared volume of contents was assumed to be correct, is as follows:

	Fat %	Solids %	Solids per gallon, lbs.
Maximum	21.0	44.9	3.3
Minimum	9.0	30.1	1.3
Average	13.9	38.6	1.9

The quantity of ice cream sold for 1 pint was weighed in each case as it was received in the laboratory. The maximum weight found was 465 grams, the minimum 111.5 grams, and the average 264.0 grams. In terms of ounces these values are approximately 16.3, 3.9 and 9.3, in the order named. A much narrower range of weight variation would include 81 of the 87 samples. Omitting the extreme high of 465, and 5 weights that were less than 150 grams, the maximum is 384 grams, the minimum 194 grams, and the average 270 grams, or approximately 13.5, 6.8 and 9.5 ounces, in the order named. This range is more nearly in accord with that shown in published overrun tables, one of which gives 11 ounces as the maximum and 8 ounces as the minimum weight of pint bricks of ice cream, representing overruns of from 65 to 125 per cent on the basis of a mix weighing 9 pounds to the gallon.

The sample that weighed 465 grams to the pint contained 40.6 per cent of solids and weighed 8.1 pounds per gallon. It therefore represents an overrun of only 11 per cent on the basis of a mix weighing 9 pounds to the gallon, or 15 per cent if the mix weighed as much as 9.3 pounds to the gallon. The weight received in this case was more nearly correct for a quart than for a pint; but the records indicate that a pint was requested and the price paid corresponded to that quantity. This sample was therefore practically frozen mix instead of ice cream. The food solids were 3.3 pounds per gallon which is nearly as much as was contained in the mix, 3.7.

The sample that weighed only 111.5 grams to the pint contained 40.7 per cent of solids and weighed 3.9 pounds to the gallon, representing an overrun of 131 per cent. The percentage of food solids present, however, was high enough to insure the legal minimum of 1.6 pounds per gallon in spite of the high overrun.

Of three samples that showed only 1.3 pounds of food solids per gallon, the lowest in food solids contained 30.9 per cent and weighed 4.2 pounds per gallon, representing an overrun of 114 per cent. The highest in food solids contained 36.1 per cent and weighed 3.6 pounds to the gallon, representing 150 per cent overrun. If the overrun in this case had been only 100 per cent, or if the solids had been 45 per cent, the legal minimum of 1.6 pounds of food solids would have been safely met. That is to say, if 100 per cent overrun is exceeded and the legal minimum of food solids per gallon is to be maintained, the solids must substantially exceed 35 per cent.

In the case of samples bought in bulk, records of weights were taken for only 36. One-half pint samples were taken in all cases. The maximum weight obtained was 268 grams, the minimum, 151 grams and the average, 204 grams. Thus the purchasers of half-pints of ice cream got from 5.3 ounces to 9.4 ounces, and on the average 7.1 ounces. Putting these weights on the one pint basis for comparison with the quantities obtained in factory packages or bricks we have the following:

	Factory packages, 1 pint (basis of 81 samples) ozs.	Dispensed in bulk for 1 pint (basis of 36 samples) ozs.
Maximum	13.5	18.8
Minimum	6.8	10.6
Average	9.5	14.2

The range quoted for factory packages omits the extreme high and low weights mentioned earlier and is probably more typical of prevailing practice in trade. According to the Laboratory Manual of the International Association of Milk Dealers, a pint brick of ice cream will weigh from 8 to 11 ounces, which is equivalent to from 4 to 5.5 pounds to the gallon. The range we have found for factory pints is somewhat wider, but it is evident that, assuming bulk ice cream to be of the same general composition and character as the brick product, the dealer who retails in bulk dispenses "pints" that are too generous.

For a number of years past we have observed that the fat content of ice cream as sold in this State was well above the legal minima of 8 per cent for plain ice cream and 6 per cent for fruit and nut ice cream. In 1929 nearly 90 per cent of the samples tested exceeded 10 per cent in fat and more than half of them were 12 per cent or more. The change in the statute raising the figures from 8 and 6 per cent to 10 and 8 per cent has not materially affected manufacturing practice here.

Thirty-nine samples of so-called frozen custard and two miscellaneous desserts were examined. "Frozen custard" must conform to the sanitary regulations provided for ice cream and is presumed to meet the standard for fat content of ice cream unless the actual fat content is declared.

TABLE VI. ANALYSES OF ICE CREAM

No.	Flavor and brand	Dealer	Manufacturer	Fat	Solids	Solids per gal.
		Ansonia		%	%	lbs.
55841	Strawberry, bulk	Laites No. End Pharmacy	Own make	14.0	....	....
55839	Vanilla, bulk	Purity Tea Room	Own make	13.0	....	....
55837	Vanilla, bulk	Vonetas Bros.	Own make	15.8	....	....
		Bridgeport				
55900	Vanilla, brick	Beechmont Creamery, Inc.	Own make	17.2	40.2	2.0
56355	Vanilla, brick	A. Bettels	Own make	15.2	38.5	1.8
55899	Fruit, brick	Ivar Bjorklund	Own make	14.0	43.7	2.0
55896	Neapolitan, brick	Collins Pharmacy	Clover Farms, Inc.	12.4	32.1	1.5
55897	Vanilla, brick	Collins Pharmacy	Clover Farms, Inc.	15.2	38.4	1.7
56351	Neapolitan, brick	Collins Pharmacy	Clover Farms, Inc.	12.4	34.9	1.8
56296	Vanilla and chocolate, brick	Decas Bros. Confectionery	Own make	15.0	41.3	2.0
55901	Neapolitan, brick	Hertz's Drug Store	Jersey Gold I. C. Co., N. Y.	11.2	39.1	2.0
56357	Neapolitan, brick—Fro-Joy	Liggett's Drug Co.	General I. C. Co.	17.2	44.8	2.1
55898	Neapolitan, brick	Ritz Soda Shoppe	Huber's I. C. Co.	11.8	39.7	1.7
		Bristol				
55942	Strawberry, bulk	Liberty Confectionery	Own make	16.2	....	....
55944	Peach, brick	Palace of Sweets	Own make	18.6	....	....
55947	Vanilla and Strawberry, brick	Sweetland Confectionery	Own make	14.4	....	....
		Canton				
55159	Vanilla, bulk	Margaret Dyer	Own make	15.6	37.9	....
		Danbury				
55932	Neapolitan, brick	Danbury Creamery, Inc.	Own make	14.6	41.6	1.9
55927	Neapolitan, brick	C. C. Hatch	Own make	11.6	34.3	1.5
55928	Neapolitan, brick	C. C. Hatch	Own make	13.0	35.8	1.6
55930	Neapolitan, brick	Rider's Dairy Co., Inc.	Own make	11.2	38.7	1.8

TABLE VI. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor and brand	Dealer	Manufacturer	Fat	Solids	Solids per gal.
		Forestville				
55860	Neapolitan, brick	Kent Pharmacy	Nelson's Purity I. C. Co.	15.2	38.9	1.5
		Greenwich				
55192	Vanilla, bulk	Beach Club	Hydrox I. C. Co., N. Y.	12.6	39.8	....
55188	Vanilla and chocolate, brick	Old Field Point Market	Hershey's I. C. Co., N. Y.	12.8	35.8	1.7
55182	Vanilla, bulk	Schofield I. C. Shop	Own make	18.2	44.9	....
55184	Neapolitan, brick	Washington Confectionery Co.	Neilsen's I. C. Co., Portchester, N. Y.	12.6	38.5	1.5
		Old Greenwich				
55195	Vanilla, bulk	J. A. Griffin	Own make	16.8	41.3	....
		Groton				
56267	Strawberry, bulk	Scuris Bros.	Own make	19.0	....	....
		Hartford				
55749	Peach, bulk	J. L. Besse & Co.	Own make	12.2	37.8	....
55739	Chocolate, bulk	Carlyn's, Inc.	Own make	12.6	45.1	....
55745	Vanilla, bulk	G. Fox & Co.	Own make	23.0	43.5	....
55174	Vanilla, brick	Highland Dairy Co.	Own make	15.4	39.5	1.9
55175	Neapolitan fruit, brick	Highland Dairy Co.	Own make	12.2	34.8	1.8
55731	Strawberry, brick	Ice Cream Shoppe	Own make	14.2	38.1	2.0
55680	Vanilla, brick	Ideal Drug Co.	Ce Brook I. C. Co.	14.0	39.0	2.2
55737	Chocolate, bulk	F. G. Jensen's & Sons, Inc.	Own make	18.8	41.1	....
55733	Strawberry, brick	Mae Rose Tea Room	Own make	14.2	36.2	1.7
55743	Raspberry, bulk	Mills Spa, Inc.	Own make	16.8	39.9	....
55747	Strawberry, bulk	The New Paris	Own make	20.6	42.5	....
55676	Progress brick	Rivoli Soda Shop	Crown I. C. Co.	11.8	39.4	1.8
55741	Vanilla, bulk	Robbin's, Inc.	Own make	12.0	35.4	....
55735	Peach, bulk	Newton Robertson's Grocery Co.	Own make	18.0	39.7	....
55678	Thrift brick—Fro-Joy	Wylly's Shoppe	General I. C. Co.	10.4	37.2	1.7
55679	Vanilla, brick—Fro-Joy	Wylly's Shoppe	General I. C. Co.	15.0	39.7	2.1

