Bulletin 388 September, 1936

THE FORTIETH REPORT ON

FOOD PRODUCTS

AND THE TWENTY-EIGHTH REPORT ON

DRUG PRODUCTS

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Agricultural Experiment Station
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CONTENTS AND SUMMARY

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
FOODS					
Beverages, carbonated	658	10	127	137	7
Orange juice, etc.	658	4	5	9	....
Beverage flavors	659	0	2	2	....
Other beverages	660	5	0	5	....
Coffee	660	2	3	5	2
Eggs	660	....	3	3	....
Fats and Oils:					
Olive oil, etc.	660	14	15	29	6
Butter	661	4	0	4	....
"Buttered" popcorn, etc.	661	0	6	6	....
Fruits and Fruit Products:					
Spray residue on apples	662	127	179	306	....
Colored oranges	662	9	0	9	....
Canned fruits, etc.	664	5	0	5	....
Ice cream	665	19	2	21	....
Meat Products:					
Frankfurts	665	6	6	12	3
Milk and Milk Products:					
Vitamin D milk	665	0	15	15	3
Ordinary milk	667	573	18	591	2
Goat's milk	667	4	0	4	....
Cream	667	14	0	14	....
Sweet Pickles	667	0	3	3	0
Tomato Products	667	0	10	10	....
Vanilla Extract	667	3	6	9	2
Vinegar	668	9	42	51	18
Total for foods		808	442	1,250	43
DRUGS, ETC.					
Alcohol, rubbing	669	0	22	22	0
Boric acid ointment	671	0	17	17	4
Chlorinated soda	671	0	2	2	2
Magnesium Citrate, Solution of	671	0	33	33	19
Corrosive Sublimate Tablets	675	0	8	8	1
Ergot, Fluid Extract of	675	0	8	8	....

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
DRUGS, ETC.—*Continued*					
Hydrogen Peroxide	676	0	16	16	0
Iodine, Compound Solution of	676	0	33	33	10
Spirit of Ethyl Nitrite	677	0	21	21	9
Phenol, 5% solution	679	0	58	58	47
Potassium Citrate, Solution of	681	0	22	22	11
Potassium Permanganate, Solution of	682	0	17	17	4
Potassium Iodide, Solution of	682	0	3	3	1
Silver Nitrate, Solution of	683	0	40	40	4
Sulphuric Acid, Dilute	683	0	41	41	26
Turpentine	685	0	1	1	1
Witch Hazel Water	685	0	1	1	1
Total for drugs			343	343	140
MISCELLANEOUS					
Foods	685	81	13	94	....
Drugs, etc.	685	17	8	25	....
Materials examined for poisons	687	76	0	76	....
Collaborative work	687	162	0	162	....
Total for miscellaneous		336	21	357	....
Total for all exclusive of Babcock glassware and thermometers		1,144	806	1,950	183
BABCOCK GLASSWARE, ETC.	689	2,268	0	2,268	....
FOOD ADVERTISING	689	....	....	....	....

THE FORTIETH REPORT ON FOOD PRODUCTS AND THE TWENTY-EIGHTH REPORT ON DRUG PRODUCTS

E. M. Bailey

THE DEPARTMENT OF ANALYTICAL CHEMISTRY is primarily concerned with analytical work relating to inspection and control of commercial fertilizers, feeding stuffs, foods, drugs and insecticides. However, a considerable amount of other work falls to the department. It is charged with the certification of Babcock glassware used in the testing of milk and cream and with certification of thermometers used to control the pasteurization of milk. It collaborates with the Experiment Station at Storrs and with other departments of this Station, chiefly the Tobacco Substation at Windsor and the Department of Soils. And it is frequently called upon for miscellaneous examinations. These last are usually investigations of suspected poisoning of farm animals for the Commissioner of Domestic Animals, and analyses for the State and local departments of health.

The department has continued its collaboration with the Association of Official Agricultural Chemists in its studies of analytical methods, members of the staff serving as referees or collaborators of the Association for that purpose.

Doctor Fisher has served as a referee on drugs and also as a member of the Committee on Recommendations of Referees of the Association; Messrs. Shepard, Walden and Mathis have served as collaborators on analytical methods, and Doctor Hubbell has collaborated on studies of the method for the bio-assay of vitamin D milk. The chemist in charge has acted as chairman of the Committee for the 1935 Revision of the Association's Book of Methods; served as a member of the Council on Pharmacy and Chemistry, of the American Medical Association; and as a member of the Committee on Definitions and Standards for foods of the U. S. Department of Agriculture.

Reports on the inspection and analysis of fertilizers and of feeding stuffs are given each year in separate bulletins. The present report summarizes work done in 1935, mainly in connection with food and drug control.

The department has undertaken the inspection and biological testing of vitamin D milk. This project began during the last half of the year and is being continued as a regular feature of food control. A part of the time, facilities and staff of the nutrition laboratory of the Department of Biochemistry have been assigned to this department to carry on the necessary bio-assays, and the plan is working smoothly and efficiently under the immediate direction of Dr. Rebecca Hubbell.

Acknowledgment is due, and gratefully given, to all members of the department staff, not only for the analytical work required, but for helpful information and advice on many inquiries and problems that come to us through correspondence and otherwise.

FOODS

CARBONATED AND OTHER BEVERAGES

One hundred and twenty-seven official samples and ten unofficial samples of carbonated beverages were examined. All conformed to the requirements for sugar content (not less than 5 per cent), and no saccharin was found. Seven samples contained artificial coloring matter that was not declared on the labels.

Orangeade

The emphasis placed upon the nutritional advantages of fruit juices has resulted in a notable increase in consumption, especially of the juice of oranges. Orange juice is a rich source of the antiscorbutic vitamin, or vitamin C, now identified as ascorbic acid or cevitamic acid. This vitamin is readily destroyed by heat in an alkaline medium and in the presence of oxygen. However, with suitable precautions the juice can be packed and marketed with little loss of this important food factor.

The fruit-ades, e.g. orangeade, are types of beverages of which lemonade was perhaps the earliest example. Such drinks need a substantial amount of actual juice to make them satisfactorily palatable, and to warrant the names of the fruits by which they are designated. For orangeade, the regulation in this State, and in several other states, requires a content of at least 15 per cent of orange juice.

There is a considerable practice of shipping orange base concentrate to local distributing agencies, such as soda fountains and, more recently, dairies, where it is diluted and made into beverages of the orangeade type. Being an orange product, its nutritional virtues due to vitamin C are not overlooked and are usually stressed in advertising.

According to tests of various fruits and vegetables for vitamin C, reported by Bessey and King (Jour. Biol. Chem., 103: 693, 1933), the vitamin C content of undiluted orange juice is of the order of about 0.6 mgm. per cc. As stated above, Connecticut requires 15 per cent of orange juice in orangeade. By mere dilution, and assuming no destruction of vitamin C in preparation of the concentrate, orangeade beverage should contain about 0.09 mgm. of vitamin C. Some loss or destruction of the vitamin is to be expected in the process of converting juice into a commercial concentrate; and there may be further reduction of vitamin due to over-dilution in making the beverage and to conditions of handling.

When fresh juice is pressed from oranges in the laboratory, without special precautions to avoid oxidation, the vitamin C content compares well with results published by Bessey and King cited above. The ash content of the concentrates is substantially the same as that in fresh juice, which indicates that the original juice has been concentrated enough to compensate for the sugar subsequently added.

Several official samples of orangeade concentrate and of the beverages made from them were submitted by the Dairy and Food Commissioner. The results of our examination are given in the following tabulation, as well as the ascorbic acid content of canned orange juice and of fresh orange juice for comparison:

TABLE 1. VITAMIN C CONTENT OF ORANGE JUICE AND ORANGE PRODUCTS

No.	Description	Ash gm/100cc	Vitamin C (ascorbic acid) mgm/cc	Approximate juice content (basis of ash)
				%
63254	Concentrate (Mission)	0.373	0.289	.....
63255	Beverage made from above, Dewhurst Dairy, Bridgeport	0.048	0.015	12
63256	Orangeade, Green Spot, Greenbacker & Sons, Meriden	0.064	0.019	16
63257	Concentrate (Bireley's)	0.409	0.390	.....
63258	Beverage made from above, Ferndale Dairy, Kensington	0.074	0.045	18
924	Orange juice, canned, Libby, McNeill & Libby	.....	0.450	.....
922	Orange juice, fresh	0.41[1]	0.510	.....
923	Orange juice, fresh	0.41[1]	0.510	.....

[1] Conn. Agr. Exp. Sta., Bul. 329, 1930.

Estimating the juice content of the orangeades on the basis of 0.41 per cent ash for fresh orange juice, the products listed in the table show from 12 to 18 per cent of juice. On the basis of the vitamin C content of fresh orange juice, the juice content of the same products is considerably lower, 3 to 9 per cent. The fair interpretation of these figures is that the products contain from 12 to 18 per cent of orange juice but that the vitamin C content has suffered considerable impairment. This is due partly to unavoidable destruction of the vitamin in preparing the concentrate, and further to the loss during preparation of the beverage from the concentrate, and to conditions of holding after preparation.

A sample of orangeade submitted by a local health department was found to contain only 0.012 mgm. of vitamin C per cc. of the beverage.

It would appear from the results obtained on the few samples examined that orangeade may be quite variable in vitamin content. How much destruction of vitamin is unavoidable in passing from the expressed juice through the medium of a concentrate to the beverage as marketed we cannot say. However the limited data here given show that the vitamin C content of the official samples examined ranges from one-sixth to one-half of that expected under the regulation—15 per cent juice content of undiminished vitamin potency. These beverages contained from 2.5 to 9 per cent of the amount of vitamin C found in fresh, undiluted orange juice.

Beverage Flavors

A sample of orange flavor and color, 60007, was examined. It appeared to be natural in flavor and was colored with a legal mixture, Ponceau 3 R and Tartrazine.

In a sample of lemon and lime, 60008, the flavor was apparently natural and the color was yellowish, resembling that of the permitted dye, Light Green S.F., but not altogether characteristic.

Other Beverages

Five samples were examined for the State Department of Parks.

COFFEE

Three samples of coffee were examined. One appeared to be genuine. Two contained chicory the presence of which was not indicated on the label.

Two samples examined for the Hartford Department of Public Welfare were not found to contain any adulterants.

EGGS

Three samples of eggs were examined. One was sold as "fresh" eggs and passed as of that description. One sold without designation as fresh was oil dipped. The third sample was said to be incubator rejects. The ammoniacal nitrogen was 3.6 mgms. per 100 gms., indicating staleness, but there was no off-odor.

FATS AND OILS

Olive Oil

Of 13 official samples of olive oil examined, six were adulterated.

Two official samples of salad oil were also examined. One was labelled Colza oil, which is rapeseed oil, and it had the physical and chemical characteristics expected. The other was not labelled to show the ingredients but appeared to be very largely, if not entirely, cottonseed oil.

Fourteen samples were examined for purchasers.

Official samples sold as olive oil are summarized in Table 2.

Table 2. Examination of Olive Oil

No.	Brand and dealer	Remarks
61626	Sidoli. L. Sidoli, Hamden	Passed
57617	Sidoli. Frank Bonesio, Avon	Passed
61276	Raviola. French-Italian Imp. Co., New Haven	Passed
60736	Italia. Italian Imp. Co., Bridgeport	Passed
63152	.....P. Berry & Sons, Inc., Hartford	Passed
62625	.....Victoria Imp. Co., Hartford	Passed
61847	.....Roma Market, Hartford	Passed
61627	Riviera. Otto Stabile, Waterbury	Adulterated. Contained peanut oil, artificial color and probably sunflower oil.
61618	Riviera. A. Verde, New York City	Adulterated. Contained peanut oil, artificial color and probably sunflower oil
61619	Acomo Fo. A. Verde, New York City	Adulterated. Contained peanut oil, artificial color and probably sunflower oil.
57616	Italia. S. Foti.. New Haven	Adulterated. Contained cottonseed oil.
60739	....Washington Cash Grocery, New Haven	Adulterated. Contained cottonseed oil and artificial color.
61611	Acomo Fo. M. Clemente, Waterbury	Adulterated. Contained artificial color and flavor and unidentified oil other than olive oil.

