

THE FORTY-FIFTH REPORT ON
FOOD PRODUCTS
AND THE THIRTY-THIRD REPORT ON
DRUG PRODUCTS
1940

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Connecticut
Agricultural Experiment Station
New Haven

CONTENTS AND SUMMARY

Material	Page	Sampled by or submitted to		Total	Adulterated, below standard or questionable
		The Station	The Dairy and Food Commissioner		
FOODS					
Beverages:					
Fruit-ade type	452	5	55	60	6
"Stabilizer"	452	.....	1	1	.....
Eggs	458	2	.....	2	.....
"Extract", vanillin	458	.....	1	1	1
Fats and Oils: Olive oil	458	14	2	16	2
Meat products:					
Italian sausage	458	.....	11	11	2
F.L.P. preservative	459	.....	1	1	.....
Milk and milk products:					
Fluid milk	459	493	7	500	3
Vitamin D milk	459	.....	77	77	6
Cream, etc.	461	14	.....	14	.....
Spray residue	467	.....	97	97	.....
Miscellaneous foods	467	2	2	4	.....
Tested for poisonous or foreign materials	468	69	7	76	.....
Total		599	261	860	20
DRUGS					
Sedative drug preparations	470	.....	7	7	.....
U.S.P. preparations:					
Bismuth subgallate	471	.....	5	5	.....
Caffeine sodio-benzoate	472	.....	2	2	.....
Compound solution of iodine	472	.....	37	37	6
Sweet spirit of nitre	476	.....	44	44	25
Miscellaneous drugs, etc.	476	11	4	15	.....
Total		11	99	110	31
COLLABORATIVE WORK	480	466	.....	466	.....
Total for all samples		1076	360	1436	51
BABCOCK GLASSWARE, ETC.	480	2879	.....	2879	11
INDEX	481				

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

E. M. BAILEY, Chemist in Charge

THIS report summarizes examinations of official samples of foods and drugs submitted by the Dairy and Food Commissioner and other items of related interest for the calendar year 1940. Included also are analytical and other data upon products and materials submitted to the laboratory, and collaborative work done for other State or Station departments.

Altogether 1,436 samples of foods, drugs and miscellaneous materials have been examined; and 2,879 pieces of Babcock glassware, etc., have been checked for certification. In all of this work the efficient cooperation of the department staff is gratefully acknowledged.

The new Food, Drug and Cosmetic Act passed by the legislature of 1939 became effective on January first of this year. Rules and regulations for carrying out the provisions of the act were issued by the office of the Dairy and Food Commissioner on June 1, 1940, the same being those adopted by the Association of Food and Drug Officials of the United States after a series of conferences with representatives of that association and of the Food and Drug Administration called by Commissioner Woodward. This department collaborated with the Commissioner in this work.

The writer, as chairman of the Revision Committee for the Fifth Edition (1940) "Methods of Analysis", compiled and published by the Association of Official Agricultural Chemists, has supervised the preparation of that text. Dr. Fisher of this department rendered valuable assistance to the committee in this undertaking. The first edition of this text issued shortly after the Association was organized in 1884 was a bulletin of some 50 pages; the latest text is a volume of over 700 pages. These methods are used in official control work in the United States and Canada and widely used also in many foreign countries. The writer also has edited the text of the Chemical Section for the Eighth Edition of "Standard Methods for the Examination of Dairy Products" published by the American Public Health Association, the methods involved being the same as those of the A.O.A.C.

FOODS
BEVERAGES

FFIFTY-FIVE samples of orange and of grape beverages of the fruitade type were examined for the Dairy and Food Commissioner. This type of beverage is commonly bottled by dairies and is prepared from syrup bases or concentrates by suitable dilution with water. Orangeade should contain at least 15 percent of orange juice according to regulations in this State. No minimum has been fixed for other fruitade beverages, but Cruess (Expt. Sta. Rec. 80, 444, April, 1939) has suggested the following proportions of juice for several fruits: orange 20 percent; apple 25 percent; California grape 25 percent; Concord grape 20 percent; berry beverages, 20 percent.

These drinks should not be confused with the juices of the corresponding fruits. As pointed out in a previous bulletin (Conn. Expt. Sta. Bul. 415, 1939), such beverages are rarely significant sources of vitamin C. Of 49 samples examined at that time, the vitamin C content in 45 was equivalent to less than 6 percent of fresh juice, and in 29 it was less than 2 percent. Juice concentrates can be prepared with but little loss of vitamin C. Conditions favoring oxidation in the preparation of beverages from these concentrates probably account for the diminished vitamin potency.