TABLE VI. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor and brand	Dealer	Manufacturer	Fat	Solids	Solids per gal.
		Litchfield		%	%	lbs.
55163	Chocolate, bulk	L. A. Dickinson	Own make	13.6	41.3	....
		Meriden				
55711	Chocolate, bulk	Billie Burns Candy Shoppe	Own make	11.8	33.4	....
55709	Vanilla, bulk	The Chocolate Shoppe	Own make	19.4	40.0	....
55713	Peach, bulk	Katt Bros.	Own make	12.4	32.2	....
56465	Vanilla and chocolate, brick	Loft's, Inc.	Own make	20.4	48.2	2.8
56466	Vanilla, bulk	Loft's, Inc.	Own make	20.2	....	....
55717	Vanilla, bulk	John Merino	Own make	7.4	29.2	....
55715	Neapolitan, brick	United Fruit & Vegetable Market	Cooper's I. C. Co., R. I.	11.2	34.3	1.4
		Middletown				
55725	Peach, brick	Cronin Drug Co.	Own make	18.0	35.4	1.7
55681	Neapolitan, brick	Kinsella Drug Co.	Millbrook I. C. Co.	12.8	39.2	1.8
55682	Yankee, brick	Kinsella Drug Co.	Millbrook I. C. Co.	10.4	36.1	1.7
55683	Neapolitan, brick	Millardo's Pharmacy	Linbrook I. C. Co.	10.0	36.0	1.6
55684	Futura brick	Millardo's Pharmacy	H. P. Hood's Sons, Cambridge, Mass.	13.8	38.8	1.9
55723	Caramel, bulk	Neville's Candy Co.	Own make	21.0	32.7	....
55721	Strawberry, brick	Olympia Candy Shop	Own make	17.4	37.6	1.5
56382	Vanilla, brick	Olympia Candy Shop	Own make	19.6	38.4	1.7
55719	Vanilla, bulk	J. W. Stueck & Sons	Own make	17.0	38.0	....
		Moosup				
55905	Neapolitan, brick—Fro-Joy	D. DiVersi	General I. C. Co.	10.0	34.5	1.6
55903	Neapolitan, brick	Moosup Pharmacy	Dairimaid I. C. Co., Worcester, Mass.	10.0	35.4	1.6
		Mystic				
56265	Vanilla, bulk	Riverside Ice Cream Parlor	Own make	18.6	....	....

TABLE VI. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor and brand	Dealer	Manufacturer	Fat	Solids	Solids per gal.
		Naugatuck		%	%	lbs.
55830	Neapolitan, brick	Naugatuck Dairy Ice Cream Co.	Own make	15.4	39.9	1.9
55831	Neapolitan, brick	Naugatuck Dairy Ice Cream Co.	Own make	11.2	36.3	1.6
		New Britain				
55844	Vanilla, brick	Crown Ice Cream Co.	Own make	15.2	40.7	1.9
55855	Orange pineapple, brick	Linwood Market	Own make	16.4	39.9	2.2
55853	Strawberry, brick	Roger's Spa	Shuttle Meadow Farms	12.6	37.3	1.9
55846	Vanilla, brick	J. E. Seibert & Son	Own make	15.0	41.6	2.3
55848	Vanilla, bulk	Star Confectionery	Own make	15.0	....	....
55850	Strawberry, brick	St. Clair Confectionery	Own make	14.6	39.5	1.8
		New Haven				
56256	Country Club, brick	Cacace Confectionery Co.	Ridgewood Farm Dairy, No. Haven	14.6	41.9	1.7
56257	Neapolitan, brick	Cacace Confectionery Co.	Ridgewood Farm Dairy, No. Haven	11.0	36.1	1.3
56378	Chocolate and strawberry, brick	Edgewood Soda Shop	Own make	14.2	42.0	2.1
56380	Vanilla, brick	Edgewood Soda Shop	Own make	11.2	37.5	1.7
55686	Home Package, Neapolitan	Eld Pharmacy	Sagal Lou I. C. Co., New Haven	14.2	41.6	1.9
55685	Neapolitan, brick	Eld Pharmacy	Sagal Lou I. C. Co., New Haven	10.4	37.9	1.9
55687	Chocolate, brick	Harry's Bakery	Brock-Hall Dairy Co., Hamden	11.8	39.2	1.8
55688	Vanilla and chocolate	Harry's Bakery	Royal I. C. Corp., New York, N. Y.	9.0	35.5	....
56258	Futura, brick	H. P. Hood & Sons, Inc.	Own make	13.4	39.3	2.0
56259	Yankee, brick	H. P. Hood & Sons, Inc.	Own make	11.2	38.1	1.7
56467	Bulk	Loft's, Inc.	Own make	19.6	....	....
56261	Thrift, brick	Marioni Ice Cream Co.	Own make	9.2	30.9	1.3
56260	Neapolitan, brick	Marioni Ice Cream Co.	Own make	12.0	35.7	1.8

TABLE VI. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor and brand	Dealer	Manufacturer	Fat	Solids	Solids per gal.
		New London		%	%	lbs.
56286	Brick	Capitol Candy Kitchen	Own make	15.6	40.6	3.3
56277	Neapolitan, brick	A. J. Maloof	Own make	15.4	40.1	1.9
56278	Neapolitan, brick	A. J. Maloof	Own make	11.2	36.9	1.7
56271	Vanilla, brick	Mumford Dairies	Own make	15.4	44.8	2.5
56290	Strawberry, brick	Olympia Tea Room	Own make	15.4	41.9	2.4
56269	Strawberry, bulk	G. P. Photos	Own make	13.4	....	....
56275	Chocolate, brick	Radway Dairy, Inc.	Own make	15.0	41.7	2.0
56283	Neapolitan, brick	United Fruit and Vegetable Store	Cooper I. C. Co.	10.2	36.0	1.4
		New Milford				
55921	Strawberry, bulk	Arthur Bona	Own make	13.6	....	....
55916	Neapolitan, brick	C. H. Hipp	Own make	13.6	37.8	2.0
55917	Neapolitan, brick	C. H. Hipp	Own make	11.6	36.1	1.9
55919	Vanilla, bulk	Geo. O. Nicholas	Own make	16.4	....	....
		Norwalk				
55450	Vanilla, bulk	Lowe's Soda Shop	Own make	13.6	37.6	....
55819	Strawberry, bulk	Lowe's Soda Shop	Own make	15.2	....	....
55817	Peach, bulk	Peter's Sweet Shop	Own make	12.0	....	....
		South Norwalk				
55825	Banana, brick	Bessie Abraham	Own make	13.2	31.3	1.3
55821	Vanilla, bulk	Palace of Sweets	Own make	9.4	....	....
55823	Peach, bulk	Strand Confectionery	Own make	10.4	....	....

TABLE VI. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor and brand	Dealer	Manufacturer	Fat	Solids	Solids per gal.
		Norwich		%	%	lbs.
55652	Strawberry, bulk	A. N. Alexander & Co.	Own make	14.6	42.2	....
55498	Vanilla, bulk	Olympia Candy Kitchen	Own make	9.6	33.3	....
55650	Neapolitan, brick	C. C. Treat	Own make	16.4	41.0	2.2
55651	Vanilla, bulk	C. C. Treat	Own make	15.2	37.5	....
		Norwichtown				
55494	Progress, brick	Norwich Dairy Co.	Own make	10.4	36.6	1.6
55496	Neapolitan, brick	Norwich Dairy Co.	Own make	17.2	42.9	2.0
		Pawcatuck				
56263	Strawberry, bulk	Greek-American Fruit Co.	Own make	23.6	....	....
		Plainville				
55857	Vanilla, bulk	Palace of Sweets	Own make	16.4	....	....
		Shelton				
55833	Vanilla, bulk	E. J. Barden	Own make	11.2	....	....
		Somers				
55698	Neapolitan, brick	H. S. Kibbe	M. K. Skipton I. C. Co., Springfield, Mass.	11.4	37.2	1.5
55696	Vanilla, bulk	Old Homestead Inn	Turnhill, Greenfield, Mass.	15.8	42.0	....
		South Manchester				
55910	Neapolitan, brick	Manchester Dairy Ice Cream Co.	Own make	14.6	42.7	1.5
55912	Neapolitan, brick	Royal Ice Cream Co.	Own make	11.8	39.2	1.8
55914	Neapolitan, brick	Royal Ice Cream Co.	Own make	16.2	42.3	1.6
		Stafford Springs				
55704	Vanilla, bulk	Louis Campo	Own make	16.4	36.5	....
55700	Vanilla, bulk	Ed. Hotkowski	Own make	17.2	42.1	....