The sophistication of olive oil with other food oils of less commercial value is an ancient practice. As methods for the detection of such adulteration have been devised from time to time, the ingenuity of the illegal trade has been taxed to find new adulterants. For some time food control chemists have been aware of a relatively new fraud in the food oil industry, but they were unable to obtain evidence by a direct objective test. The adulterant is teaseed oil. It is obtained from the seed of a plant closely related to the tea cultivated for its leaves and used in the beverage. The crude oil from these seeds is imported from the Orient and its use was formerly confined to the paint and varnish industry. In a refined state, however, it is fit for food purposes, and its bland taste makes it adaptable to blending with other salad oils. Racketeers in the olive oil trade hailed it as the perfect adulterant because its physical and chemical characteristics are practically identical with those of olive oil. When mixed with olive oil, therefore, its detection was impossible by any known tests.

After exhaustive study, however, a Government chemist, Mr. J. Fitelson, devised a color test which differentiates this oil in a striking way from any of the other food oils in present use. A few drops of teaseed oil in a mixture of acetic anhydride, chloroform and sulphuric acid, allowed to stand five minutes and then mixed with ethyl ether, produces a distinct red color of magenta shade. The intensity of the color is proportional to the amount of teaseed oil present, so that an approximation of the proportion of teaseed oil in a mixture with other food oils is possible. In this respect the test resembles the well known Halphen test for cottonseed oil. The Fitelson test is negative on such food oils as corn, cottonseed, peanut, sesame, sunflower, rapeseed, soybean, poppy, mustard and olive. With olive oil, a faint pinkish color may be developed in some instances, in no way to be confused with the characteristic color produced with teaseed oil. The reliability of the test has been demonstrated by experience in government and state food control laboratories over a period of about a year.

No official samples have been found to contain teaseed oil since the test was available; but three unofficial samples of salad oils submitted by purchasers, have shown teaseed oil in substantial proportions.

Butter

No official samples of butter have been examined but four samples were tested for health departments and the Connecticut School for Boys.

"Buttered" Pop Corn

"Buttered" popcorn may be popcorn treated with melted butter or with an artificially colored vegetable fat, such as cocoanut oil.

Three samples of "buttered" popcorn, with the dressing used in treating them, were submitted by the Dairy and Food Commissioner. One of the dressings was butter and the other two were not.

Three samples designated as popcorn "dressing" or "seasoning" were also submitted. Two of them were declared to be colored cocoanut oil. All were vegetable fats of the general character of cocoanut oil.

These dressings do not appear to be oleomargarine or imitation butter under our statutes. The Treasury Department advised that this cocoa-

nut oil product is not taxable as oleomargarine under government regulations. The melted fat is perhaps an imitation of butter oil but not of butter. However, popcorn treated with such dressing should not be called "buttered" popcorn because the dressing is not butter.

FRUITS AND FRUIT PRODUCTS

Spray Residue on Apples

During the harvest season a comprehensive survey was made of the principal commercial apple orchards of the State and samples were taken to determine the extent of contamination of the fruit with spray residues. A list of the larger orchardists in each county was secured from the several county agents, and the survey was made by an inspector from the office of the Dairy and Food Commissioner, accompanied in some instances by a representative from this laboratory. Most of the samples were taken from the tree, but some were from stock already in storage.

Tests were made by the Gutzeit method for arsenic and by the "dithizone" procedure for lead.

One hundred and seventy-nine official samples were taken. In addition to this, 127 samples were examined for growers, and for the Departments of Entomology and Botany, the latter in connection with experimental studies.

The past season was unusual in that the rainfall for August was far below normal. For New Haven and vicinity the normal precipitation for the month of August is 4.32 inches, but for that month in 1935 it was 0.72 inches. Rainfall in June was above normal; in July, slightly below normal; and for September, normal.

The survey was begun in August and was continued until the middle of November. A summary of the results shows that of 179 official samples tested, 35, or 19.6 per cent, exceeded the tolerance for lead (0.018 grain per lb.); only 8, or 4.5 per cent exceeded the tolerance for arsenic (0.01 grain As_2O_3 per pound).

There was a heavy rainfall from September 4 to 10. Of samples taken prior to that time, 43.2 per cent showed lead in excess of the tolerance. From September 4 to October 1, excess of lead was found in 20.8 per cent of the samples examined. From October 1 to the end of the survey, November 15, only 4.3 per cent of the samples tested were above the tolerance for lead.

Growers whose fruit showed excesses of residue were notified of the facts. They were also advised that it would be necessary to process their products to bring them within the tolerances for lead and arsenic before marketing. The inspection data included information as to the types of spray materials used and the final dates of application. All of this material was studied in collaboration with the Department of Entomology and was used as a basis for instructions and advice to growers in spray programs for 1936.

"Color Added" Oranges

A number of inquiries have come to us regarding the significance of the legend "color added", quite generally appearing on Florida oranges, but not, we understand, entirely confined to fruit produced in that State.

The color is imparted to the fruit by immersion in a bath containing a harmless coal tar dye that produces a uniform orange shade of color. The purpose of the treatment is to enhance the marketability of fruit which is produced on trees flowering out of season and known as "off-bloom" fruit. The natural color of such fruit is likely to be variable and not typical of the normal varietal production. Although the oranges may be fully matured and of normal palatability, there is a consumer prejudice against them because the non-uniform natural color creates an impression that the fruit is unripe and unpalatable.

It should be pointed out in this connection that for many years there has been a common practice of subjecting fruits and vegetables to the action of ethylene gas. This treatment stimulates the natural agencies in the tissues, causing the development of normal and characteristic color. The gas itself does not become a part of the vegetable or fruit tissues. It is represented, however, that the gas process is not well adapted to Florida varieties of oranges and the direct dying method was adopted instead. "Gassing" requires 48 to 96 hours, while dying involves no considerable delay in marketing operation. The difference between the two processes is clear: The one is merely a stimulation of natural processes to hasten their completion, whereas the dyeing method is artificial both as to treatment and effect.

The State of Florida has passed legislation permitting artificial coloring and regulating the practice. The Florida Citrus Commission specifies the requirements which must be met before fruit is allowed to be colored and the Commissioner of Agriculture is charged with enforcing those requirements. One of the chief specifications is that no fruit shall be colored that has not attained a satisfactory degree of ripeness. This condition is judged by the ratio of sugar to fruit acid which must not be less than 8 to 1.

Under the statutes in Connecticut, artificial coloring of foods is not illegal, provided such coloration does not conceal damage or inferiority, and provided the color is harmless and its presence is declared. In such samples as we have examined, no evidence was obtained that the color was injurious, although it did not, in at least one instance, correspond to the U. S. certified shade. As for concealment of inferiority, the fruits examined all exceeded the sugar-acid ratio of 8 to 1, and hence could not be judged immature or unripe, or inferior in the food sense of edibility or palatability. As to whether the color served to simulate fruit of greater maturity or of superior varietal quality we were unable to say. It seems rather difficult to establish concealment of inferiority on that basis.

There appears to be an impression among some consumers that the practice of artificial coloring permits the marketing of damaged, undersized or blemished fruit that would otherwise be rejected in commerce. It cannot, of course, be fairly contended that such characters as undersize or irregular or blemished peel surfaces are effectually masked by artificial color. Such characteristics are still quite obvious to the consumer, and he can still exercise his choice regardless of the color factor.

Whatever may be said for or against the practice of artificial coloring of natural products, there is another aspect of the matter which is a question of economic policy rather than one of food control. It is not our purpose to criticize statutes and regulations that have been adopted

in another State and held to be in the interest of both growers and consumers; but it is a matter of interest to observe what is the reaction of some consumers to this practice. The character and quality of Florida oranges, including their peculiarities and variations as to natural color, are well known to consumers by the experience of many years. These variations of color have become marks of identity, not at all incompatable with acceptable and delicious fruit qualities. Artificial color introduces a new factor which is interpreted as an indirect admission of some fault that it is intended to conceal, and suspicion or prejudice results. Thus, to remove one obstacle to consumer acceptance, the industry has introduced another which it must now be put to the effort and expense of removing by convincing explanation.

In four unofficial samples of oranges examined, the acidity and distribution of sugars was as follows: Acidity, as anhydrous citric acid, ranged from 0.48 to 0.96 gm. per 100 cc.; total sugars, 5.87 to 8.46; sugar to acid ratio, 8.9 to 12.2. As noted above, a sugar-acid ratio of 8 is regarded as an index of satisfactory ripeness.

Five samples were submitted for examination as to color. One was uncolored and three bore the legend "color added". The added color was not identified but it was not one of the permitted yellow shades. It closely resembled Sudan II.

Canned Fruits, etc.

A sample of canned elderberries, our No. 9763, was submitted by a consumer in Kinderhook, N. J. It contained the natural fruit, without added water or sugar, pressure cooked at 240° and 10 lbs. pressure for 5 minutes.

Analysis:

Water 80.9%, ash 0.8%, protein (N x 6.25) 1.8%, total sugars 5.8%, undetermined carbohydrate including fiber 9.6%, ether extract 1.1%.

Several samples of canned cranberry "sauce" were analyzed. The brands were as follows:

No. 385. *Ocean Spray*, Cranberry Canners, Inc., So. Hanson, Mass.
No. 386. *Minot*, Minot Food Packers, Inc., Hammonton, N. J.
No. 387. *Krasdale*. A. Krasne, (distributor), Newark, New Jersey.
No. 388. *Sunrise*. Miner, Read and Tullock, New Haven (distributors).

Analyses:

	385 %	386 %	387 %	388 %
Water	51.3	44.5	46.4	43.8
Solids	48.7	55.5	53.6	56.2
Ash	0.07	0.07	0.06	0.07
Invert sugar	39.6	42.8	42.2	44.0
Sucrose	0.0	1.3	0.9	0.3
Total sugars	39.6	44.1	43.1	44.3
Acidity (as citric acid)	0.98	1.03	0.91	1.00
Benzoic acid	0.011	0.013	0.012	0.013
Total nitrogen	0.003	0.007	0.007	0.005

No coal tar dye, gelatin or glucose was found in any of the samples.

Ice Cream

Only two official samples of ice cream were examined. These were tested chiefly for evidence of foreign fat. The refraction and Reichert-Meissl No. of the extracted fat were within the range for milk fat in both samples and they were passed.

Nineteen samples were tested for the superintendent of State Parks and for several producers.

MEAT PRODUCTS

Frankfurts

Six official samples of frankfurt sausage were submitted. One of them was labelled to show the addition of cereal and the amount found was not in excess of 3.5 per cent so that no objection can be taken under State regulations. None of the other three samples had any declaration of cereal although all contained some, and one an excess of the allowable amount, 3.5 per cent.

Six unofficial samples were also examined.

MILK AND MILK PRODUCTS

Vitamin D Milk

Diseases or nutritional disorders that can properly be ascribed to a lack of one or more vitamins in the diet are few in number in this country. Ordinarily the usual varied diet and reasonable opportunity for exposure to sunlight suffice for our nutritional well-being. However, rickets is still a hazard to be guarded against in infants and young children. The observation that this condition is corrected or prevented by increased intake of vitamin D led to the practical suggestion of incorporating that diet factor in some appropriate article of food. Since milk is pre-eminently the food of infants and children, is consumed regularly and in fairly definite and uniform quantities, and contains calcium and phosphorus in substantial amounts, it is peculiarly adapted as a vehicle for the wider distribution of this food factor that is so important in the dietary of growing children. Clinical observations have clearly shown the effectiveness of milk fortified with vitamin D in the cure and prevention of rickets, although it may not in all cases remove the need for recourse to supplemental sources of that vitamin, such as cod liver oil. Vitamin D milk should be regarded as a rich, dependable and convenient food source of vitamin D, but not as a complete substitute under all circumstances for the usual medicinal sources of that vitamin.