The juice content of the grape drinks examined has been approximated on the basis of 0.33 percent as the ash content of grape juice. For orange drink, an ash content of 0.41 percent was used.

Analysis of official samples are given in Table 1. Five unofficial samples were examined.

P-758. *Effect-O*, a stabilizer for beverages, said to obviate the need for a preservative, was examined.

Analysis, qualitative: Sodium, chloride, phosphate, sulphate, and acetate present. No H₂S metals from acid soln. and only traces from ammoniacal soln. No ammonium salts, nitrate, sulphite, fluoride, borate, formate, citrate, oxalate, tartrate, lactic or other α-hydroxy acid detected.

Analysis, quantitative, in gms./100 cc: "Solids" (dried over night at 100°) 14.21; ash 6.68; sulphated ash 8.42; total acidity to phenolphthalein 1.497 N.; total chlorine (ashed with Na₂CO₃) 8.36; inorganic chlorine, direct titration, 3.85; organic chlorine, by diff., 4.51; P₂O₅ 0.44; SO₂ 0.06; acetic acid (vol. acidity), 1.31.

Although none of the chlorinated acetic acids was identified by preparation and examination of derivatives, the analysis indicates the presence of monochloroacetic acid. The following calculated composition is consistent with the total acidity and other factors observed: Monochloroacetic acid 12.02 gm. per 100 cc; acetic acid 1.31; sulphuric acid 0.07; sodium chloride 6.35; disodium phosphate 2.22.

TABLE 1. FRUIT JUICE BEVERAGES

D.C. No.	Dealer	Ash gms./100 cc.	Juice content estimated from ash %	Remarks
P-749	ORANGE Avon Holloway Bros.	0.092	22	.....
P-757	Bloomfield Mortensen's Dairy	0.067	16	.....
P-730	Bridgeport Barnum Dairy	0.101	25	.....
P-712	Beechmont Dairy	0.088	21	.....
P-713	Dewhurst Dairy	0.075	18	.....
P-715	Foland's Dairy	0.074	18	Coal-tar color present, not declared
P-714	Round Hill Dairy	0.078	19	.....
P-724	Chester Mapleshade Dairy	0.110	27	Coal-tar color present, not declared
P-725	Clinton Burr Dairy	0.090	22	.....
P-738	Coventry J. E. Kingsbury	0.067	16	.....
P-737	East Hartford J. A. Bergren	0.080	19	.....
P-711	Fairfield Wade's Dairy	0.087	21	.....

TABLE 1. FRUIT JUICE BEVERAGES—CONTINUED

D.C. No.	Dealer	Ash gms./100 cc.	Juice content estimated from ash %	Remarks
P-747	Roberge Dairy Forestville	0.069	17	.....
P-710	Round Hill Dairy Greenwich	0.079	19	.....
P-735	Bayer's Dairy Hartford	0.057	14	Coal-tar color present, not declared.
P-736	Kagan's Dairy	0.075	18	.....
P-741	Norman's Dairy Jewett City	0.074	18	.....
P-748	Ferndale Dairy Kensington	0.074	18	.....
P-721	Robert Greenbacker & Son Meriden	0.073	18	Coal-tar color present, not declared
P-722	S. Coleman Middlefield	0.093	23	.....
P-723	Hillside Dairy Middletown	0.078	19	.....
P-731	Clover Dairy Milford	0.081	20	.....

TABLE 1. FRUIT JUICE BEVERAGES—CONTINUED

D.C. No.	Dealer	Ash gms./100 cc.	Juice content estimated from ash %	Remarks
P-751 P-753 P-752	Bayer Milk Co. Selbert's Dairy United Milk Co. New Britain	0.062 0.067 0.098	15 16 24	...............
P-729 P-727	Sagal-Lou Dairy Story's Dairy New Haven	0.084 0.090	20 22	..........
P-755 P-754	Peiper's Dairy Spring Brook Farm Newington	0.077 0.088	19 22	..........
P-746 P-745 P-744	New London-Mohegan Dairy Radway's Dairy Star Milk Co. New London	0.082 0.072 0.078	20 17 19	...............
P-742 P-708	Browning's Dairy Herrick's Dairy Norwich	0.070 0.072	17 18	..... Coal-tar color present, not declared
P-740	Richard's Dairy Putnam	0.082	20	.....
P-756	E. A. Jacobsen Dairy Stafford Springs	0.130	32	Coal-tar color present, not declared