TABLE VI. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor and brand	Dealer	Manufacturer	Fat	Solids	Solids per gal.
		Stamford		%	%	lbs.
55199	Neapolitan, brick	Pickwick Ice Cream Co.	Own make	12.2	39.5	2.1
55176	Vanilla and chocolate, brick	Richardson's, Inc.	Louis Sherry, N. Y. City	18.0	38.4	2.6
		Suffield				
55690	Strawberry, bulk	Jas. V. Mix	Own make	15.6	39.1	....
		Thompsonville				
55692	Chocolate, bulk	A. F. Scavotto	Own make	15.6	40.7	....
55694	Vanilla, bulk	A. Tatoian	Own make	15.4	39.5	....
		Torrington				
55165	Vanilla, bulk	Blue Plate Tea Room	Own make	11.6	30.1	....
55949	Neapolitan, brick	Jacob's Ice Cream Co.	Own make	11.8	35.4	1.7
55167	Neapolitan, brick	Jacob's Ice Cream Co.	Own make	13.4	35.5	1.4
55168	Neapolitan, brick	Jacob's Ice Cream Co.	Own make	20.2	39.8	1.8
55171	Vanilla, bulk	John Khoury	Own make	13.2	37.2	....
55872	Chocolate, brick	Torrington Creamery, Inc.	Own make	11.4	40.7	1.6
55169	Neapolitan, brick	Webbs & Seigel	Torrington Creamery, Inc., Torrington	12.6	40.2	2.1
		Union				
55702	Vanilla, bulk	Mashopaug Garage	Forest Lake I. C. Co., Palmer, Mass.	17.0	39.5	....
		Waterbury				
55482	Vanilla, bulk	Blue Bird Tea Room	Own make	16.4	38.8	....
55484	Neapolitan, brick	Lake Drug Co.	A. H. Merriman & Sons	15.2	38.9	2.0
55485	Neapolitan, brick	Litsky Pharmacy	R. F. Worden & Co.	14.8	41.9	1.9
56491	Vanilla, brick	Maple Hill Farm	Own make	20.0	35.0	2.2
55478	Vanilla, bulk	Whelan's Ice Cream Co.	Own make	13.2	35.5	....

TABLE VI. ANALYSES OF ICE CREAM—*Concluded*

No.	Flavor and brand	Dealer	Manufacturer	Fat	Solids	Solids per gal.
		Waterville		%	%	lbs.
55480	Coffee, bulk	E. M. Cookson	Own make	19.2	40.4	....
		West Haven				
56372	Strawberry, bulk	Cameo Confectionery	Own make	12.6	....	....
56374	Chocolate, brick	Canfield's	Own make	19.2	44.3	3.0
56376	Neapolitan, brick	Clark Dairy Co., Inc.	Own make	15.4	38.1	1.8
56377	Progress, brick	Clark Dairy Co., Inc.	Own make	11.4	35.8	1.6
56370	Strawberry, bulk	Thompson Spa	Own make	10.4	....	....
		Willimantic				
55660	Vanilla, bulk	Albro's Soda Shop	Own make	15.8	36.8	....
55907	Neapolitan, brick	Bay State Drug Co.	H. P. Hood's Sons, Cambridge, Mass.	13.6	40.1	1.4
55662	Vanilla, bulk	Dimock Farm Products	Own make	18.4	40.4	....
55656	Thrift, brick	Hallock's Restaurant	B. C. Hallock Ice Cream Co.	12.4	35.6	1.9
55658	Neapolitan, brick	Hallock's Restaurant	B. C. Hallock Ice Cream Co.	18.2	41.3	1.9
55654	Vanilla, bulk	Thread City Candy Kitchen	Own make	16.4	36.5	....
		Winsted				
55161	Vanilla, bulk	Highland Sweet Shoppe	Own make	14.4	39.7	....

MAPLE SYRUP, ETC.

Three official samples of maple syrup were examined and all were passed as genuine.

Three samples submitted by health officers and others also appeared to be of standard quality.

A sample of syrup derived from squash, 1837, was examined with results as follows:

Moisture	28.36%
Ash	5.28
Total nitrogen	0.384
Protein (N x 6.25)	2.40
Ether extract (Roese-Gottlieb)	0.14
Reducing sugar (calc. as invert)	44.97
Sucrose	4.47
Insoluble ash	0.67
Alkalinity of soluble ash cc N.HCl/100 gms	46.41
Alkalinity insoluble ash	9.98
Acidity as acetic acid	1.48
Winton lead number	7.14
Starch	none
Nitrogen-free extract including dextrin (by diff.)	63.82

The syrup has about 64 per cent of carbohydrates including dextrin, and about 72 per cent of total food solids. Its composition resembles that of other common food syrups, such as molasses and sorghum syrup, for example.

MILK AND MILK PRODUCTS

MARKET MILK

Twenty-three official samples of market milk were examined for the Dairy and Food Commissioner. No instances of skimming or of dilution with water were found.

Three hundred and thirty-eight samples were tested for producers and others interested.

EVAPORATED MILK

Two official samples of evaporated milk were examined and both were of standard quality.

CREAM

Eleven samples of sour cream were tested for milk fat and the fat content was found to range from 10 to 38 per cent. Sour cream should not contain less than 16 per cent judged by the same standard as applies to sweet cream.

Sixteen samples of sweet cream were tested for producers and others interested.

SHELLED NUTS

Shelled nuts were examined for residual sulphur dioxide which might be present in the event of sulphuring to prevent insect infestation. Sixteen samples of mixed nuts were tested but no evidence of sulphur dioxide was found in any of them. All of the samples were submitted by the Dairy and Food Commissioner.

SALAD DRESSING

Two samples of salad dressing were submitted for examination. No. 1405, *Tasti-Gold Mayonnaise* is distributed by the Silver Distributing Co., Hartford, and No. 1811, *Rajah Brand Salad Dressing,* by the Great Atlantic and Pacific Tea Co., Cheshire, Conn.

Analyses of these two products are as follows:

	No. 1405 %	No. 1811 %
Solids	87.74	67.81
Fat	84.51	55.12
Ash	1.02	1.43
Salt (NaCl)	0.88	1.09
Total P_2O_5	0.108	0.109
Lipoid P_2O_5	0.067	0.054
Total nitrogen	0.23	0.28
Protein (N x 6.25)	1.44	1.75
Starch	none	1.70
Approx. egg content from total P_2O_5	7.7	7.8

No. 1405 conforms to the fat standard for mayonnaise dressing. The approximate egg content is based upon the total phosphoric acid content. No. 1811 is not claimed to be a mayonnaise and is not required therefore to meet the standard for mayonnaise. It is apparently an egg product containing approximately 7.8 per cent of egg.

SPRAY RESIDUE

The work on spray residue during the season of 1933 has involved the examination of 170 samples of fruits, vegetables and miscellaneous materials for arsenic, or lead, or both; and in a few experimental studies, tests for or determinations of fluorine and nicotine have been made. In addition to official samples of fruits and vegetables taken in open markets, samples submitted directly by growers have been examined and reported to them.

The tolerance established by the U. S. Department of Agriculture for the season of 1933 is 0.01 grain of arsenic (As_2O_3) and 0.014 grain of lead (Pb) per pound of food product. In the case of fruit, however, the somewhat more liberal tolerance for lead of 0.02 grain per pound has been allowed for the 1933 crop.

The results of the survey show that, excluding samples representing experimental or investigational work of the station, 59 in number, the limits of the tolerances were not exceeded by any significant amount. A summary of the work done is given as follows:

	Arsenic (As_2O_3) gr./lb.	Lead (Pb) gr./lb.
44 official samples of apples	none to 0.0107	none to 0.017
44 samples of apples submitted by growers	none to 0.009	none to 0.020
23 official samples of vegetables largely string beans	none to 0.009	.....

The results of a similar survey made last year showed only 21 samples out of 153 that exceeded the tolerance for arsenic, and of these only 7 exceeded 0.014 grain per pound. This was regarded as a very satisfactory showing, but the results this year are remarkable. The improvement is probably due largely to the avoidance of late applications of arsenicals, particularly lead arsenate, during the season of 1933. So far as we are informed there has been no practice of washing of fruit before marketing.

Fifty-nine samples examined for arsenic and other spray materials in connection with investigations by other departments of the Station are not discussed here.

The method used for the determination of arsenic was the official Gutzeit method. For the determination of lead, the method employed was that outlined by the Food and Drug Administration of the U. S. Department of Agriculture, the so-called sulphide method, whereby the lead content was estimated colorimetrically as the sulphide by comparison with solutions containing known amounts of lead. This method was later improved, and recently a shorter and more accurate procedure has been suggested by the Department above mentioned, the so-called "dithizone" method. Apparently the sulphide procedure overestimates the lead content and may indicate traces of lead when none is present. So far as we have made comparative trials of the two procedures, the "dithizone" method appears to avoid that difficulty.

SQUASH

Fourteen samples of squash were examined for content of total solids. Samples were submitted by the Associated Seed Growers, Inc., New Haven. Solids were determined on the fresh material exclusive of the seeds. Solids ranged from 5.91 to 17.20 per cent.

VINEGAR

No special survey of vinegar was made during the past year. Four official samples were submitted by the Dairy and Food Commissioner and ten were submitted by individuals. Of the official samples, two were below standard in acid strength. Acidity is required to be not less than 4 per cent.

UNCLASSIFIED MATERIALS

Sixty-nine samples were submitted by the Dairy and Food Commissioner, health officers, physicians and others interested. These were of miscellaneous character and for the most part require no special comment.

2271. *"Diabetic sugar."* This sugar was submitted by a diabetic patient to whom it had been recommended. The sugar was identified as dextrose and the patient was advised that if used, the same precautions would be necessary as when eating ordinary sugar or starchy foods.

2942, 2943. *Almond milk* and *Cocoanut milk* respectively. They were water suspensions of the ground nuts. Analyses were made as follows:

	No. 2942 %	No. 2943 %
Solids	15.98	8.48
Ash	0.54	0.23
Protein (N x 6.25)	4.56	0.89
Fat	9.44	6.43
Fiber	trace	trace
Sugars (by difference)	1.44	0.93
Calcium (as oxide)	0.058	0.012
Phosphorus (as pentoxide)	0.202	0.052
Iron (as ferric oxide)	0.0013	0.0013

3628. *Soy Bean Flour.* Madison Rural Sanitorium and Hospital, Madison, Tennessee.