The milk industry quickly appreciated the commercial possibilities of vitamin D milk and it soon became a market commodity. At present several methods are employed to impart vitamin D potency to milk. These procedures are of three basic types, although modifications of some of these types make the products so treated distinctive. The three types most commonly in use, and the three at present recognized by the Milk Regulation Board in this State, are: (1) direct irradiation of milk; (2) addition of a concentrate of cod liver oil to milk; and (3) milk produced by cows fed with irradiated yeast. These products are sometimes referred to as "irradiated", "fortified" and "metabolized" milks in the order named.

The fortification of milk is also accomplished by the addition of irradiated ergosterol, or by the addition of a product made by a somewhat different technique and known as activated ergosterol.

In June, 1935, the Milk Regulation Board formally recognized the three types of vitamin D milk enumerated above and charged the Dairy and Food Commissioner with the duty of a systematic inspection of these products offered for sale in this State. The Commissioner requested this Station to carry out the necessary biological tests. It was decided that the best plan of operation was to proceed on the same basis as obtains in the inspection of other food products and regard the project as a phase of food and drug control to be carried on with funds appropriated for that purpose. This plan was adopted.

Labelling regulations for vitamin D milk require only that the process of production be designated on the bottle cap. The regulations recognize the prevailing commercial practice for the three types of products in the matter of vitamin content or unitage per quart, and the several types are judged accordingly. Thus irradiated milk should contain not less than 135 units per quart; cod liver oil concentrate milk, 400 units; and milk produced by yeast feeding, 430 units. The relative nutritional efficacy of these different types and unitages is not clearly established at this time, but it is sufficient to say that all are effective for the prophylaxis of rickets.

In conducting the tests on market samples of vitamin D milk, the milk is fed to white rats which have been maintained for about three weeks after weaning on a diet that will cause them to develop a marked condition of rickets. The amount of milk fed varies according to the unitage expected and required for the type of milk fed, and the vitamin D content or activity of the sample is judged by the degree of healing in the bones of the animals. Under these conditions satisfactory healing (recalcification of the bones) should be produced by all three types of milk.

In rating samples and reporting results, only three classifications are used by us at present: viz., (1) satisfactory, (2) pass, and (3) below standard. The significance of these ratings is obvious and needs no comment except to say that for ratings (1) and (3), the evidence is quite distinct and conclusive, whereas in (2), it is doubtful in character but not sufficiently questionable to warrant classification as below standard.

Preparatory work consumed some time and actual testing of official samples was begun in September. Up to the close of the year 15 samples, representing as many producers, were tested. Of these, ten were satisfactory, two were passed and three were below standard. In tabular form the inspection may be summarized as follows:

	By Irradiation	C.L.O. Concentrate	Yeast Feeding	Irradiated Ergosterol
Satisfactory	4	2	4	....
Passed	..	2	..	...
Below standard	1	1	..	1

This tabulation is merely a summary of experience for the period indicated and is not a basis for judging the relative merits of the several types of fortification.

Ordinary Milk

Eighteen official samples of ordinary market milk were tested and two were found to be watered.

Five hundred and sixty-eight samples were examined for producers. Five samples were examined for calcium and phosphorus for Professor E. O. Anderson of the State College at Storrs. These were variously modified milks for experimental purposes.

Goat's Milk

Four samples of goat's milk were submitted by Professor E. O. Anderson, State College, to be examined for calcium, phosphorus and lactose. The results are recorded for reference.

Sample No.	CaO %	P_2O_5 %	Lactose %
9047	0.184	0.217	4.15
9048	0.187	0.240	5.05
9049	0.188	0.214	4.55
9050	0.185	0.184	4.85

Cream

No official samples were examined, but 14 samples were tested for producers.

SWEET PICKLES

In the inspection for the year 1934, a recurrence of the use of saccharin in sweet pickles was detected. Three samples examined during the past year were not found adulterated and were passed. The products examined were packed by the Silver Lane Pickle Co., East Hartford, Conn.; the Horbanes Co., Toledo, O.; and the Rhode Island Sales Co., Providence, R. I.

TOMATO PRODUCTS

Ten samples of tomato juice and other tomato products were submitted by the Dairy and Food Commissioner. The character and quality of tomato stock that is used to make such products as purée are judged by the mould count of the finished products. Accurate manipulation of the official method for mould count and proper interpretation of results requires considerable training and constant experience. As we have had little occasion to use this technique, the examination was made for us by courtesy of the Food and Drug Administration at the New York Station, and the results transmitted to the Commissioner.

EXTRACT OF VANILLA

Six official samples were submitted by the Dairy and Food Commissioner. Three appeared to be genuine and were passed. One was vanilla extract probably fortified with vanillin. Two were adulterated and misbranded. They were essentially mixtures of synthetic vanillin, coumarin and caramel color, possibly containing some true vanilla extract, but not properly labelled.

Three samples were examined for purchasers, one of them the Board of Education, New Haven.

VINEGAR

Section 2456 of the General Statutes provides that no vinegar may be sold or offered for sale as cider vinegar, if it is not produced wholly from the juice of apples. It also provides that no drug, or any hurtful or foreign substance, or any coloring matter, or any acid, may be added to vinegar; and that no vinegar may have an acidity of less than 4 per cent by weight of acetic acid. Section 2457 provides that vinegar shall be labelled to show the kind or identity of the product. Regulations provide that natural vinegars may be diluted to legal strength of acidity if the fact of such dilution is declared; and that dilute acetic acid is not vinegar and may not be sold as such; but it may be sold under its correct name for food purposes if it is free from harmful impurities.

A vinegar may be made from any alcoholic liquid which is subjected to the action of the acetic-acid-forming organism, which organism is present in the so-called "mother-of-vinegar". Vinegars are named according to the source of the alcohol from which acetic acid is produced. Cider and wine vinegars are derived from the alcoholic and subsequent acetous fermentations of apple and grape juices respectively. Malt or beer vinegar is made by similar fermentations of malted barley or other malted cereals. Similarly, glucose vinegar is derived from glucose solutions; and sugar vinegars from solutions of sugar refiners' syrup or molasses. Vinegar may also be made from distilled alcohol and such is known as spirit vinegar, or distilled vinegar.

The commonest forms of adulteration found in cider vinegar are the addition of water, and the substitution, wholly or in part, of distilled or other vinegars or of acetic acid. Dilution with water is not held to be adulteration if the fact is declared and the acidity is not reduced below the legal limit of 4 per cent.

Conclusions as to the fact of adulteration and the character of it depend upon interpretation of analytical data. Potential acidity, ash, non-sugar solids and glycerol are very useful items in determining adulteration due to dilution with water. Non-sugar solids are more easily determined than glycerol and that value is about as useful as the glycerol value for diagnostic purposes. When values for these items are found which are less than the minimum limiting values for authentic cider vinegars, evidence of dilution is afforded.

Dilution may have been practiced, however, without reducing the values mentioned below those observed for authentic cider vinegars. In such cases a combination of these factors must be considered and possibly further determinations made. This is especially necessary when evidence of substitution of distilled vinegar or of acetic acid is desired.

As distilled vinegar should contain little or no formic acid, and commercial acetic acid contains considerable amounts, a formic acid determination has been used to show the presence of diluted commercial acetic in vinegars. Formic acid in excess of 10 mgms. per 100 cc. is enough to cause suspicion, at least, if the article is sold as cider vinegar. Cider vinegar itself may apparently yield some formic acid by the procedure employed. This determination is obviously of no value as a diagnostic measure in case commercial acetic acid of the purer grade is used.

As the transformation of alcohol into acetic acid is likely to be incomplete in the process of making distilled vinegar, a determination of alcohol is helpful in indicating the source of acetic acid in suspected samples.

Pratolongo (Ann. Chim. Applicata, 15: 72, 1925) suggested the determination of oxygen value and iodine value as a means of distinguishing between dilute acetic acid and distilled vinegar. Schmidt (Zeit. Untersuch. Lebensm., 69: 472, 1935) pointed out the necessity of removing caramel before applying these tests. In our hands, however, the iodine values were not sufficiently distinctive to be of service. For example, distilled vinegar without caramel color gave an iodine value of 23, and with caramel added a value of 24 was obtained. Dilute acetic acid without caramel gave an iodine value of 19, and with caramel a value of 23.

The oxygen value is somewhat more indicative provided the values are low; if they approach those given by distilled vinegar, the conclusions are again uncertain.

Oxygen value was determined as follows:

Take a quantity of vinegar sufficient to yield a solution of 3 per cent acidity when diluted to 100 cc. To such quantity add 1 gram of "norit", dilute to a volume of 100 cc, shake for 2 minutes and filter. Take 50 cc. of the filtrate, add 2 cc. of 1:1 H_2SO_4, heat just to boiling and titrate with N/10 $KMnO_4$ until the pink color developed lasts for one-half minute. The volume in cc. of N/10 $KMnO_4$ consumed, corrected for a blank determination made with distilled water carried through the same procedure, is the oxygen value of the vinegar.

The end point is fugitive except in the case of uncolored dilute acetic acid, and cannot be determined with the same degree of accuracy that obtains for inorganic permanganate determinations.

Trials of distilled vinegar and dilute acetic acid showed values of about five for the former and zero for the latter.

The method cannot be applied to cider vinegar because the end point cannot be read to even approximate accuracy due to the large amount of manganese dioxide formed. Cider vinegars give oxygen values that are well over 100.

In the examination of market vinegars, in only one case did the oxygen value clearly point to the use of dilute commercial acetic acid. In several other instances the inspection evidence pointed in the same direction, but the oxygen values did not support that conclusion.

Fifty-one samples were examined, of which 42 were official, 5 were for experimental purposes and 4 were tested for producers. Of 42 official samples, 24 were passed and 18 were below standard in acidity or otherwise illegal.

DRUGS

RUBBING ALCOHOL

Alcohol for massage purposes should be grain alcohol rendered unfit for beverage purposes by the addition of suitable chemicals. Acetone, boric acid, diethylphthalate and zinc phenolsulphonate are commonly used as denaturants. Section 2674 of the General Statutes makes the use of methyl (wood) alcohol in this and other toilet preparations unlawful.