TABLE 1. FRUIT JUICE BEVERAGES—CONTINUED

D.C. No.	Dealer	Ash gms./100 cc.	Juice content estimated from ash %	Remarks
P-709	Maplehurst Dairy Stamford	0.076	19	.....
P-719	Torrington Creamery Torrington	0.087	21	.....
P-720	Beaumont Dairy Wallingford	0.088	21	.....
P-718 P-716	Brookside Dairy Diamond Ginger Ale Co. Waterbury	0.114 0.060	28 15	.....
P-734 P-733	Clark Dairy West Haven Creamery West Haven	0.076 0.094	18 23	.....
P-739	Kramer's Dairy Willimantic	0.069	17	.....

TABLE 1. FRUIT JUICE BEVERAGES—CONCLUDED

D.C. No.	Dealer	Ash gms./100 cc.	Juice content estimated from ash %	Remarks
P-750	Holloway Bros. GRAPE Avon	0.040	12	.....
P-726	Hillside Dairy Middletown	0.032	10	.....
P-732	Clover Dairy Milford	0.038	11	.....
P-728	Story's Dairy New Haven	0.037	11	.....
P-743	Browning's Dairy Norwich	0.037	11	.....
P-717	Brookside Dairy Waterbury	0.045	14	.....

SHELL EGGS

Two samples of eggs, H-950 sold as Western Fresh and H-951 sold as cold storage eggs, were examined. Both samples were stale eggs as shown by candling, and the ammoniacal nitrogen was 2.9 and 3.4 mgm. per 100 gms., respectively. Assuming 2.6¹ as about the upper limit for ammoniacal nitrogen in edible eggs, the fitness of one of these samples for food is doubtful, although no odor of decomposition was detected in either of them.

"VANILLIN EXTRACT"

A sample C-7, labelled "pure vanillin extract" coumarin and color added, General Merchandising Co., Hartford, distributor, was submitted by the Dairy and Food Commissioner. The article was sold as "vanilla". It was a non-alcoholic coumarin and vanillin flavor colored with caramel. Proper labelling would require it to be called "imitation vanilla flavor" and to state the ingredients including the base or vehicle. It is not properly an "extract".

Partial analysis: Vanillin gm./100 cc. 0.15; coumarin 0.18; lead No. (Winton) 0.07; color insol. in amyl alcohol 81.0 percent; alcohol, trace; test for ethyl vanillin (Ind. Eng. Chem., Anal. Ed. 12, 98, 1940), Negative.

OLIVE OIL

Only two official samples of olive oil were examined, both of which were largely or in part cottonseed oil, artificially colored and flavored. Both were also short volume. Sample K-1 was sold by J. Celio, Hartford, and G-2047 was sold by J. Ruggiero, New Haven. The respective packers were Stefano Bros., New York, and New Jersey Olive Oil Co., Jersey City.

Fourteen unofficial samples were tested of which seven were adulterated and seven passed.

ITALIAN SAUSAGE

Eleven official samples of Italian sausage were submitted by the Dairy and Food Commissioner. Two were adulterated with sulphites.

¹U. S. Dept. Agr., Bul. 846, (1920).

TABLE 2. ANALYSES OF ITALIAN SAUSAGE

No.	Dealer	Manufacturer	SO ₂ p.p.m.	SO ₂ Qualitative
S- 6	First National Stores, Inc., Hartford	Armour & Co.	601	Positive
S- 7	Spurveri Bros., Hartford	Own make	none	.....
S- 8	S. Bazzano, Hartford	Own make	none	.....
S- 9	DeVito's Market, Wallingford	Own make	none	.....
S-201	Piermonte Provision Co., E. Hartford	Own make	none	.....
S-202	P & N Importing Co., Hartford	Own make	none	.....
S-204	E. Kloss, Plainville	Own make	none	.....
S-210	Armour & Co., Hartford	Own make	228	Positive
S-211	New York Produce Co., Hartford	Own make	none	.....
S-212	A.Y.O. Packing Co., New Britain	Own make	none	.....
S-213	A. Capodagli, Derby	Own make	none	.....