2859. *Breakfast Crisps;* 2860 *Fruit Sticks;* 2048 *Vigorost;* Madison Sanitorium Food Co., Madison, Tennessee. The breakfast crisps and fruit sticks are mixtures of cereals with soybean flour. Vigorost is a vegetable substitute for meat. Analyses of this group of products are as follows:

	No. 3628 %	No. 2859 %	No. 2860 %	No. 2048 %
Moisture	7.78	8.42	10.50	56.59
Ash	3.18	4.29	2.15	2.48
Protein (N x 6.25)	34.38	16.69	8.50	18.28
Fiber	9.13	1.95	1.51	0.48
Carbohydrate other than fiber	29.04	64.90	67.16	13.03[1]
Fat	16.49	3.75	10.18	9.14

DRUGS

AMMONIA WATER

Eight samples were examined. One of them was stronger ammonia water and labelled as such but it had not the content required. Ammonia water should contain not less than 9.5, nor more than 10.5 per cent, of ammonia (NH_3). Stronger ammonia water should contain not less than 27 per cent of ammonia. The sample that was labelled as stronger was declared to be 26 per cent and the analysis showed the declaration to be correct. Analyses are given in Table VII.

TABLE VII. ANALYSES OF AMMONIA WATER

No.	Dealer	Ammonia (NH_3) per cent
55320	Bursten's Pharmacy, Bridgeport	7.0
55309	Lombardi's Drug Store, Darien	9.4
55221	The Holcomb Drug Co., Inc., East Haven	2.5
54984	H. F. Bassett, New Milford	6.5
55102	G. E. Lemartre, Putnam	26.6
55116	McCormick Drug Co., Stafford Springs	1.9
55113	Wick's Drug Store, Stafford Springs	8.7
55324	Blank Bros. Pharmacy, Stratford	6.6

ANTIMONY AND POTASSIUM TARTRATE
(Tartar Emetic)

This substance should contain not less than 98.5 per cent of antimony-potassium tartrate.

[1]Starch 4.93 per cent, total sugars 1.69 per cent.

The five samples tested showed in excess of 99 per cent, and some of them slightly in excess of 100 per cent, due to loss of water of crystalization. The crystals readily effloresce on exposure to air.

Samples were purchased at the following places: Ideal Pharmacy, Danbury; E. J. Bardein, Shelton; Harding Drug Store, Derby; Terragna Drug Co., Hartford; Millard Drug Co., Devon.

OLEORESIN OF ASPIDIUM

This official product yields not less than 24 per cent of crude filicin. Samples were assayed by a modification of the U.S.P.X. procedure devised by Pabst and Bliss (Jour. Am. Pharm. Assoc., 21,435, 1932; 22,289, 1933), and regarded by these investigators as more reliable and expeditious than the U.S.P. method.

Four samples were examined and one was substandard. Analyses are given in Table VIII.

TABLE VIII. ASSAYS OF OLEORESIN OF ASPIDIUM

No.	Dealer	Crude filicin per cent
55091	Whalen's Drug Store, Bristol	27.93
55136	John A. Rosenthal, Hartford	16.40
55146	Liggett's Drug Store, Norwich	30.32
55201	Curran & Flynn, Willimantic	25.15

OINTMENT OF BELLADONNA

Based on the U.S.P. formula this preparation should contain not less than 0.118 nor more than 0.132 per cent of belladonna alkaloids. All samples were assayed by the paraffin method (Jour. A.O.A.C. XV, 83, 1932). Sample 55051 was also assayed by the shakeout method (same reference).

Twelve samples were examined of which three were below standard by substantial amounts. Analyses are given in Table IX.

TABLE IX. ASSAYS OF OINTMENT OF BELLADONNA

No.	Dealer	Belladonna alkaloids per cent
55083	C. F. Hotchkiss, Derby	0.117
55236	J. M. Dougherty, Hartford	0.094
55240	Parent's Drug Store, Hartford	0.111
55223	Adams Pharmacy, Meriden	0.127
55225	Whelan's Drug Store, Meriden	0.121
55230	Washington Ave. Pharmacy, New Haven	0.111
55305	The McNichols Drug Co., Norwalk	0.087
55081	Shelton Pharmacy, Shelton	0.108
55315	Monroe Drug Co., So. Norwalk	0.120
55051	Union City Pharmacy, Union City	0.126
55303	Silver's Drug Shop, West Haven	0.076
55316	Hugh T. Driscoll, Westport	0.135

BORIC ACID

Boric acid should contain not less than 99.5 per cent of H_3BO_3. All samples examined met this requirement within a reasonable tolerance and otherwise were of satisfactory quality.

Twenty samples were examined. Sample 55313 was conspicuously higher than the others in arsenic content but did not exceed the tolerance allowed by the Pharmacopoeia. Analyses are given in Table X.

TABLE X. ASSAYS OF BORIC ACID

No.	Dealer	Moisture per cent	Boric acid per cent	Arsenic (As_2O_3) p.p.m.	Heavy metals per cent
	Ansonia				
55065	McQuade's Drug Store	0.005	99.65	none	none
	Colchester				
55138	A. T. Van Cleave	0.005	97.06	none	none
	Darien				
55313	The Bell Pharmacy	0.00	98.15	2.5	none
	East Hartford				
55211	Prospect Pharmacy	0.02	97.40	none	none
	Hartford				
55088	Peter Glassman	0.00	98.93	1.0	none
55235	Hillside Pharmacy	0.005	97.85	none	none
55132	Temkin Drug Co.	0.01	98.85	none	none
55133	Temkin Drug Co.	0.005	97.78	none	none
54994	Wetmore Pharmacy	0.02	98.40	trace	none
	Hazardville				
55118	Hazardville Pharmacy	0.00	98.58	none	none
	New Haven				
55229	The Congress Pharmacy ...	0.01	98.63	trace	none
	Norwalk				
55306	Conroy's Pharmacy	0.01	97.66	none	none
	Norwich				
55141	Jaspin Cut Rate Store	0.035	98.26	trace	none
	Putnam				
55106	Donahue Drug Store, Inc...	0.00	99.25	trace	none
	Seymour				
55061	Geo. Smith & Son	0.00	98.90	trace	none
	South Norwalk				
55314	DeLux Pharmacy	0.00	98.26	none	none
55308	Wershaw's Drug Stores, Inc.	0.00	98.45	none	none
	Stratford				
55071	Hamilton Pharmacy	0.00	99.56	trace	none
	Union City				
55056	Union City Pharmacy	0.04	98.75	trace	none
	Waterbury				
55097	Ideal Pharmacy	0.00	99.05	trace	none

PRECIPITATED CALCIUM CARBONATE
(Precipitated Chalk)

When dried to constant weight at 200° C precipitated chalk contains not less than 98 per cent of calcium carbonate.

Fifteen samples were examined. Thirteen fully met the standard; two were slightly deficient but were passed.

Analyses will be found in Table XI.

TABLE XI. ASSAYS OF PRECIPITATED CHALK

No.	Dealer	$CaCO_3$ (dry basis) per cent
55063	McQuade's Drug Store, Ansonia	97.60
55064	McQuade's Drug Store, Ansonia	98.58
55202	People's Drug Store, Burnside	99.26
55212	W. B. Noble, East Hartford	97.50
55243	Washington Pharmacy, Hartford	98.10
55119	Hazardville Pharmacy, Hazardville	98.43
55109	Starr Bros. Inc., New London	98.05
55110	Starr Bros. Inc., New London	98.13
55105	Willis B. Carroll, Putnam	99.30
55219	Salisbury Pharmacy, Salisbury	98.16
55078	E. J. Bardein, Shelton	96.46
55080	E. J. Bardein, Shelton	98.75
55121	Steel's Corner Drug Store, Thompsonville	99.08
55055	Union City Pharmacy, Union City	98.43
55302	Myer's Drug Store, West Haven	98.23

SOLUTION OF CALCIUM HYDROXIDE
(Lime Water)

At 25° C this solution should contain not less than 0.14 grams of calcium hydroxide in 100 cc. At 15° C it contains about 0.17 grams and the strength diminishes as the temperature at which it is kept rises.

Of thirteen official samples all except two were satisfactory.

Analyses are given in Table XII.

TABLE XII. ASSAYS OF LIME WATER

No.	Dealer	Calcium hydroxide gms/100 cc
55067	The Bristol Drug Co., Ansonia	0.16
55323	Lincoln Pharmacy, Bridgeport	0.13
55128	Liggett's Drug Store, Hartford	0.17
55129	Whelan Drug Co., Inc., Hartford	0.17
54998	Cassiday's Pharmacy, Middletown	0.17
55085	Park View Pharmacy, Middletown	0.13
55058	Buckley's Drug Store, Naugatuck	0.25
55103	G. N. Lamatre, Putnam	0.16
55070	Blank Bros., Stratford	0.01
54973	Park Pharmacy, Torrington	0.19
54975	Webb & Siegel, Torrington	0.15
54992	Moran's Drug Store, Wallingford	0.16
54980	Sceery & Ivory, Winsted	0.15

CHLORINATED LIME

This official preparation should contain not less than 30 per cent of available chlorine. No objection can be taken to a product containing less than 30 per cent if the strength is declared and the declaration is met, provided the strength is not so low as to be worthless as a disinfectant. Chlorinated lime deteriorates rather rapidly in spite of precautions to preserve its strength.