Twenty-two samples were submitted by the Dairy and Food Commis-

TABLE 3. EXAMINATION OF RUBBING ALCOHOL

No.	Dealer	Manufacturer	Alcohol by volume		Denaturants found
			Declared	Found	
61266	Allen's Perfumers, Bridgeport	Mearl Laboratories, Hamden	70.0	75.6	Acetone and boric acid
61267	Allen's Perfumers, Bridgeport	Johnson Products Co., New Haven	70.0	76.1	Acetone, boric acid and a trace of diethylphthalate
61265	Kresge & Co., Bridgeport	Lander, New York, N. Y.	70.0	76.9	Acetone, boric acid and diethylphthalate
61261	Willow Pharmacy, Bridgeport	Minlin Co., Boston, Mass.	70.0	78.2	Acetone, boric acid and zinc phenolsulphonate
61262	Willow Pharmacy, Bridgeport	Hygienic Pharm. Lab., New Haven	70.0	78.4	Acetone, boric acid and zinc phenolsulphonate
61263	Willow Pharmacy, Bridgeport	Parke-Davis & Co., Detroit, Mich.	70.0	78.1	Acetone and zinc phenolsulphonate
61264	F. W. Woolworth, Bridgeport	Minard Co., Framingham, Mass.	70.0	77.8	Acetone, boric acid and zinc phenolsulphonate
61269	Brook's Cut Rate, Meriden	A-M-R Chem. Co., Brooklyn, N.Y.	70.0	70.1	Acetone
61270	Brook's Cut Rate, Meriden	Parker Lab., New York, N. Y.	70.0	64.6	Acetone
61271	Brook's Cut Rate, Meriden	Robert's Lab., New York, N. Y.	70.0	65.0	Acetone
61251	Carroll Perfumers, New Haven	Brown Lab., Philadelphia, Pa.	70.0	75.6	Acetone and boric acid
61252	Carroll Perfumers, New Haven	Brown Lab., Philadelphia, Pa.	70.0	76.2	Acetone and boric acid
61253	Carroll Perfumers, New Haven	Vining Perfumers, New York, N. Y.	70.0	75.0	Acetone and boric acid
61268	East Rock Pharmacy, New Haven	National Pharm. Co., New York, N.Y.	70.0	76.1	Acetone and boric acid
61259	Eldorado Drug Co., New Haven	Norwich Pharm. Co., Norwich, N.Y.	70.0	75.3	Acetone and boric acid
61260	Eldorado Drug Co., New Haven	Norwich Pharm. Co., Norwich, N.Y.	70.0	77.3	Acetone and boric acid
61258	Eldorado Drug Co., New Haven	McKesson & Robbins New York, N. Y.	70.0	76.7	Acetone and boric acid
61256	Liggett's Drug Co., New Haven	United Drug Co., Boston, Mass.	70.0	76.4	Acetone, boric acid and zinc phenolsulphonate
61257	Liggett's Drug Co., New Haven	United Drug Co., Boston, Mass.	70.0	75.6	Acetone and zinc phenolsulphonate
61250	Temple Drug Co., New Haven	Rio Chemical Co., Newark, N.J.	70.0	72.0	Acetone and boric acid
61255	United Cigar Co., New Haven	Whelan Laboratories, Inc. New York, N. Y.	70.0	68.9	Acetone, boric acid and diethylphthalate
61254	United Cigar Co., New Haven	Weho Products Co., Phila., Pa.	70.0	74.7	Acetone and boric acid

sioner. None of them was found to contain methyl alcohol and no denaturants other than those mentioned above were detected. The preparations were declared to contain not less than 70 per cent of alcohol and that amount was met or exceeded in all except three of the samples.

Results are summarized in Table 3. (Page 670)

BORIC ACID OINTMENT

Boric acid ointment, according to the U.S.P. formula, should contain 100 grams of boric acid powder in 1000 grams of ointment. Assuming the minimum of 99.5 per cent purity for boric acid powder, the boric acid content of the ointment should be 9.95 per cent. The tenth edition of the U.S.P. specifies yellow beeswax and petrolatum (yellow vaseline) as the base of this preparation; the ninth edition of the same text specified a base of paraffin and white petrolatum. Strictly speaking, products sold as "U.S.P." unqualified, should be the yellow preparation of the tenth edition, but products labelled as "U.S.P. IX", or "white, U.S.P. strength", have been passed.

Analyses are given in Table 4. (Page 672)

CHLORINATED SODA

Solution of chlorinated soda ' U.S.P. strengt ı should contain not less than 2.5 per cent of available c orine. The preparation deteriorates and must be kept in well-stoppered ıottles in a cool place and protected from light.

Only two samples were submitted and they were examined promptly. Both were weak. Sample No. 61671, Glendowe Drug Co., Hamden, contain d 0.96 per cent available chlorine. Sam le 61673, Country Club Pha macy, Hamden, contained 1.71 per cent of available chlorine.

SOLUTION OF MAGNESIUM CITRATE

Made according to U.S.P. specifications, solution of magnesium citrate will contain not less than 1.5 grams of magnesium oxide in 100 cc. It should also contain not less than 9.8 grams of total citric acid and not less than 3.3 grams of free citric acid in each 100 cc.

Preparations labelled "U.S.P." are presumed to comply with the present official text which is the tenth revision. Preparations complying with some other revision of this text and labelled accordingly are not illegal. Preparations labelled "not U.S.P." or "special formula", without further qualification, do not comply with the statute. Although it is clear that they do not pretend to be of the current U.S.P. standard, the label does not show wherein they differ from such standard.

Thirty-three official samples were submitted and nineteen were deficient in one or more respects.

Analyses are given in Table 5. (Page 673)

TABLE 4. ANALYSES OF BORIC ACID OINTMENT

No.	Dealer	Manufacturer or jobber	Boric Acid	Remarks
			%	
61901	Ostrofsky's Pharmacy, Bridgeport	Pfeiffer Mfg. Co., St. Louis, Mo.	7.28	Below standard
61572	Allen's Cut Rate Perfumers, Bristol	Johnson Products Co., New Haven	11.26	Too strong
61566	Boulevard Pharmacy, Bristol	John Wyeth & Bros., Philadelphia, Pa.	5.46	Below standard
61666	Marble's Pharmacy, New Hartford	Brewer & Co., Worcester, Mass.	9.94	Pass
61678	Beirne's Pharmacy, New Haven	Hance Bros. & White, Philadelphia, Pa.	9.85	Pass
61756	Gillespie's Drug Store, New Haven	Petroline Laboratories, New York, N. Y.	10.36	Pass
61915	Carroll Cut Rate Store, New London	Good Products Co., Inc., Bridgeport	9.92	Pass
61576	Geo. R. Byington, Plainville	Benedict Laboratory, Waterbury	9.76	White not U.S.P.X.
61586	Central Cut Rate Store, Thompsonville	Royal Mfg. Co. of Duquesne, Brooklyn, N. Y.	10.10	Pass
61585	Central Cut Rate Store, Thompsonville	Price Drug Co., New York, N. Y.	9.77	Pass
57643	Webb & Siegel, Torrington	Sharpe & Dohme, Philadelphia, Pa.	9.95	Pass
57647	Moran's Drug Store, Wallingford	McKesson & Robbins, Bridgeport	9.79	Pass
61573	Rickman's Drug Store, Waterbury	Wm. R. Warner & Co., Inc., New York, N. Y.	10.14	Pass
61578	Prouty's Pharmacy, Windsor	The Upjohn Co., Kalamazoo, Mich.	9.46	Pass
61579	Windsor Drug Co., Windsor	Eli Lilly & Co., Indianapolis, Ind.	10.25	Pass
57639	Bannon's Drug Store, Winsted	Norwich Pharmacal Co., Norwich, N. Y.	9.91	Pass
57636	Sceery & Ivery, Winsted	United Drug Co., Boston, Mass.	10.03	Pass

TABLE 5. ANALYSES OF SOLUTION OF MAGNESIUM CITRATE

No.	Dealer	MgO	Total Citric Acid	Free Citric Acid	Remarks
		%	%	%	
61653	Schoonmaker Drug Store, Ansonia	1.58	8.36	2.68	Low in free and total citric acid
61911	The Spaulding Co., Branford	1.66	9.14	3.54	Pass
61900	Laverty's Drug Store, Bridgeport (Klawson Magnesia Co.)	1.73	11.47	5.44	Too much citric acid
57644	Warner's Drug Shop, Cheshire (Philadelphia Magnesia Co.)	1.52	9.24	3.69	Pass
61654	East Side Pharmacy, Derby (Sterling Co.)	1.65	9.38	3.71	Pass
61656	The Harding Drug Store, Derby	1.81	9.40	3.00	Pass
61657	Pocotopaug Pharmacy, East Hampton (National Magnesia Co.)	1.50	9.29	3.86	Pass
57619	Hartford Drug Co., East Hartford (Laurel Chemical Products)	0.92	5.43	1.83	"Special formula," but mis-branded
61910	Frank F. Dauden, Guilford	1.63	8.98	3.40	Pass
61687	Franklin Pharmacy, Hartford	1.18	7.39	2.98	Low in free and total citric acid and magnesium oxide
57624	Grower's Outlet, Hartford (Diamond Drug and Magnesia Co.)	1.00	2.50	0.45	Pass, not sold under U.S.P. name
61829	Harris Pharmacy, Hartford	1.46	8.08	2.72	Low in free and total citric acid
61801	A. Peterson, Hartford	1.31	7.77	2.90	Low in free and total citric acid and magnesium oxide
61828	L. J. Madsen & Co., Hartford	1.39	7.53	2.37	Low in free and total citric acid
61688	South End Drug Co., Hartford	0.91	4.64	1.58	Low in free and total citric acid and magnesium oxide
61552	The Graeber Pharmacies, Meriden	1.40	6.87	1.67	Low in free and total citric acid
61550	Lynch Drug Co., Inc., Meriden (Klawson Magnesia Co.)	1.03	6.90	2.99	Low in total citric acid and magnesium oxide
61797	Mystic Pharmacy, Mystic	1.55	9.16	3.46	Pass
61596	Park's Drug Store, Naugatuck (Royal Drug Co.)	1.74	8.91	2.82	Pass for U.S.P.IX. as labelled
61274	Murphy's Pharmacy, New Britain (Laurel Chemical Products)	1.01	5.87	1.91	"Special formula," but mis-branded
61813	Seltzer's Pharmacy, New Britain (Sisson Drug Co.)	1.63	9.39	3.65	Pass
61557	Wood's Drug Store, New Haven	1.70	8.99	2.96	Low in free citric acid
61924	Niantic Pharmacy, Niantic (Sterling Magnesia Co.)	1.62	9.33	3.78	Pass

TABLE 5. ANALYSES OF SOLUTION OF MAGNESIUM CITRATE—*Continued*

	Dealer	MgO	Total Citric Acid	Free Citric Acid	Remarks
		%	%	%	
61553	North Haven Pharmacy, North Haven	1.61	8.70	2.99	Low in free and total citric acid
61834	W. B. Carroll, Putnam (Sterling Magnesia Co.)	1.60	9.41	3.71	Pass
65552	Herman Meyer, So. Coventry (Laurel Chemical Products)	0.94	5.34	1.64	"Special formula," but mis-branded
61588	McCormick Drug Co., Stafford Springs	1.37	7.95	2.92	Low in free and total citric acid
57641	Claxton's Pharmacy, Torrington	1.44	8.60	3.35	Low in total citric acid
57642	Park Pharmacy, Torrington	1.68	8.30	2.21	Low in free and total citric acid
57646	Liberty Pharmacy, Wallingford	1.54	8.84	3.35	Pass
61825	Simonson Drug Co., Waterbury	1.03	4.94	0.98	Low in free and total citric acid and magnesium oxide
61824	W. J. Dunphy, Waterbury	1.19	8.18	3.76	Low in total citric acid and magnesium oxide
57638	Opera House Pharmacy, Winsted	1.77	9.47	3.20	Pass

CORROSIVE SUBLIMATE TABLETS

Eight official samples of corrosive sublimate tablets were examined. Unless otherwise specified in the table, each tablet should contain not less than 0.45 gram and not more than 0.55 gram of bichloride of mercury ($HgCl_2$) per tablet. The U.S.P. specifications require that the tablets be stained blue and the package marked "Poison".

Analyses are given in Table 6.

TABLE 6. ASSAY OF CORROSIVE SUBLIMATE TABLETS

No.	Dealer	Manufacturer or jobber	$HgCl_2$	
			Declared gm/tablet	Found gm/tablet
61658	Barton Drug Co., East Hampton	United Drug Co., Boston, Mass.	0.45	0.49
61799	State Drug Stores, Inc., New London	Premo Pharmaceutical Laboratory, New York, N.Y.	0.48	0.38
61680	Hillside Pharmacy, Hartford	Brewer & Co., Worcester, Mass.	0.48	0.46
61690	Vincent's Pharmacy, Rockville	Wm. R. Warner & Co., Inc., New York, N. Y.	0.48	0.50
61846	Lincoln's Drug Store, Simsbury	Squibb & Co., New York, N. Y.	0.45	....
61694	Arthur Drug Store, So. Manchester	Hance Bros. & White, Philadelphia, Pa.	0.47	0.46
61691	Magnell Drug Co., So. Manchester	Davis & Rose Co., Ltd., Boston, Mass.	0.45	0.47
57635	Sceery & Ivery, Winsted	Eli Lilly Co., Indianapolis, Ind.	0.065	0.063

Sample 61846 contained 45.9 per cent of $HgCl_2$, but the amount per tablet could not be accurately estimated because the tablets were somewhat crumbled when received. Sample 61799 was deficient. All other samples were passed.