Only four samples were examined. One of them was distinctly inferior and much below the declared strength. Analyses are given in Table XIII.

TABLE XIII. ASSAYS OF CHLORINATED LIME

No.	Dealer	Available chlorine	
		declared per cent	found per cent
55086	Park View Pharmacy, Middletown	24.00	21.85
55104	Joseph A. P. Gagne, Putnam	26.00	9.59
54981	Opperman's Drug Store, Torrington	24.00	24.25
55053	W. J. Dunphy, Waterbury	30.00	26.44

SOLUTION OF CHLORINATED SODA

This solution should contain not less than 2.5 per cent of available chlorine.

Five samples were examined and all were below standard. Analyses are given in Table XIV.

TABLE XIV. ASSAYS OF SOLUTION OF CHLORINATED SODA

No.	Dealer	Available chlorine per cent
55231	M. Epstein, New Haven	0.66
55143	Utley & Jones, Norwich	1.65
55126	Chafee's Drug Store, Southington	1.42
55310	The Church Pharmacy, Stamford	1.95
55300	Robert Aventin, West Haven	1.91

SOLUBLE FERRIC PHOSPHATE

This preparation should contain not less than 12 per cent of iron, (Fe).

Three samples were examined and all met this requirement.

The samples were taken at the following druggists: J. M. Rosenthal, Hartford, (14.5 per cent); Liggett's, Norwich, (14.9 per cent); and Achons Pharmacy, Westport, (15.1 per cent).

SACCHARATED FERROUS CARBONATE

This preparation should contain not less than 15 per cent of ferrous carbonate, $FeCO_3$.

Four official samples were examined and one was found to be considerably below standard.

Analyses are given in Table XV.

TABLE XV. ASSAY OF SACCHARATED FERROUS CARBONATE

No.	Dealer	Ferrous carbonate per cent
55238	Metropolitan Drug Co., Hartford	16.68
55224	Graeber Pharmacy, Meriden	11.42
55246	John T. Howes, Milford	19.14
54978	Claxton's Pharmacy, Torrington	14.96

SOLUTION OF FORMALDEHYDE

The standard for this preparation as given in the Pharmacopoeia requires that it contain not less than 37 per cent of formaldehyde.

Nine official samples were examined. Only one fully met the standard, but the others were not seriously deficient.

Analyses are given in Table XVI.

TABLE XVI. ASSAYS OF SOLUTION OF FORMALDEHYDE

No.	Dealer	Formaldehyde per cent
55089	Boulevard Pharmacy, Bristol	36.35
55239	Taylor's Drug Store, Hartford	37.24
55232	York & Oak Pharmacy, New Haven	36.24
55107	Town Hill Pharmacy, New London	36.43
55307	Harold A. Mead, Norwalk	36.60
54970	South End Pharmacy, Torrington	36.26
54976	Webb & Siegel, Torrington	36.87
55099	McCarthy Pharmacy, Waterbury	35.20
55327	The Bridge Pharmacy, Windsor Locks	36.41

HYPOPHOSPHOROUS ACID

The standard for this product requires that it contain not less than 30 per cent and not more than 32 per cent of hypophosphorous acid.

Only two samples were examined and both were passed.

55111, bought of Nichols and Harris, New London, contained 32.79 per cent of hypophosphorous acid.

55144, bought of Utley and Jones, Norwich, contained 30.97 per cent of hypophosphorous acid.

COMPOUND SOLUTION OF IODINE
(Lugol's Solution)

The Pharmacopoeia requires that this solution contain in 100 cc not less than 4.8 grams and not more than 5.2 grams of iodine; and not less than 9.8 grams nor more than 10.2 grams of potassium iodide.

Of eleven official samples examined only three were satisfactorily close to the limits prescribed.

Analyses are given in Table XVII.

TABLE XVII. ASSAYS OF COMPOUND SOLUTION OF IODINE

No.	Dealer	Iodine gms/100 cc	Potassium iodide gms/100 cc
55319	Whelan Drug Co., Bridgeport	6.0	12.6
55125	Gladding's Pharmacy, Cheshire	4.8	9.5
55228	Country Club Pharmacy, Hamden	4.1	9.5
55234	Highwood Pharmacy, Hamden	4.3	11.5
55237	The Hubert Drug Co., Hartford	5.2	11.2
55248	Milford Pharmacy, Milford	2.9	10.6
55087	Peter Glassman, New Britain	4.4	9.7
55093	Pilchar's Pharmacy, Terryville	4.2	9.9
55100	G. A. Lemmon, Thomaston	3.8	9.1
55301	The Campbell Drug Store, West Haven	4.2	11.2
55328	Paxson's Drug Store, Windsor	5.0	15.2

LACTIC ACID

Lactic acid is a syrupy liquid containing not less than 85 per cent and not more than 90 per cent of lactic acid.

Four official samples were examined and all were satisfactorily close to these limits.

Analyses are given in Table XVIII.

TABLE XVIII. ASSAYS OF LACTIC ACID

No.	Dealer	Lactic acid per cent
55227	Spring Glen Pharmacy, Hamden	83.50
54995	Wetmore Pharmacy, Hartford	85.47
54985	H. F. Bassett, New Milford	84.09
55060	Geo. D. Smith & Son, Seymour	84.24

SOLUTION OF MAGNESIUM CITRATE

This solution is usually called "citrate of magnesia" although that name is not an official synonym. The standard preparation should contain magnesium citrate equivalent to not less than 1.5 grams of magnesium oxide in 100 cc. According to the specifications given in the Pharmacopoeia total citric acid should be not less than 9.8 grams and free citric acid not less than 3.3 grams.

Of twenty-three samples only twelve were satisfactorily close to the standard specifications.

Analyses are given in Table XIX.

TABLE XIX. ASSAYS OF SOLUTION OF MAGNESIUM CITRATE

D.C. No.	Dealer	MgO	Free citric acid	Total citric acid	Remarks
		gms/100 cc	gms/100 cc	gms/100 cc	
	Ansonia				
55066	Bristol Drug Co.	1.79	3.31	9.63	O. K.
	Danbury				
54990	S. George	1.23	2.33	6.91	Low in magnesium and free and total citric acid
54988	Ideal Pharmacy	1.38	2.44	7.53	Low in free and total citric acid
54991	Kinner's Drug Store ..	1.66	2.99	9.06	Low in free citric acid
	East Haven				
55222	Metcalf's Drug Store..	1.50	3.41	8.81	Low in total citric acid
	Hartford				
55134	Forest Drug Co.	1.68	3.64	9.46	Pass
	Milford				
55245	A. H. Botsford	1.64	3.94	9.85	O. K.
	Naugatuck				
55057	Buckley's Drug Store..	1.67	3.52	9.59	Pass
	New London				
55108	Montauk Pharmacy ...	1.67	3.74	9.75	Pass
	New Milford				
54983	H. F. Bassett	1.50	4.09	9.67	Pass
	Seymour				
55062	The Seymour Pharmacy	1.56	3.99	9.63	Pass
55059	Geo. D. Smith & Son..	1.50	2.46	7.97	Low in free and total citric acid
	Stafford Springs				
55115	McCormick Drug Co. .	1.36	1.45	6.57	Low in free and total citric acid
	Stratford				
55069	Blank Bros.	1.67	3.68	9.29	Pass
	Thompsonville				
55122	Carroll Cut Rate Store	1.68	3.42	9.48	Pass
	Torrington				
54977	Claxton's Pharmacy ..	1.25	2.13	6.74	Low in magnesium and free and total citric acid
54972	Park Pharmacy	1.45	2.38	7.73	Low in free and total citric acid
54969	South End Pharmacy .	1.57	2.90	8.54	Low in free and total citric acid
	Wallingford				
55050	F. W. Marx	1.52	3.90	9.58	Pass
	Waterville				
55096	T. B. Carney & Co. ...	1.12	1.53	5.81	Low in magnesia and free and total citric acid
55095	W. J. Dunphy	1.67	2.46	8.47	Low in free and total citric acid
	Windsor				
55329	Windsor Drug Co.	1.68	4.14	10.01	O. K.
	Winsted				
54979	Sceery and Ivory	1.59	3.49	9.29	Pass

COMPOUND PILLS OF MILD MERCUROUS CHLORIDE

This mixture contains among other medicaments 60 grams of mild mercurous chloride in a pill mass sufficient for 1000 pills. The dosage of mild mercurous chloride in each pill, therefore, should be 60 milligrams. This preparation is generally known as Compound Cathartic Pills.

Eight samples were examined. One of them, 54997, was labelled "Calomel Tabs" 1/10 grain. These tablets were correct as labelled but they were not the article called for. In two other samples the deficiencies in mercurous chloride exceeded 10 per cent.

Results are given in Table XX.

TABLE XX. ASSAY OF COMPOUND PILLS OF MILD MERCUROUS CHLORIDE[1]

No.	Dealer	Mercurous chloride, milligrams per pill
55216	Freeman Dempsey, Canaan	56
55220	People's Pharmacy, Canaan	56
54997	Murphey Drug Store, Middletown	Calomel
55114	Wick's Drug Store, Stafford Springs	64
55120	Thompsonville Drug Co., Thompsonville	60
54971	South End Pharmacy, Torrington	53
55054	W. J. Dunphy, Waterbury	66
55326	R. J. Keefe, Windsor Locks	52

[1](Assays were made by the A.O.A.C. method, p.64, sec.155, 1930 Ed.)

METHENAMINE

This preparation is otherwise known as hexamethylenetetramine and should be 99 per cent pure.

Five samples were examined and found to be from 96 to 97 per cent pure and were passed. No ammonium salts were detected.

Samples were obtained from the following druggists: E. J. Bardein, Shelton; People's Pharmacy, Hamden; Parent Drug Store, Hartford; Silver Drug Shop, West Haven; and L. B. Switzer, Inc., Southport.

SOLUTION OF POTASSIUM ARSENITE (Fowler's Solution)

This preparation should contain in each 100 cc, the equivalent of not less than 0.975, nor more than 1.025, grams of arsenic trioxide, As_2O_3.

Twenty-one samples were examined and five were deficient by amounts greater than 10 per cent.

Analyses are given in Table XXI.

TABLE XXI. ASSAYS OF SOLUTION OF POTASSIUM ARSENITE

No.	Dealer	Arsenic trioxide (As_2O_3) per cent
55092	Central Drug Co., Bristol	0.960
55203	Powell Drug Co., Burnside	0.894
55217	Farnum Drug Store, Canaan	0.933
55226	Broderick & Curtin, Meriden	0.978
54996	Murphey Drug Store, Middletown	0.928
55247	J. H. Barnes, Milford	0.827
55139	Treat's Drug Store, Norwich	0.785
55209	Vincent's Pharmacy, Rockville	0.967
55206	Miner's Pharmacy, So. Manchester	0.790
55112	Delmonica Drug Shoppe, Stafford Springs	0.935
55311	Jones' Drug Store, Stamford	0.987
55312	Whelan's Drug Co., Stamford	0.985
55072	Hamilton Pharmacy, Stratford	0.855
55123	O'Brien's Pleasant St. Pharmacy, Thompsonville	0.812
54974	Opperman's Drug Store, Torrington	0.960
55052	W. A. Dunphey, Waterbury	0.936
55098	Rielly & Burns, Waterbury	0.894
55148	Windham Pharmacy, Willimantic	0.929
55213	The City Pharmacy, Winsted	0.971
55214	Opera House Pharmacy, Winsted	0.931
55249	The Seaside Pharmacy, Woodmont	0.878

SULPHURIC ACID, DILUTE

Dilute sulphuric acid should contain not less than 9.5, nor more than 10.5, per cent of sulphuric acid, H_2SO_4.

The dilution should be made on the basis of weight and not on the basis of volume. If diluted on the volume basis the acid strength will be too high.

Fourteen samples were submitted. Five of them were considerably over-strength, in some cases practically twice the official strength. One sample, No. 55204, was slightly contaminated with quinine.

Analyses are given in Table XXII.

TABLE XXII. ASSAY OF DILUTE SULPHURIC ACID

No.	Dealer	Sulphuric acid per cent
55322	Laverty Drug Store, Bridgeport	9.48
55321	Tuckett's Drug Store, Bridgeport	9.71
55124	Warner's Drug Store, Cheshire	17.09
55130	Alderman Drug Co., Hartford	16.16
54999	Park View Pharmacy, Middletown	17.48
55140	Smith's Drug Store, Norwich	9.48
55142	Utley & Jones, Norwich	9.86
55210	J. J. Lee, Rockville	10.20
55127	Oxley's Drug Store, Southington	21.17
55204	Crosby's Pharmacy, South Manchester	8.68
55325	Brodie Drug Co., Stratford	9.59
55094	The Center Drug Store, Terryville	12.05
55149	The Wilson Drug Co., Willimantic	9.85
55215	Frank S. Bunnell, Winsted	10.12

REPEAL WHISKEY

(Survey made prior to announcement of regulations by the Federal Alcohol Control Administration)

C. E. Shepard and E. M. Bailey

Immediately following the repeal of the 18th Amendment numerous inquiries came to the Station and to the Dairy and Food Commissioner's Office regarding the character and quality of the whiskey then available. The Dairy and Food Commissioner submitted a number of samples and they were examined in some detail in this laboratory. The results were interpreted in the light of government regulations in effect before prohibition and which at the time of our inspection had not been superseded by other official announcements.

No poisonous or deleterious substances foreign to whiskey were found in any of the samples, and there was no evidence of violation of Section 2728 of the General Statutes of this State or of the corresponding Section 734 b of the Liquor Control Act of 1933 regarding adulterated liquor.

The alcoholic strength as declared on labels or indicated by statements of proof was correct, or substantially so, in all cases. There was no evidence of undue dilution with water; proof ranged from 86° to 100°.

Statements of net contents were found to be in agreement with the label declarations. There were no shortages in excess of reasonable tolerances provided in state regulations.

The label declarations as to identity of products were in general accord with official understanding and accepted practice prior to prohibition. Unmixed distillates from grain mashes, whether colored and flavored by storage in wood or by the addition of caramel and harmless flavoring, reduced to potable strength, were entitled to the name whiskey without qualification; and mixtures of such whiskies were properly called "blends".

"Straight" whiskey is the term used to designate a grain mash distillate which contains the full measure of fusel oil, acids, esters, aldehydes and furfural (sometimes spoken of as "congeners") which volatilize with water and alcohol at the usual temperature of distillation. Such whiskey may be new, young or old. Storage in wood develops those characters of flavor and aroma for which whiskey is prized as a beverage.

For medicinal purposes it is required that whiskey be matured in charred casks for at least four years. Specifications and tests for identity and purity of such whiskey are given in the United States Pharmacopoeia, and whiskey meeting those requirements is presumed to be of the substance and quality suitable for medicinal use.

"Blended" whiskey has usually contained some straight whiskey mixed in varying proportions with alcohol. Under recent regulations issued by the Federal Alcohol Control Administration blended whiskey must contain at least 20 per cent by volume of 100° proof straight whiskey or whiskies.

Of the 32 samples included in our inspection 16 were labelled as "blends" and they were passed as labelled. From our analyses we would judge that some of them contained very little straight whiskey, but under the regulations prevailing at that time no objection could be taken to the label

descriptions if no straight whiskey were present. Thirteen samples were labelled "for medicinal purposes". Of these three were passed as of that description, eight were not and two were doubtful. Three samples were labelled "straight" whiskey or blends of straight whiskies and of these two were passed and one questioned.

Our criticism was chiefly that the declaration "for medicinal purposes" was not justified except on whiskey that conforms to the U.S.P. specifications for that article, and the distillers or distributors of whiskies so labelled and which did not meet those specifications were notified that such labelling should be abandoned. A ruling announced by the Food and Drug Administration, February 16, 1934, supported this view. It holds that "medicinal whiskey which does not conform to the pharmacopoeial standard must be labelled to differentiate it clearly from the official product".

Analyses of the samples examined are given in Table XXIII. It should be made clear that all of these samples were purchased and examined prior to the announcement of regulations by the Federal Alcohol Control Administration, and hence the composition of some of these brands, particularly the blends, may have been modified since the new regulations became effective. The analyses are given, however, as a matter of interest and for reference purposes.

The exhaustive study of changes taking place in authentic grain mash distillates, stored under various conditions, made by Crampton and Tolman (J. Am. Chem. Soc., 30, 98–136. 1908) shows that numerous factors must be taken into account in judging the character and quality of whiskey. The relationships among acids, esters, color and solids in whiskey are important factors in judging its maturity. The color of straight whiskey is acquired by storage in wood. The color so acquired is soluble in amyl alcohol (Marsh reagent) whereas caramel, which is used to simulate the natural color of whiskey, is insoluble. In the aging process acids and esters reach an equilibrium in about four years and remain so thereafter. The presence of tannin, if not excessive, indicates storage in wood and whiskey stored in charred casks acquires an oily appearance. Irish and Scotch whiskies are stored in uncharred casks and are lighter in color than American whiskies which are stored in charred wood. The smoky taste of Irish and Scotch whiskies is due to the practice of drying the malt over peat.

In interpreting our analyses of samples declared to be medicinal in character the specifications of the U. S. Pharmacopoeia were used as a guide. No objection was raised if the alcoholic content was somewhat less than 47 per cent by volume provided the declared proof was substantially met. A certain tolerance for the proportion of color insoluble in Marsh reagent appeared to be necessary also. Crampton and Tolman observed that in applying this test to their pure whiskies the lower aqueous layer was water-white. The U.S.P. specifications remark that this lower layer is colorless or very nearly so. In a previous examination (1915) we passed samples showing 10 per cent of amyl-alcohol insoluble color. In the present survey samples apparently genuine so far as color is concerned showed from 3 to about 7 per cent of insoluble color. The limits for acids and esters as fixed by the Pharmacopoeia, stated in terms of grams per 100 litres, are 36 to 120 for acids, and 30 to 123 for esters. In applying

these limits it should be kept in mind that these two constituents, whatever their magnitudes within the postulated limits, should be present in approximately equal amounts.

Samples 57200, 56544 and 57218 were labelled as medicinal products and they were passed as of that character. Samples 56545, 56546, 57230, 57213, 57229, 56893, 56896, and 57214 were also labelled as medicinal, but were not of that grade. Samples 57231 and 57202 were classed as doubtful, although the latter probably should be classed in the non-medicinal group.