FLUID EXTRACT OF ERGOT

The U.S.P. procedure requires assays of ergot preparations to be made by the cockscomb method. This laboratory has no facilities for carrying out such a technique. A number of samples were examined by the chemical method discussed in Jour. Assoc. Official Agr. Chem., **16**: 387, 1933 and **17**: 453, 1934. The standard used was ergotoxine ethanesulphonate obtained through courtesy of the U.S.P. XI Revision Committee. This chemical procedure is supposed to give results comparable with those obtained by the cockscomb method. The U.S.P. XI standard is not less than 0.5 mgm. ergot alkaloids per cc of fluid extract.

Eight samples of fluid extract representing as many manufacturers were tested and the results ranged from 0.00 to 0.38 mgm. per cc. Three preparations assayed 0.37 to 0.38; three others, 0.11 to 0.22; and two showed 0.005 and 0.00, respectively.

Since the official method of assay was not used, the products were not judged as to their compliance with U.S.P. requirements.

HYDROGEN PEROXIDE

The U.S.P. standard for this article requires not less than 3 per cent of hydrogen peroxide $(H_2O)_2$. Sixteen official samples were examined. All were within 10 per cent above or below the standard and were passed. Results are summarized in Table 7.

TABLE 7. ASSAYS OF HYDROGEN PEROXIDE

No.	Dealer	Manufacturer or jobber	Hydrogen Peroxide
			%
61912	Brewer's Drug Store, Branford	The Regal Drug Co., New Haven	2.82
61570	Allen's Cut Rate Perfumes, Bristol	.....	2.94
61571	Allen's Cut Rate Perfumes, Bristol	Mearl Laboratories, Hamden	2.77
6157	Leroy P. Tucker, Bristol	McKesson & Robbins, Bridgeport	3.06
6182	Novick's Pharmacy, Bristol	Park-Davis & Co., Detroit, Mich.	3.17
6176	A. T. Van Cleve, Colchester	Merck & Co., New York, N. Y.	2.88
6181	S. W. Zager, New Britain	American Peroxide Co., New York, N. Y.	3.07
61556	Eld Pharmacy, New Haven	McKesson & Robbins, Bridgeport	2.70
61558	The National Cut Rate Syndicate, New Haven	Dr. Higgin's Laboratories, New York, N. Y.	3.09
61929	H. F. Bassett, New Milford	Schieffelin & Co., New York, N. Y.	3.00
61909	Geo. T. Johnson, Norfolk	National Pharmacy Co., New York, N. Y.	2.95
61599	Geo. Smith & Son, Seymour	United Drug Co., Boston, Mass.	2.97
61583	Thompsonville Drug Co., Thompsonville	Mallinkrodt Chemical Works, St. Louis, Mo.	2.94
61669	Paul F. Flynn, Unionville	The Goodman Chemical Co., Brooklyn, N. Y.	3.04
57648	Carroll's Cut Rate Store, Wallingford	Certified Pharmacal Co., New York, N. Y.	3.05
6182	Litsky's Pharmacy, Waterbury	Hygienic Pharm. Laboratory, New Haven	2.99

COMPOUND SOLUTION OF IODINE

This preparation is commonly called Lugol's solution. It differs from Tincture of Iodine in that it is a water solution and contains less iodine and more potassium iodide than the tincture. The tincture is alcoholic.

The compound solution contains not less than 4.8 grams nor more than 5.2 grams of iodine, and not less than 9.8 grams nor more than 10.2 grams of potassium iodide, in each 100 cc.

Thirty-three official samples were submitted of which ten were not sufficiently close to the standard to be passed.

All preparations were of the druggists' own compounding.

The results are summarized in Table 8.

TABLE 8. ASSAYS OF COMPOUND SOLUTION OF IODINE

No.	ealer	ine	Potassium iodide	Remarks
		gm/100 c	gm/100 cc	
61632	Bristol Drug Co., Ansonia	4.80	9.96	O.K.
57628	La Place Pharmacy, Deep River	4.93	10.10	O.K.
61696	People's Drug Store, East Hartford	4.92	9.96	O.K.
61697	Powell Drug Co., East Hartford	4.79	9.82	Pass
57632	Prospect Pharmacy, East Hartford	5.03	10.53	Pass
57627	Hyde Drug Co., Essex	4.61	10.15	Pass
57630	Franklin Pharmacy, Glastonbury	4.72	10.01	Pass
61802	Capitol Pharmacy, Hartford	2.71	8.31	Low in iodine and potassium iodide
61831	Kaufman's Pharmacy, Hartford	4.49	9.95	Pass
61686	Roosevelt Drug Co., Hartford	5.17	11.11	Pass
61827	Scharr Pharmacy, Hartford	4.92	9.83	O.K.
61684	Washington Pharmacy, Hartford	4.30	10.68	Low in iodine
61660	Moodus Drug Store, Moodus	4.75	9.76	Pass
61595	Olson's Drug Store, Naugatuck	5.87	11.84	Too strong in iodine and potassium iodid
61810	Packard Drug Co., New Britain	4.12	10.79	Low in iodine
61809	Whelan Drug Co., New Britain	3.01	10.53	Low in iodine
61677	Theo. J. Beck, New Haven	4.97	10.18	O.K.
61555	Eld Pharmacy, New Haven	4.74	10.37	Pass
61674	The Orchard Pharmacy, New Haven	5.14	10.89	Pass
61820	The Spooner Drug Co., Oakville	4.69	9.73	Pass
61689	F. E. Metcalf Drug Store, Rockville	4.94	10.32	Pass
61815	Pelchar's Pharmacy, Terryville	4.81	10.02	O.K.
61816	Latimer's Drug Store, Thomaston	4.86	10.29	Pass
61817	Lemmon Pharmacy, Thomaston	4.06	8.53	Low in iodine and potassium iodide
61592	Opperman's Drug Store, Torrington	4.53	10.17	Pass
61593	Union City Pharmacy, Union City	3.82	9.39	Low in iodine
61819	D. G. Sullivan, Watertown	5.62	11.34	Too strong in potassium iodide
61562	Curran & Flynn, Willimantic	4.79	10.02	Pass
61563	The Wilson Drug Co., Willimantic	4.35	9.48	Pass
61580	Kane's Pharmacy, Windsor	4.46	9.72	Pass
61582	R. J. Keefe Pharmacy, Windsor Locks	5.16	11.35	Too strong in potassium iodide
57640	Franl S. Bunnell, Winsted	5.16	10.47	Pass
57637	The City Pharmacy, Winsted	3.65	9.40	Low in iodine

SPIRIT OF ETHYL NITRITE

This preparation, commonly called sweet spirit of nitre, should contain not less than 3.5 per cent, nor more than 4.5 per cent of ethyl nitrite.

Twenty-one official samples were examined and nine were below standard.

TABLE 9. ASSAYS OF SPIRIT OF ETHYL NITRITE

No.	Dealer	Manufacturer or jobber	Ethyl nitrite	Remarks
			%	
61651	McQuade's Corner Drug Store, Ansonia	Own make	3.32	Pass
61650	North End Pharmacy, Ansonia	Eli Lilly & Co., Indianapolis, Ind.	3.27	Pass
57645	Gladding's Pharmacy, Cheshire	Leete and Co., New Haven	2.55	Below standard
61667	McNamara's Pharmacy, Collinsville	The Sisson Drug Co., Hartford	0.06	Below standard
61668	The Valley Pharmacy, Collinsville	Moore & Co., Worcester, Mass.	2.85	Below standard
61655	East Side Pharmacy, Derby	E. R. Squibb Co., New York, N. Y.	3.46	Pass
61659	Chatham Pharmacy, East Hampton	Own make	4.59	Pass
61387	Hazardville Pharmacy, Hazardville	McKesson & Robbins, Bridgeport	4.16	O.K.
61842	Redding's Drug Store, Jewett City	United Drug Co., Boston, Mass.	4.09	O.K.
61598	Buckley's Drug Store, Naugatuck	Benedict Laboratories, Waterbury	2.00	Below standard
61807	Besco Drug Co., New Britain	W. R. Warner & Co., New York, N. Y.	2.94	Below standard
61805	Noveck's Pharmacy, New Britain	Own make	2.67	Below standard
61811	West End Pharmacy, New Britain	Royal Mfg. Co., Duquesne, Pa.	3.34	Pass
61764	W. D. Ricker, Norwich	Lee & Osgood, Norwich	2.74	Below standard
61832	G. A. Lemaitre, Putnam	Own make	4.11	O.K.
61908	Salisbury Pharmacy, Salisbury	Hance Bros. & White, Philadelphia, Pa.	0.18	Below standard
57626	Central Pharmacy, Old Saybrook	Leete & Co., New Haven	3.42	Pass
61845	Hoffert's Pharmacy, Simsbury	Smith, Kline & French, Philadelphia, Pa.	4.05	O.K.
61589	Delmonico's Drug Shoppe, Stafford Springs	Own make	4.30	O.K.
61823	Reilly & Burns, Waterbury	Own make	2.92	Below standard
61821	West Side Pharmacy, Waterbury	Own make	3.36	Pass

The Pharmacopoeia directs that this product should be kept in small, well-stoppered, dark amber-colored bottles, in a cool, dark place, remote from fire. Failure to observe these precautions after the preparation is made no doubt accounts for most or all of the deficiencies found.

Results are summarized in Table 9.

PHENOL

Fifty-eight official samples of phenol were taken by the Dairy and Food Commissioner, the inspector asking for a 5 per cent solution in each case. Allowing a margin of 10 per cent above or below this strength as a reasonable latitude for error in compounding, 47 samples cannot be said to be reasonably accurate.

A 5 per cent solution is made by diluting 5 grams of phenol (carbolic acid) to 100 cc with water at room temperature. Such a preparation made in the laboratory with U.S.P. IX phenol, and assayed by the same procedure used in testing official samples, showed a phenol content of 4.9 per cent which is correct, assuming the minimum standard of purity for U.S.P. phenol, viz. 98 per cent. Thus an allowance of 10 per cent for error in compounding is more than liberal.

Some of the samples were less than one-half the required strength. One sample, 65235, was more than seven times the strength called for and contained undissolved phenol. As delivered it was not labelled "5 per cent" and there may have been a misunderstanding as to strength of preparation asked for.

Results are given in Table 10.

TABLE 10. ASSAYS OF 5 PER CENT SOLUTION OF PHENOL

No.	Dealer	Phenol	Remarks
		%	
65239	Blank Bros., Bridgeport	5.04	Pass
65235	Burstein's Pharmacy, Bridgeport	38.32	Much too strong
65236	Pickett's Drug Store, Bridgeport	2.61	Too weak
65234	Kaesmann Pharmacy, Bridgeport	3.78	Too weak
65233	Spaner's Pharmacy, Bridgeport	3.74	Too weak
61281	Holley Pharmacy, Inc., Bristol	2.59	Too weak
61934	Culhane's Drug Store, Danbury	4.69	Pass
61937	Doran's Drug Store, Danbury	4.50	Pass
61936	Kinner's Drug Store, Danbury	5.47	Pass
61935	Pershing's Pharmacy, Danbury	4.29	Too weak
61932	Steven's Drug Store, Danbury	4.16	Too weak
61938	Whelan's Drug Co., Danbury	3.38	Too weak
65215	Lombardi Drug Store, Darien	3.66	Too weak
61913	The Holcomb Drug Co., East Haven	3.96	Too weak
65230	Brooklawn Pharmacy, Fairfield	3.48	Too weak
65221	Clampell's Pharmacy, Fairfield	6.34	Too strong
65220	Fairfield Pharmacy, Fairfield	2.15	Too weak
65222	Randall's Pharmacy, Fairfield	2.08	Too weak
65214	*Glenbrook Pharmacy, Glenbrook*	2.33	Too weak
61790	Centerville Drug Store, Hamden	4.23	Too weak
61616	Arthur Drug Stores, Hartford	2.90	Too weak
61612	Mark Drug Store, Hartford	2.79	Too weak
61906	Laverty's Pharmacy, Lakeville	3.99	Too weak
62130	Liggett's Drug Store, Meriden	3.18	Too weak
62136	The Hartman Drug Co., Middletown	5.24	Pass
62137	Kinsella's Drug Store, Middletown	4.48	Too weak
62138	Misentis Drug Store, Middletown	3.93	Too weak
62139	Murphey's Drug Store, Middletown	5.22	Pass
61792	The Brooks Drug Co., New Britain	3.96	Too weak
65227	The Packard Drug Co., New Britain	2.18	Too weak
61784	Bezner's Pharmacy, New Haven	4.51	Pass
61786	D'André's Pharmacy, New Haven	8.17	Too strong
65243	D'André's Pharmacy, New Haven	2.58	Too weak
61785	Freedman's Pharmacy, New Haven	1.92	Too weak
65244	Westville Pharmacy, New Haven	2.25	Too weak
61783	Wolfson's Drug Store, New Haven	3.54	Too weak
65242	Wood's Drug Store, New Haven	2.10	Too weak
61918	The Nichols & Harris Co., New London	4.55	Pass
61916	State Drug Store's Inc., New London	2.01	Too weak
61930	Park Pharmacy, New Milford	4.86	Pass
61926	H. H. Canfield, No. Woodbury	4.03	Too weak
65217	The McNichol's Drug Co., Norwalk	2.91	Too weak
65216	Wershow's Drug Store, Norwalk	3.32	Too weak
61759	*Central Avenue Pharmacy, Norwich*	3.55	Too weak
61283	Thrall's Drug Store, Plainville	4.37	Too weak
61791	Oxley's Drug Store, Southington	4.55	Pass
65229	Chas. A. Reccio, Stratford	4.63	Pass
65551	Center Drug Store, Terryville	3.84	Too weak
65550	Liggett's Drug Store, Torrington	11.04	Much too strong
65228	Whelan Drug Co., West Hartford	2.58	Too weak
61787	The Albinos Drug Co., West Haven	2.60	Too weak
65248	Coughlan's Pharmacy, West Haven	4.20	Too weak
65247	Edward F. Cornell, West Haven	4.17	Too weak
61789	Eugene E. Mayer, West Haven	4.13	Too weak
65249	Peter's Medicine Shop, West Haven	4.33	Too weak
61788	Silver's Drug Store, West Haven	4.11	Too weak
65246	West Shore Pharmacy, West Haven	4.09	Too weak
65218	Achonis Pharmacy, Westport	3.80	Too weak
65219	Driscoll's Pharmacy, Westport	3.97	Too weak
65245	The Sea Side Pharmacy, Woodmont	6.23	Too strong

SOLUTION OF POTASSIUM CITRATE

Twenty-two official samples of this preparation were examined and eleven were passed.

The standard for this product is not less than 8 grams of potassium citrate per 100 cc.

Sample 61699 was labelled "potassium citrate 100 grains, distilled water q.s. 120 cc." One hundred grains of potassium citrate in sufficient water to make 120 cc. of solution is equivalent to 5.4 grams in each 100cc., so the sample is nearly twice the strength declared.

Results are given in Table 11.

TABLE 11. ASSAYS OF SOLUTION OF POTASSIUM CITRATE

No.	Dealer	Potassium citrate	Remarks
		gms/100 cc	
61848	Madison Pharmacy, Bridgeport	6.77	Below standard
61849	Schiner's Pharmacy, Bridgeport	8.24	Pass
61839	The M. H. Berthiaume Pharmacy, Danielson	5.65	Below standard
61837	A. A. Bonneville, Danielson	8.21	Pass
61838	Woodward Drug Store, Danielson	3.95	Below standard
61699	*College Pharmacy, Hamden*	10.29	Nearly twice the declared strength
61753	People's Pharmacy, Hamden	7.06	Below standard
61800	Iverside Drug Store, Hartford	13.14	Too strong
61682	Sehl's Drug Store, Hartford	9.96	Strength correct as labelled (10%)
61662	John J. Cronin, Middletown	8.60	Pass
61663	Liggett's Drug Store, Middletown	8.37	Pass
61664	Woodward Drug Store, Middletown	7.13	Below standard
61841	Lavallie & Brennan, Moosup	7.61	Pass
61840	Moosup Pharmacy, Moosup	7.29	Pass
61814	Belvedere Drug Store, New Britain	7.02	Below standard
61676	Beirne-Cashman, Inc., New Haven	12.09	Too strong
61844	The Garden Drug Co., New Haven	7.61	Pass
61679	F. J. Hallahan, Plantsville	11.71	Too strong
61695	Center Pharmacy, So. Manchester	8.46	Pass
61693	J. H. Quinn & Co., So. Manchester	7.75	Pass
61692	Weldon Drug Co., So. Manchester	8.01	Pass
61818	Post Office Drug Store, Watertown	7.63	Pass

POTASSIUM PERMANGANATE SOLUTION

Seventeen samples of this solution were submitted, the inspectors asking for a 5 per cent solution in each case. Solutions within 10 per cent above or below that strength were passed as satisfactorily accurate. Only four samples varied from the stipulated strength by more than 10 per cent.

Results are summarized in Table 12.

TABLE 12. ASSAYS OF 5 PER CENT SOLUTION OF POTASSIUM PERMANGANATE

No.	Dealer	Potassium Permanganate	Remarks
		%	
61903	Farmers' Drug Store, Canaan	5.09	Pass
61904	Freeman Dempsey, Canaan	5.38	Pass
61905	The Service Pharmacy, Canaan	4.74	Pass
65554	The Purdy Drug Co., Derby	4.50	Pass
61914	Metcalf's Drug Store, East Haven	5.09	Pass
61614	Arsenal Pharmacy, Hartford	5.78	Too strong
61615	Merlsin's Pharmacy, Hartford	5.07	Pass
61617	Quality Drug Co., Hartford	5.33	Pass
65557	Barnum's Drug Store, Kent	5.00	Pass
65558	Dunn's Pharmacy, New Haven	5.10	Pass
61923	Montauk Pharmacy, New London	4.65	Pass
65560	Smith's Drug Store, Norwich	5.83	Too strong
65561	Treat's Drug Store, Norwich	4.69	Pass
61795	Higgin's Pharmacy, Pawcatuck	6.10	Too strong
65555	Conklin's Pharmacy, Portland	4.58	Pass
61907	C. H. Eggleston, Sharon	5.32	Pass
65556	Robert J. Benham, Washington	4.27	Too weak

SOLUTION OF POTASSIUM IODIDE

Solution of potassium iodide is a National Formulary preparation and should contain in each 100 cc not less than 97, and not more than 103 grams of potassium iodide. It is a saturated solution.

Three official samples were tested. One procured at Liggett's Drug Store in Norwich and one at Leroy's Pharmacy in the same city contained 103 and 102.8 grams per 100 cc respectively, and both were passed. One obtained at Noveck's Pharmacy in Bristol contained only 83.08 grams per 100 cc. and hence was only 86 per cent of the minimum required for a saturated solution.

SOLUTION OF SILVER NITRATE

Forty samples of solution of silver nitrate were examined. The samples in all cases were dispensed on request for a 2 per cent solution. Only four samples varied from the strength asked for by more than 10 per cent.

Results are given in Table 13.

TABLE 13. ASSAYS OF 2 PER CENT SOLUTION OF SILVER NITRATE

No	Dealer	Silver Nitrate	Remarks
		%	
61757	Baltic Pharmacy, Baltic	2.13	Pass
65237	Community Pharmacy, Bridgeport	3.59	Too strong
65238	Lincoln Pharmacy, Bridgeport	2.03	Pass
61280	Rickman's Economy Drug Store, Bristol	1.90	Pass
62055	Clinton Pharmacy, Clinton	2.13	Pass
62056	Neal's Pharmacy, Clinton	1.12	Too weak
65211	Meade's Drug Store, Cos Cob	2.36	Too strong
65207	D. H. McHugh, East Portchester	1.95	Pass
65209	The Boswell Drug Co., Greenwich	2.07	Pass
65210	Greenwich Drug Store, Greenwich	1.98	Pass
65208	Post Road Pharmacy, Greenwich	2.12	Pass
62053	Monroe's Pharmacy, Madison	2.16	Pass
62054	T. E. Jolly, Madison	1.85	Pass
62132	N. P. Forcier, Meriden	1.89	Pass
62131	W. W. Mosher, Meriden	2.05	Pass
62133	Victor W. Schmelzer, Meriden	1.97	Pass
62134	Cassiday's Pharmacy, Middletown	2.06	Pass
62135	Central Drug Store, Middletown	1.84	Pass
61798	Knox's Drug Store, Mystic	2.10	Pass
65553	Naugatuck Drug Co., Naugatuck	1.96	Pass
65226	Reffell's Pharmacy, New Britain	1.83	Pass
61919	James Drug Store, New London	2.08	Pass
61917	Starr Bros., Inc., New London	1.98	Pass
61920	Whelan Drug Co., New London	1.96	Pass
61760	Reardon Pharmacy, Norwich	1.99	Pass
61762	Jas. C. Mara, Norwich	2.25	Too strong
65213	The W. H. Jones Drug Store, Stamford	2.19	Pass
65212	Sherwood's Drug Store, Stamford	2.11	Pass
61796	F. J. Connors, Stonington	2.04	Pass
61758	Taftville Pharmacy, Taftville	2.10	Pass
62057	Neidlinger's Drug Store, Westbrook	1.86	Pass

DILUTE SULPHURIC ACID

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

It has been pointed out to us by pharmacists that this preparation is of little or no medicinal importance and seldom if ever called for. This may be true; nevertheless, as examples of pharmaceutic technique, some

of the samples dispensed represent very careless work. The variations are almost all in the direction of over strength, no doubt resulting from preparing the solution by volume instead of by weight and forgetting that the specific gravity of sulphuric acid is almost twice that of water. Only 15 out of 41 samples could be passed as reasonably accurate.

Results are given in Table 14.

TABLE 14. ASSAYS OF DILUTE SULPHURIC ACID

No.	Dealer	Sulphuric Acid	Remarks
		%	
61567	Blackall Drug Co., Bristol	12.22	Too strong
61575	The Holley Pharmacy, Inc., Bristol	17.05	Too strong
61569	Whelan Drug Co., Bristol	18.29	Too strong
57629	Chester Pharmacy, Chester	10.05	O.K.
57631	Aircraft Pharmacy, East Hartford	10.29	O.K.
61670	Colonial Pharmacy, Farmington	10.40	O.K.
57634	Elmwood Drug Store, Elmwood	15.77	Too strong
61750	Cherry Hill Drug Store, Hamden	14.77	Too strong
61752	The Hamden Pharmacy, Hamden	8.91	Pass
61751	Strand Pharmacy, Hamden	9.20	Pass
61672	Spring Glen Pharmacy, Hamden	13.91	Too strong
61804	Beacon Drug Co., Hartford	17.79	Too strong
61685	Buck's Pharmacy, Hartford	10.44	O.K.
61681	J. M. Dougherty, Inc., Hartford	19.14	Too strong
61613	A. Laschener, Hartford	10.49	O.K.
60738	Sobol Drug Co., Hartford	10.15	O.K.
61803	Whitney Pharmacy, Hartford	16.63	Too strong
61830	Wynn's Pharmacy, Hartford	19.64	Too strong
61590	Marley Pharmacy, Litchfield	13.46	Too strong
61591	Sepple's Drug Store, Litchfield	14.77	Too strong
61661	Parkview Pharmacy, Middletown	17.87	Too strong
61665	Pelton's Pharmacy, Middletown	14.91	Too strong
61597	Adam's Pharmacy, Naugatuck	9.81	O.K.
61808	Liggett's Drug Store, New Britain	11.05	Pass
61806	Noveck's Pharmacy, New Britain	19.78	Too strong
61554	Deegan-Hope Drug Co., New Haven	10.57	Pass
61755	Dixwell Pharmacy, New Haven	12.99	Too strong
61675	Heyl & Lynch, New Haven	13.89	Too strong
61754	Christian G. Visel, New Haven	16.43	Too strong
61577	Thrall's Drug Store, Plainville	18.01	Too strong
61835	Edward H. Burt, Putnam	11.17	Pass
61836	Donahue Drug, Inc., Putnam	17.38	Too strong
61833	Joseph A. P. Gagne, Putnam	9.28	Pass
61683	Lee Pharmacy, Rockville	11.61	Too strong
61902	Brodie Drug Co., Inc., Stratford	17.11	Too strong
57649	Marx Drug Store, Wallingford	7.81	Too weak
61561	Bay State Drug Co., Willimantic	10.08	O.K.
61564	T. Hickey Drug Co., Willimantic	10.20	O.K.
61560	The Nathan Hall Drug Store, Willimantic	30.01	Too strong
61559	Windham Pharmacy, Willimantic	0.44	Too weak
61581	Bridge Pharmacy, Windsor Locks	8.03	Too weak

TURPENTINE

One official sample was examined, 57618, obtained at the State Paint Co., Waterbury.