Sample 57212, labelled as a blend of straight whiskies, has the composition of very new whiskey colored with caramel.

There is little to comment upon concerning the blends except to note that the acids and esters are so low in most cases as to indicate very little aged whiskey in the products. Sample 57217 was labelled as "Old Scotch whiskey" with the further declaration that it was a blend of aged brandy and spirits. The term "blend" as applied to whiskey is correctly used only in the case of mixed distillates from grain mashes; brandy is not derived from a grain mash.

Two unofficial samples were examined. No. 4700 was labelled as a blend for medicinal purposes but it did not meet the specifications for medicinal whiskey. No. 4727, also labelled "for medicinal purposes", met the U.S.P. requirements and appeared to be matured straight whiskey.

TABLE XXIII. ANALYSES OF WHISKEY

No.	Brand and label	Price per quart	Net volume declared, fluid ounces	Net volume found, fluid ounces	Alcohol by volume declared %	Alcohol by volume found %	Solids gms/100 cc	Color insoluble in amyl alcohol % of total	Acids, as acetic gms/100 litres	Esters, as ethyl acetate gms/100 litres	Tannin	No.
	U. S. P. Whiskey	.....	....	....	47–53	.....	not over 0.5	none or trace	36–120	30–123	present	
57200	*Old McBrayer, Bonded.* Aged in wood. Medicinal	$7.00	32.0	31.4	50.00	50.12	0.25	3.3	94.8	106.0	present	57200
57212	*Mayfair.* Blend of straight	2.75	32.0	31.1	45.00	43.96	0.09	17.0	9.6	4.2	present	57212
56544	*Golden Wedding.* Blend of old rye and other fine whiskies. No alcohol or spirits added. Medicinal	3.25	32.0	31.5	47.50	46.84	0.12	4.0	46.3	31.1	present	56544
56545	*Blackstone.* Blend of straight whiskey. Medicinal	2.50	32.0	31.5	50.00	49.40	0.09	4.0	36.7	15.8	present	56545
56546	*Belle of Anderson.* Blend of straight whiskies. Medicinal	2.50	32.0	31.8	46.00	45.12	0.10	5.3	40.3	20.8	present	56546
57230	*Melvale.* Blend of rye and other straight, no alcohol or spirits added. Medicinal	2.75	32.0	32.2	46.00	45.32	0.10	5.7	42.7	17.6	present	57230
57231	*Gibson.* Blend of rye and other straight, no alcohol or spirits added. Medicinal	3.00	32.0	31.7	46.00	45.12	0.10	5.3	41.5	25.2	present	57231
56890	*Walker's DeLux, Am. Rye, Bonded*	5.12[1]	25.6	25.5	50.00	49.48	0.11	6.3	45.1	28.1	present	56890
56894	*Crab Orchard, Bourbon,* straight	1.50	32.0	31.1	46.50	45.96	0.09	6.7	55.7	20.7	present	56894
57218	*Old Sunny Brook, Bonded,* straight. Medicinal	6.95	32.0	31.7	50.00	50.04	0.19	5.0	83.0	71.3	present	57218
57202	*Tally-Ho.* Blend of whiskey with old rye, aged in wood. Medicinal	2.50	32.0	31.8	45.00	45.28	0.37	12.7	37.9	25.1	present	57202
57213	*Four Roses.* Blend. Medicinal use	3.50	32.0	32.3	45.00	44.64	0.19	70.0	28.6	10.4	present	57213
57229	*Hawthorne.* Blend. Medicinal use	2.50	32.0	31.3	45.00	44.56	0.36	51.0	25.0	3.5	present	57229
56893	*Green River.* Blend. Medicinal use	3.50	32.0	32.4	45.00	44.68	0.17	57.0	23.8	19.0	present	56893
56896	*Lucky Star.* Blend. Medicinal use	2.85	32.0	31.8	45.00	44.24	0.22	80.5	25.0	12.1	trace?	56896
57214	*Kentucky Judge.* Blend. Medicinal use	2.50	32.0	31.3	45.00	44.40	0.23	81.5	20.2	5.1	trace	57214
57201	*Canadian Club Whiskey.* Bonded. Matured in casks	6.27[1]	25.5	25.5	45.20	44.92	0.07	9.3	33.1	17.6	present	57201
57203	*Shenandoah.* Blend	2.25	32.0	31.9	45.00	43.75	0.16	78.0	14.2	11.4	present	57203
57204	*Mellwood.* Blend	3.15	32.0	31.5	45.00	44.28	0.17	71.0	17.8	6.2	present	57204
57205	*Oak Lawn.* Blend	2.00	32.0	21.8	45.00	44.24	0.43	83.0	11.8	5.1	trace?	57205
56548	*Cherry Grove.* Blend	2.25	32.0	31.8	45.00	44.32	0.36	70.7	13.0	1.8	none	56548
56547	*Snug Harbor.* Blend	2.00	32.0	31.8	45.00	45.16	0.25	27.0	36.7	9.7	present	56547
57227	*Sweep Stakes.* Blend	2.82[1]	25.6	25.5	45.00	45.40	0.12	17.3	20.2	0.9	present	57227
57228	*Captain Kidd.* Blend	2.00	32.0	31.3	45.00	44.96	0.17	24.7	28.6	3.3	present	57228
56883	*Chester Hills.* Blend	2.25	32.0	31.3	45.00	44.24	0.25	66.0	9.6	4.2	none	56883
56888	*Teachers Highland Cream. Old Scotch*	5.10[1]	25.0	25.6	43.00	43.04	0.13	72.0	15.4	12.2	present	56888
56889	*Irish Pot. Still* Whiskey	5.06[1]	25.0	25.8	43.00	43.12	0.08	45.0	15.4	12.1	present	56889
56891	*Martin's V.V.O. Scotch.* Blend	4.86[1]	26.0	25.7	44.00	44.00	0.05	14.0	16.6	15.6	trace?	56891
56892	*Original 13 States.* Blend containing old rye aged in wood	2.25	32.0	32.4	45.00	43.44	0.48	9.3	37.9	12.1	present	56892
56895	*Fireside.* Blend	1.85	32.0	31.3	45.00	43.60	0.25	82.0	9.6	4.4	trace?	56895
57216	*Belle of New York.* Blend of aged whiskey and spirits	2.00	32.0	31.1	45.00	45.08	0.40	84.0	11.8	2.6	trace?	57216
57217	*Old Scotch.* Blend of aged brandy and spirits	3.50[1]	25.6	24.7	45.00	44.20	0.64	81.5	11.8	4.4	trace?	57217
4700	*Paul Jones, Four Star.* Medicinal	.....	....	....	45.00	44.92	0.47	62.0	36.0	18.5	present	4700
4727	*Glencoe, Bonded.* Aged in wood. Medicinal	.....	....	....	50.00	49.41	0.25	3.0	86.4	100.3	present	4727

[1]Calculated to basis of 32 ounces.

THEOBROMINE SODIO-SALICYLATE

When dried at 110° C this compound should contain not less than 46.5 per cent of theobromine and not less than 35 per cent of salicylic acid.

The four samples examined substantially met the above requirements. Only one passed the solubility test, but this may have been due to absorption of carbon dioxide from the air after the samples were purchased.

Assays are given in Table XXIV.

TABLE XXIV. ASSAYS OF THEOBROMINE SODIO-SALICYLATE

No.	Dealer	Theobromine per cent dry basis	Salicylic acid per cent dry basis
55068	Bristol Drug Co., Ansonia	50.35	37.58
55090	Boulevard Pharmacy, Bristol	45.78	36.08
55082	Shelton Pharmacy, Shelton	44.75	32.71
55207	J. H. Quinn Co., South Manchester	51.40	38.22

EXTRACT OF WITCH HAZEL

This article is no longer a U.S.P. preparation, but it is described in the National Formulary where tests for identity and purity are given.

Eight samples were examined. No. 55473 was labelled U.S.P., which is incorrect. The sample also gave positive tests for acetone which should not be present.

No. 55705 also contained acetone.

Assays are given in Table XXV.

TABLE XXV. ASSAYS OF EXTRACT OF WITCH HAZEL

No.	Dealer	Alcohol per cent	Acetone
	Essex		
55473	Geo. W. Dow	13.90	present
	Hartford		
55706	Forest Drug Co.	14.50	faint trace
55773	Forest Drug Co.	14.43	none found
55781	L. W. Leib	14.86	none found
55772	Liggett's Drug Store	13.79	none found
55705	The Garden Pharmacy	14.18	present
55774	Timkin's Drug Co.	13.83	none found
	New Haven		
55707	Carroll's Cut Rate Perfume Store	14.35	none found

OINTMENT OF YELLOW MERCURIC OXIDE

This ointment should contain 1 per cent of yellow mercuric oxide. The official strength was formerly 10 per cent.

Of six samples submitted by the Dairy and Food Commissioner, one was considerably below standard in mercury.

Analyses are given in Table XXVI.

TABLE XXVI. ASSAYS OF YELLOW MERCURIC OXIDE

No.	Dealer	HgO per cent
55131	Ideal Drug Co., Hartford	0.94
55135	John M. Rosenthal, Hartford	1.01
55145	Liggett's Drug Store, Norwich	0.93
55208	Arthur Drug Stores, Inc., So. Manchester	0.34
55205	Magnell Drug Co., So. Manchester	1.04
55200	Curran & Flynn, Willimantic	0.92

UNCLASSIFIED DRUGS, ETC.