Examination:

	Sample 57618		Standard Specifications	
Sp. gravity at 15.5° C.	0.7891		not less than	0.862
Refractive Index	1.4370		not less than	1.468
Unpolymerized residue	82.0	%	not more than	2.5 %
Initial B. Pt.° C.	152.1		**not less than**	**150.0**
Distilling below 170° C	50.0	%	not less than	90.0 %

The sample is not turpentine, but a material consisting wholly or in large part of a petroleum product of the nature of kerosene or so-called "painter's naphtha". It violates Section 2461 of the General Statutes.

WITCH HAZEL

One sample of witch hazel water was examined, 61928, obtained at Merrell's Cut Rate Stores, New Milford.

The sample contained a trace of wood alcohol by the U.S.P. test. Only **pure alcohol should be used in the preparation of this article.** Section 2674 of the General Statutes makes the presence of any wood alcohol in toilet preparations illegal.

MISCELLANEOUS MATERIALS

FOODS

Ninety-four samples of miscellaneous food products were examined. Thirteen of these were submitted by the Dairy and Food Commissioner and the remainder were submitted directly to the Station by health authorities and others. Reports have been made to the persons or departments interested and no special comment is required here.

DRUGS, ETC

Twenty-four samples of drugs and related materials of a miscellaneous **character have been examined.** Eight were submitted by the Dairy and Food Commissioner and the remainder by health authorities and others. All have been reported to the persons or departments interested but the following are summarized for reference purposes:

62063. *Gall Stone Pain Relief.* Galvin Drug Co., Hartford. Said to contain no opiates but to afford instant relief from gall stone pain.

The remedy was a brown, turbid liquid, slightly acid to litmus, with a sweet, licorice-like taste and an odor of methyl salicylate.

Qualitatively the preparation contained ammonium salts, sugars, gelsemium and possibly podophyllin. Tests for morphine derivatives, acetanilide and other synthetic analgesic substances were negative.

Quantitatively the liquid contained solids 13.27 gms/100 cc, ash 0.14, sucrose 4.49, invert sugar 6.44. Alcohol declared but not determined.

The preparation is an alcoholic solution containing vegetable extractives with about 11 per cent of sugars and a trace of methyl salicylate. Gelsemium is present and possibly also podophyllin. Other medicaments, if present, were not detected. Gelsemium is not generally classed as an analgesic but apparently it has some uses in the treatment of neuralgia.

9642. *Capsules "for seizure of epilepsy".* Dr. Hunter's Laboratory, Little Rock, Ark.

Red capsules containing a light brown powder with an odor of anise. Faintly acid to litmus. Tests for alkaloids and halides, negative. Phenobarbital present, 28.37 per cent. Average weight of contents of one capsule, 4.15 grains. Phenobarbital per capsule, 1.18 grains.

57620. *Cellasin Tablets No. 1.* The Cellasin Co., Buffalo, N. Y. Light brown tablets, sweetish, vanilla-like odor. Alkaline to litmus and faintly alkaline to phenolphthalein. Carbonate present. No alkaloids, phenols or other medicaments found. The preparation has the power of converting the sugar sucrose into acid products. This feature was characteristic of a preparation of the same name (but not of same manufacturer) reported upon in the Journal, American Medical Association, July 5, p. 58 (1924). That product was offered as a remedy for diabetes because it had the property of converting sugar into lactic acid, but it was not regarded by the Council on Pharmacy and Chemistry of the association mentioned as effective in the treatment of diabetes. The sample submitted was on request of a diabetic patient who was using the remedy for diabetes. There is no recognized effective treatment for diabetes except the judicious use of insulin and suitable control of the diet under advice of a physician.

7943, 7944. *Lipsticks.* Harriet Hubbard Ayer, Inc. The sticks were "medium" and "light" shades. Examination showed the products to be a perfumed, carmine red pigment in a fatty base. The dye appeared to be an aluminum lake of an eosine derivative, probably eosine scarlet. Nothing was found that is ordinarily regarded as injurious. Individual sensitivities to external applications, or indeed to food substances, cannot be predicted.

7842. *Irma Coleman Beautitone, Special.* This was a pale pink, perfumed paste, neutral to litmus. The product consisted of, or contained, a paste of zinc oxide partly in the form of calamine, with talcum and glycerine, perfumed. No evidence of anything injurious was detected.

831. *La Jolie Cucumber Cream.* This was a pale green, perfumed cream, neutral to litmus. No alkaloids, soap or free fatty acids were found. Test for peroxide was negative. Contained 0.11 per cent boric acid or borax equivalent thereto. Other medicaments, if present, were not identified. The base is chiefly white petrolatum.

57621. *Silver Polish.* Sil-ver-ene. Lane Laboratories, Inc., Camden, Maine. Contains cyanide. Cyanide polishes are not suitable for use in cleaning table-ware because of the danger of incomplete removal and possible contamination of food with a dangerous poison.

9297. *Colodol,* washing powder. Colloidal Detergents, Inc., New York. A white, gelatinous material, alkaline to phenolphthalein. Qualitative tests indicated the mixture to consist of, or contain, sodium silicate, trisodium phosphate and sodium hydroxide.

7719. *Kemiko Kleener.* A yellowish powder, alkaline to phenolphthalein. Qualitatively the mixture consists of, or contains, soap, trisodium phosphate and sodium silicate.

326 and 327. Cigars, reduced in nicotine. M. & N. Cigar Manufacturers, Inc., Cleveland, Ohio.

	No. 326 large size %	No. 327 small size %
Total nicotine	0.41	0.43
"Free" nicotine	0.34	0.34

Analyses of tobacco processed to reduce the nicotine content have been reported in previous bulletins from this laboratory. Bulletins 295, 1928; and 307, 1929.

MATERIALS EXAMINED FOR "POISON"

A considerable number of requests for the examination of various substances and products for poisonous or injurious ingredients, or to explain symptoms of illness alleged to have been caused by the materials in question, or to dispel or affirm suspicions of spoilage or unfitness of food stuffs, are made to this department by various public agencies or by physicians or others. Most of the examinations in this group are of specimens of viscera of domestic animals submitted to us by, or at the suggestion of, the Commissioner of Domestic Animals, by veterinarians or by farmers of the State.

Seventy samples were examined. In ten of these, yellow phosphorus, lead or arsenic was found in sufficient quantities to be regarded as probable causes of death. Reports have been made to the persons or departments interested in this information and investigation.

COLLABORATIVE WORK

Collaboration with the Tobacco Sub-station and with the Department of Soils has required analyses of 133 samples involving over 700 analytical determinations. These are for investigational purposes and the results are for records of the departments named and not for discussion here.

Four samples of fruits of wild plants have been submitted by Dr. Paul D. Dalke of the U.S.D.A. Bureau of Biological Survey, Division of Wildlife Research. Proximate analyses were made to determine the food value of these fruits upon which birds and other wild life feed. The analyses are given here for study reference, (Table 15).

Since the moisture figures vary considerably due to varying degrees of drying under out-door conditions, a better comparison is afforded on approximately the same moisture basis, i.e. air-dry material.

Collaboration with the Association of Official Agricultural Chemists in studies of analytical methods has involved examinations of about 25 samples of foods, drugs and feeds and fertilizers. These results, with those of other collaborators, are given in official publications of the Association.

TABLE 15. ANALYSES OF WILD FRUITS

No.	Material	Moisture	Ash	Protein (N x 6.25)	Fiber	N-free extract	Crude fat (ether extract)
		%	%	%	%	%	%
	(As received)						
1395	High bush cranberry	47.32	1.70	2.66	6.32	37.07	4.93
1396	Japanese barberry	27.58	2.27	11.03	6.13	44.93	8.06
1397	Red-berried night shade	11.21	4.76	15.98	18.19	36.54	13.32
1398	Botia privet	24.14	2.73	8.19	9.13[4]	44.66	10.85
	(Air-dry material)						
1395		5.98	3.03	4.75	11.28	66.16	8.80
1396		4.80	2.98	14.50	8.06	59.06	10.60
1397		4.50	5.12	17.19	19.57	39.29	14.33
1398		2.83	3.50	10.88	11.70	57.19	13.90

BABCOCK GLASSWARE AND THERMOMETERS

Two thousand, two hundred and sixty-eight pieces of Babcock glassware, including test bottles for milk and cream and milk pipettes, and one hundred and thirty-one thermometers for checking pasteurization temperatures, have been tested, and certified if found correct.

	Passed	Inaccurate	Total
Babcock glassware	2,113	24	2,137
Thermometers	129	2	131
	2,242	26	2,268

FOOD ADVERTISING

In 1929 the American Medical Association established a Committee on Foods. At first it functioned as a sub-committee of the Council on Pharmacy and Chemistry, but it is now a separate body. To use the language of its rules, the Committee was created "for the purpose of preventing or discouraging unwarranted, incorrect or false advertising claims in the promotion of food products, and thus protecting the public and the medical profession against deception by untruthful or fraudulent 'health', nutritional or other advertising claims for foods." The formation of this Committee was an outgrowth of the work of the Council on Pharmacy and Chemistry dealing with so-called medicinal foods. Its name was subsequently changed to "Council on Foods."

It is worthy of note that the work of this Council has been welcomed by food industries almost without exception and both manufacturers and advertising agencies have coöperated with it to a remarkable degree. Many advertising programs, some of them national in scope, have been revised and brought into accord with the rules and regulations of the Council. The Council does not invade the field already covered by the federal food law nor of those agencies delegated to administer it; but it works in harmony with such agencies and accepts their rulings on matters pertaining to adulteration and misbranding. The Council's work is essentially in the field of collateral advertising that involves "health" and nutritional claims.

Food products submitted for consideration are required to be accompanied by full information as to composition, ingredients, and methods of manufacture. Nutritional claims must be supported by adequate and acceptable evidence. The products must conform to the provisions of the federal laws and regulations pertaining to adulteration and misbranding. The Council does not undertake to determine whether there is violation of such laws; it requires assurance or evidence from the manufacturer on this point. It reserves the right to discuss with federal authorities any apparent violations of their regulations and accepts their rulings in such matters.

While the Council is without authority to impose its rules and decisions upon manufacturers or distributors of food products, it does grant to them the right to use the seal of the Council when all of its requirements have been complied with. The significance of this seal is, as set forth in the rules, not a guarantee or recommendation of the accepted product; it

signifies that the food product, its label and all published or displayed advertising relating thereto have been considered by the Council and no conflict with its rules discovered. Acceptances may be withdrawn if evidence is found that the spirit and intent of the rules have been violated.

In the course of this work, many interesting and difficult questions arise. As these have been decided from time to time, the conclusions have been adopted by the Council in the form of general decisions for the guidance of committee members and for the reference of food manufacturers and of others interested. These decisions are of interest to consumers and they may be obtained by writing to the office of the secretary, 535 N. Dearborn St., Chicago, Ill.

Space does not permit quoting them in full here, but a few of them may be cited.

Good Food Advertising

Food advertising must be considered from the points of view of both the public and the food merchandiser. Sound advertising effectively serves the interests of both. The continued welfare of the food industry rests largely on the dedication of its advertising activities to the good of the public. It is essential therefore to define proper food advertising.

Proper food advertising should use the common name of the food concerned, or in the case of a fanciful trade name should identify the ingredients in the order of their decreasing proportions in the product. Such practice prevents deception. Any statement of the physical, chemical, nutritional or physiologic properties and values of the food should be truthful and expressed in simple common terms. Proper advertising is free from false implications. It does not create incorrect or improper inferences or comparisons between foods. It attempts to promote sales solely on the merits of the food article itself.

Good food advertising harmonizes with established authoritative knowledge popularly expressed. Meritorious foods require no exaggerated, false, misleading claims. The inferior food with alleged fictitious values requires gross superlatives and exaggerations and flamboyant, vague and mysterious claims. Good advertising discusses nutritional values but avoids specific health claims; it recognizes that health depends on the diet as a whole and on many factors other than foods and not on any one food brand nor any one type of food.

Food Advertising Claims with Scientific or Technical Significance

Statements or claims in food advertising with technical, scientific, nutritional, physiologic or health significance shall be carefully phrased so as to be in complete accord with established knowledge and authoritative opinion, and shall be free from misleading or incorrect popular implications or interpretations.

Sleep Inducing Claims for Specific Foods

Sleep inducing claims are not permissible for specific food beverages because of their misleading character implying the possession of unique sleep inducing properties by the specific individual foods and because they lead to grossly deceptive advertising practices. No objection is taken to statements averring the relaxation value of hot drinks at bedtime for inducing sleep and accompanied by recommendation for the particular food drink for this purpose.

Mastication Not an Aid to Health of Teeth and Gums

Claims that the mastication of specific foods "keeps the teeth and gums clean and healthy" and equivalent statements are meaningless, misleading and deceptive by implication and are not permissible.

Use of Terms "Sterile," "Sterilized" and "Sterilization"

The terms sterile, sterilized and sterilization shall be used in food advertising in their correct scientific significance only. Foods processed to be free of pathogenic organisms or to keep sound and wholesome are not necessarily sterile, i. e., free from viable micro-organisms.

Tonic Claims

The term tonic or its inflected forms have vague and misleading meanings or implications in food advertising and are not permissible.

Chocolate and Cocoa Products: Special Recommendations for Children

Special recommendations for children are not permissible for foods consisting largely of chocolate or cocoa which contain considerable quantities of theobromine and caffeine; no objection will be taken, however, to such recommendations in the case of foods that are merely flavored with chocolate or cocoa and which, in quantities likely to be consumed, are free from any probable effects due to theobromine or caffeine, provided the recommendations are permissible for the basis foods themselves.

Gelatin Not an Aid to the Digestibility of Milk and Milk Products

There is no satisfactory evidence that gelatin increases the digestibility of milk or milk products. Such claims are not permissible.

Vitamin E Claims for Public Advertising

There are at present no adequate scientific data establishing the role of vitamin E in human dietetics. This vitamin is present in many common foods, the necessary amount, so far as is known, being acquired with any ordinary diet. Statements or claims referring to vitamin E in advertising to the public imply a need for special sources of the vitamin that is not warranted by present knowledge. Neither claims for vitamin E nor mention of the vitamin shall appear on food labels or in advertising for accepted foods addressed to the public.

Blood Building Claims in Advertising

Iron is an important element in blood formation, since it is a chemical component of hemoglobin, the coloring substance of red blood corpuscles. Other substances taking part in hemoglobin generation are pigment-complexes, parent substances of the hemoglobin molecule, and copper in minute traces. It is important to point out that iron, copper and the pigment-complexes are concerned only with hemoglobin formation. They in no way contribute to the many other constituents of the blood, some of which are in solution as other mineral salts, proteins, amino acids and dextrose, and some in suspension as white blood corpuscles, platelets and the stroma of red blood corpuscles. Even the red blood cell stroma is only indirectly affected by iron and copper. In secondary or nutritional anemia the red corpuscles decrease because they have no pigment to carry. Their number will increase, however, with an increase of hemoglobin, provided there is no impairment of the cell forming mechanism. It is thus evident that the food supply of iron and copper affects only the hemoglobin content of blood.

The whole process of blood regeneration is complex, involving many factors that may be affected by pathologic or disease conditions as well as by adequacy or inadequacy of the diet in iron. Anemia is a condition in which the blood is deficient in hemoglobin. It may be due to an inadequate diet, but pathologic conditions are frequently involved. Anemia and blood regeneration are not appropriate subjects for advertising addressed to the public. Blood building claims, therefore, should be excluded from food advertising.

Acidosis Claims in Lay Advertising

Acidosis and acid claims, and the words "acidosis," "acidity" and "acid" are frequently used in advertising to play on vague fears of the public. The usual well-bal-

anced diet includes many alkali yielding foods—milk in its various forms, fruits and vegetables. Acid forming diets are not a practical nutritional problem because a good modern mixed diet adequate in minerals and vitamins can scarcely be potentially acid. It is appropriate to call attention to the fact that certain foods are potentially alkaline, or yield alkaline mineral residues in the body.

Acidosis is a medical name for a morbid condition of diminution in the reserve supply of fixed alkali in the blood and body fluids. Most people have no conception of the true meaning of the word and are quite likely to confuse it with gastric hyperacidity or "acid stomach," or to conceive of it as "acid blood," a condition which would be incompatible with life. The term "acidosis" is so little understood that its use in any advertising except that restricted to the medical profession is misleading and consequently disapproved.

Whole Wheat and Graham Foods

The terms whole wheat, entire wheat and graham as applied to flour and to bread are synonymous. In harmony with this understanding, these terms shall be used as food names or as parts of food names only when the sole cereal and farinaceous ingredient is whole wheat. Their use as names for foods with other composition is misinformative and misleading. Descriptive food names shall correctly and properly identify the nature of the foods.

Mineral, Spring, Natural or Alkaline Waters

Mineral, spring, natural or alkaline waters are usually advertised with unwarranted claims as to their health values. These waters are often alleged to possess curative and medicinal properties.

Analyses of most of these waters do not disclose explanations or evidence for remarkable curative properties. In case of potable mineral waters their mineral content comprises traces only of commonly occurring salts present in substantially greater quantities in ordinary foods. In many cases the deceptive therapeutic claims are the result of hearsay and illusion, or of deliberate scheming to defraud. Mineral waters having therapeutic action, generally cathartic, usually contain salts such as sodium phosphate or magnesium sulphate. Such therapeutically active mineral waters come under the purview of the Council on Pharmacy and Chemistry.

Formerly, therapeutic properties were attributed to mineral waters containing lithium or possessing radioactivity. Such characteristics as radioactivity or the presence of lithium in drinking water have not been shown to have useful effects. Strongly radioactive waters may be distinctly harmful. Natural waters contain only traces of lithium. The fortification of waters with lithium salts has no rational foundation; larger doses of lithium may be dangerous.

Spring waters of low mineral content are not to be distinguished physiologically from ordinary potable tap or drinking water; their properties for meeting the water needs of the body are the same. Drinking water should be pleasing to the taste and free from contamination that may produce disease. Therapeutic or curative claims for mineral waters that are not laxative are to be viewed with suspicion.

The daily water requirements for health cannot be defined with any degree of exactness, as activity, temperature and other conditions influence the demands. Sufficient water should be taken with meals and between meals to satisfy thirst. Glutting the body with water is not justified. Under disease conditions the physician should prescribe the water intake.

Good bottled waters of uniform composition, of tested purity and freedom from pathogenic contamination at the source and protected from possible contamination during transit to the consumer, have special usefulness; they serve as refreshing, pleasing drinking water with a maximum safety assurance and merit the support of popular and professional advertising appropriate for pure potable water.

"Resistance" Claims in Food Advertising

Food advertising abounds with vague "resistance" claims. Certain foods or their constituents are alleged to increase "resistance," implying body "resistance," which popularly signifies ability of the individual to keep well or healthy or not to suffer untoward effects from bacteria, infections, fatigue, exposure to cold and wet, loss of sleep and the like.

A healthy body is free from disease: it and its parts function normally. The tissues are physiologically sound, body cells function efficiently, there is a normal production of internal secretions or hormones, a normal power to produce immunity antibodies, and the many reactions of metabolism proceed without interference. Such a healthy body possesses a maximum "resistance" for the particular individual. Any influence disturbing its functioning, metabolism or structure may adversely affect "resistance." The potency and duration of the disturbing factor determine the degree of the breakdown of "resistance" and consequent effect on health. Slight but insidious disturbances may continue a long time before signs of positive ill health appear.

Scientific, clinical and common experience shows that adequate nutrition (water, minerals, vitamins, proteins, lipins, carbohydrates and roughage adequate in kinds and amounts), exercise, rest, hygienic environment and sane habits are among the important requisites for maintaining "resistance" and the conditions of health. There are, however, many other intangible and undefined prerequisites.

It is apparent that "resistance" depends on many other factors than diet or any one dietary essential. Insufficiency of a dietary essential may eventually break down health; but more than is necessary of one or more of these essentials for adequate body reserves does not lead to a "super-resistance." "Resistance" produced by adequate nutrition is not to be confused with immunity resulting from antibodies in the body fluids produced by the body cells in their defensive reaction against pathogenic organisms and their toxins. Food advertising should conform to this established knowledge.

Sweets in the Diet, Especially of Children

The adequate nutrition of children and adults requires careful selection of foods both as to kind and quantity. Each type of food has a proper place in the diet. A well-balanced diet, including ample proteins, fats, carbohydrates, minerals, vitamins and roughage, is one of the prime requisites for growth and health. Sweets consisting essentially of sugars are likely to be taken in excess because of their highly pleasing flavor. They supply energy only for body activity. Although sweets are wholesome and valuable foods when given their proper place in the balanced diet, they contribute few or none of the structural components required for good nutrition. Common concentrated sweets used to excess are harmful, especially in the case of children, so far as they impair the appetite for other highly necessary foods and lead to reduced intake of milk, eggs, fruits, vegetables, meat and cereals.

Food advertising that obscures the facts of good nutrition by encouraging too liberal use of sweets should be condemned.

Alcohol, rubbing 669

Babcock glassware 689
Beverages, carbonated 658
orangeade 658
beverage flavors 659
Boric acid ointment 671

Cellasin Tablets, No. 1 686
Chlorinated soda, solution of 671
Coffee 660
Colodol washing powder 686
Corrosive sublimate tablets 675

Eggs 660
Ergot, fluid extract of 675
Ethyl nitrate, spirit of 677

Fats and oils: 660
butter 661
"buttered" popcorn, etc. 661
olive oil 660
Food advertising 689
Fruits and fruit products:
spray residue on apples 662
"color added" oranges 662
canned fruits, etc. 664

Gall Stone Pain Relief 685

Hydrogen peroxide 676

Ice cream 665
Iodine, compound solution of 676
Irma Coleman Beautitone, Special . . . 686

Kemiko Kleener 686

La Jolie Cucumber Cream 686
Lipsticks—Harriet Hubbard Ayers, Inc. 686

Magnesium citrate, solution of 671
Material examined for poisons 687
Meat products:
frankfurts 665
Milk and milk products:
vitamin D milk 665
ordinary milk 667
goat's milk 667
cream 667
Miscellaneous 685

Phenol, 5% solution 679
Pickles, sweet 667
Potassium citrate, solution of 681
iodide, solution of 682
permanganate, solution of 682

Silver nitrate, solution of 683
Sulphuric acid, dilute 683

Tobacco, reduced nicotine 687
Tomato products 667
Turpentine 685

Vanilla, extract of 667
Vinegar 668

Witch hazel water 685