56876. *Epsotabs.* The Dill Company, Morristown, Pa. White-coated laxative pills. The ground sample has the odor of rhubarb. The average weight per pill is 12.6 grains, ash 41.5 per cent. Pills consist of, or contain, phenolphthalein and magnesium sulphate (Epsom salt), coated with a mixture of sugar and calcium carbonate.

4279. *Crazy Water Crystals.* These salts when added to drinking water are supposed to reproduce Crazy Mineral Water obtained from certain wells in Texas. Water so treated has been recommended for the treatment of various ailments such as constipation, rheumatism, neuritis, arthritis, kidney and liver trouble, high blood pressure, nervousness and common colds, when any of these are the results of faulty elimination.

Our analysis shows the crystals to consist essentially of 98.8 per cent of hydrated and anhydrous sodium sulphate (Glaubers salt), with a little (0.8 per cent) sodium chloride (common salt), and a trace of magnesium.

The significance of the qualifying phrase following the disease names mentioned above is, of course, that so far as laxative and diuretic effects aid in the treatment of these diseases, Crazy Mineral Water will give that aid. Sodium sulphate is a laxative agent and water in sufficient quantity will produce diuretic effects; but intelligent medical treatment of the diseases named requires more than repeated doses of mineral salts solution. Indeed continued medication with cathartics may not be at all advisable.

More recently the advertising of this product has been considerably altered and claims are more cautiously stated; symptoms are emphasized instead of diseases.

3843. *Harriet Hubbard Ayer Beautifying Face Cream.* Old analyses report this product as containing ammoniated mercury. The sample examined during the past year contained zinc oxide in a fatty base. Other ingredients, if present, were not detected. No evidence of ammonia or mercury was found.

3285. *Dunn's Razorless Shaving Powder.* A white, perfumed powder. Directions tell the user to mix the powder with warm water and apply it to the face with a stick. Allow it to remain for three or four minutes and

then remove with the stick. The caution is added that the paste should not be applied immediately after bathing the face with hot water.

Examination showed the powder to consist of or contain, a perfumed mixture of barium sulphide and corn starch.

Alkaline sulphides are common in depilatory preparations. Texts referring to the external application of sulphides note that they are likely to cause irritation and reddening of the skin. Soothing creams are generally recommended to follow the application. Products of this type are not to be recommended because of the irritation that may follow their use, especially in the case of delicate or sensitive skins.

3026. *Venetian Acne Lotion,* Elizabeth Arden, N. Y. C. This is a colorless liquid with the odor of rose and containing a large amount of suspended materials. It is neutral to litmus.

Qualitative tests showed a large amount of zinc present (all in the insoluble portion) a little iron and sulphate, and traces of calcium and sodium. Phenol and glycerine were present. No phosphates, chlorides, alkaloids, phenolsulphonates or sugars were found.

The lotion is very nearly the same as Compound Calamine Lotion described in the National Formulary, V. Ash content was found to be 16.63 per cent; phenol 1.32 per cent.

2888. *Solva-Roma Applicator.* 2889, *Solva-Roma Application No. 1.* 2890. *Solva-Roma Application No. 2.*

This is a depilatory outfit. The applicator was a circular lens-shaped device on a wooden stick. The lens-shaped portion appeared to consist of pumice with a binder of rosin and dextrin or gum. Application No. 1 was a gray-colored ointment with a garlic-like odor. The active agent was calcium sulphide mixed with a pasty base consisting largely of calcium carbonate and fatty material. Application No. 2 was a white ointment with a carnation-like odor. It contained boric acid in a base of fatty material with probably a little soap and a trace of coloring matter.

Analysis of Application No. 1 is as follows:

> Volatile at 100° C 30.61 per cent; ash, sulphated, 54.14 per cent; total sulphur 1.71 per cent; sulphate sulphur 0.41 per cent; total calcium oxide 17.60 per cent; calcium hydroxide (direct titration), 1.75 per cent; non-volatile ether extract 21.94 per cent; carbonate present, in quantity; sulphide present. Other ingredients, if present, not detected.

The approximate composition calculated from the analysis is as follows:

> Calcium sulphide 2.70 per cent; calcium sulphate 1.74 per cent; calcium hydroxide 1.75 per cent; calcium carbonate 22.24 per cent; iron, magnesium and sodium salts 11.42 per cent; fat 21.94 per cent; water and "perfume" 30.61 per cent; undetermined 7.60 per cent.

The active agent in this preparation is calcium sulphide. The comments made in connection with Dunn's Razorless Shaving Powder apply also in this case.

1396. *Shadocol.* Sample submitted by a physician. The preparation is essentially a mixture of tetraiodophenolphthalein, lactose and citric acid.

The calculated composition of the mixture based on our analysis is as follows:

> Moisture 1.6 per cent; tetraiodophenolphthalein (disodium salt), 16.7 per cent; lactose 74.2 per cent; anhydrous citric acid 5.3 per cent; undetermined 2.2 per cent.

MISCELLANEOUS

MATERIALS EXAMINED FOR POISONS

Sixty-three samples of materials have been examined for poisons. These include animal tissues, feeding stuffs, foods, cosmetics and miscellaneous materials. In most cases no positive evidence of poisonous or injurious ingredients was detected, but a few cases are worthy of mention.

3527. *Stomach contents of cow.* The usual poisons—phosphorus, cyanide, arsenic and heavy metals—were tested for with negative results. When a portion of the stomach contents were made alkaline and distilled with steam, the distillate yielded a heavy precipitate with phosphomolybdic acid indicating the presense of an alkaloid. The distillate was extracted with chloroform and the residue left after evaporating the chloroform was treated with hydrochloric acid to form the hydrochloride of the alkaloid probably present. From this a picrate salt was prepared and its crystalline structure appeared to be identical with a picrate salt prepared from nicotine. The melting point of nicotine dipicrate was observed to be 216.5° C and the melting point of the unknown picrate prepared from our sample as above described was found to be 215.0°. The unknown picrate mixed with known nicotine dipicrate melted at 216.0°. From the fact that the alkaloid was volatile with steam from alkaline solution, and that the crystalline structure and melting point of the picrate salt was practically identical with known nicotine dipicrate, the presence of nicotine in the stomach contents was regarded as established.

Nicotine sulphate is often used in the treatment of animals, especially sheep, for stomach worms, but there was no history of such treatment in this case. Wild tobacco plants are known to be poisonous to cattle (Tech. Bul. No. 22, U. S. Dept. Agr. 1927), but whether such plants were available to this animal was not determined. Whether or not nicotine poisoning was the cause of death cannot be established; but the occurrence of nicotine in the stomach contents is a matter of interest and it is the first time that we have identified this alkaloid in such material. The examination was made by C. E. Shepard, who has investigated a number of interesting cases of animal poisoning in recent years.

3838. This was another sample of *stomach contents* of a cow and a large quantity of arsenic, 6.67 grams per kilo, was found.

1580. *Milk,* submitted by a physician, was found to contain cyanide equivalent to 0.363 gram of hydrocyanic acid per quart.

2651. A number of complaints were received from health officers and physicians concerning so-called Bubble (chewing) Gum thought to have been responsible for a peculiar skin rash in children. A number of samples of this gum were examined without definite indications of injurious in-

gredients. This particular sample, however, contained methyl salicylate for flavoring. Skin rash is one of the manifestations of methyl salicylate poisoning, symptoms of which are described in Petersen, Haines and Webster, Vol. II, 2nd edition; and Jour. Am. Med. Assoc., LXII, 22, 1919.

1817. *Eau Minerale Naturelle,* a French mineral water, was submitted by a physician who wished it tested for arsenic. Arsenic was found and its identity established by the characteristic crystals of arsenic trioxide. The amount was approximately 0.0027 grain per pint which is not in excess of the recognized tolerance for food products (0.01 grain per pound); but a daily intake of about one quart, continued over a period of time, might have an objectionable cumulative effect.

4111. *A Facial Mask,* a cosmetic device for the correction of wrinkles and acne, was submitted by the State Commission of Hairdressers and Cosmeticians. The device was suspected of causing irritation of the eyes. Partial analysis showed an ash content of 23.64 per cent; nitrogen 4.58 per cent; arsenic, a trace, less than 1 p.p.m. Qualitative tests indicated zinc in quantity, traces of aluminum, iron and sodium, with a possible trace of magnesium. No ammonium salts, carbonates, chlorides, sulphates, nitrates or phenols were detected. Glycerine was present. The mask was essentially glycerinated gelatine containing about 24 per cent of zinc oxide. A physician or an eye specialist can best advise whether the ingredients found, or any one of them, would cause irritation of the eyes.

Lead poisoning. Ten samples of urine and feces were examined for Dr. J. M. Mirman and for Dr. A. Shaefer of the Mt. Sinai Hospital, Hartford, in their studies of cases of lead poisoning.

TOBACCO

Collaboration with the Department of Soils of this Station has required analyses of 52 samples of tobacco. The results are not for discussion in this report.

BABCOCK GLASSWARE, ETC.

Babcock glassware and dairy thermometers tested during the past year are summarized as follows:

	Total	Inaccurate
Milk test bottles	1571	0
Cream test bottles	262	0
Pipettes, milk	223	2
Thermometers	108	0
Totals	2164	2

INDEX