Sodium sulphite, or other salts of sulphurous acid, are sometimes added to meat products, especially to chopped meats such as hamburger, but the practice is illegal. Sulphites are not very effective as a preservative but they enhance the natural red color of meat and destroy the odor that results from decomposition. Meat so treated, therefore, has an appearance of freshness though it may not in fact be fresh; and the meat may be "tainted" without attracting the notice of the purchaser.

S-214. A sample of powder, F.L.P., used for pickling and curing meats. The Preservaline Mfg. Co., Brooklyn, N. Y. The article was labelled as a mixture of sodium chloride, sodium nitrate and sodium nitrite.

The ingredients as stated were confirmed by qualitative tests. No sulphites were detected.

MILK AND MILK PRODUCTS

Fluid Milk

O. L. NOLAN

Seven official samples of milk were examined. Two were below standard, one watered and the others passed.

Four hundred and ninety-three samples of milk were tested for dairymen.

Vitamin D Milk¹

R. B. HUBBELL and E. M. BAILEY

Significant quantities of vitamin D are lacking in most common foods. This factor is essential for the proper utilization of dietary calcium and phosphorus. Exposure of the skin to sunlight provides

¹For a more complete discussion of this subject see "Accepted Foods", Council on Foods, American Medical Association, Chicago.

us with a natural source of supply of vitamin D, and it may be secured artificially by similar exposure to lamps providing rays of suitable wave lengths. A natural supply is available in certain fish liver oils with which we may supplement our daily diets; and common foods may be "fortified" with vitamin D if they are appropriate vehicles for this factor. Milk is especially appropriate for such fortification because of its composition and because it is consumed regularly and in quantities that insure a significant intake of this added vitamin.

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

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

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

Another concentrate used for this purpose is viosterol A.R.P.I. process, which is ergosterol activated by a process controlled by E. I. DuPont de Nemours and Co. This article is made by American Research Products, Inc., a subsidiary of General Mills, Inc.

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

Vitamin D milk produced by irradiation usually contains 135 U.S.P. units of vitamin D per quart, but irradiators capable of producing 400 units per quart are in use. Metabolized vitamin D milk should contain not less than 400 units per quart; it was formerly standardized at 430 units and milk of this type has been tested on that basis.

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

During the past year, 77 samples of vitamin D milk have been tested and the results are given in Table 3.

In the five-year period 1935 to 1939 inclusive, 90 percent of all samples tested fully or substantially met the unitage required. In the past year, 1940, 63 samples were rated as satisfactory, 8 were passed, and 6 were below the unitage declared or expected. The proportion rated as satisfactory or passed was 92 percent.

Cream, Etc.

Nine samples of cream and five samples of ice cream mix were tested for producers.

TABLE 3. ASSAYS OF VITAMIN D MILK

No.	Dairy	Process	Units Vitamin D claimed per quart	Remarks
H - 517	Avon Woodford Farms Woodford Farms	Yeast feeding	430	Satisfactory
H - 2170		Yeast feeding	430	Satisfactory
B - 1614	Bridgeport Beechmont Dairy Dewhurst Dairy Dewhurst Dairy Joshua Kent Marsh Dairy Mitchell Dairy	C.L.O. Conc. (Vitex)	400	Satisfactory
B - 1213		C.L.O. Conc. (Vitex)	400	Below guaranty
H - 2370		C.L.O. Conc. (Vitex)	400	Satisfactory
B - 123		Yeast feeding	430	Pass
B - 122		Activated Ergosterol	400	Satisfactory
B - 121	Irradiated Ergosterol	400	Satisfactory	
G - 1535	Bristol Elton Dairy Elton Dairy	C.L.O. Conc. (Vitex)	400	Satisfactory
G - 1963		C.L.O. Conc. (Vitex)	400	Satisfactory
G - 1519	Canaan "Borden's" "Borden's"	Irradiation	400	Satisfactory
G - 1964		Irradiation	400	Pass
H - 61	Clinton Burr Dairy	C.L.O. Conc. (Vitex)	400	Satisfactory
G - 1676	Danbury Rider Dairy	C.L.O. Conc. (Vitex)	400	Satisfactory
B - 1976	Derby Osborndale Farm	Yeast feeding	430	Satisfactory
B - 1975	Greenwich Round Hill Farms	C.L.O. Conc. (Vitex)	400	Satisfactory

TABLE 3. ASSAYS OF VITAMIN D MILK—CONTINUED

No.	Dairy	Process	Units Vitamin D claimed per quart	Remarks
G - 1633	Hamden Brock-Hall Dairy	C.L.O. Conc. (Vitex)	400	Satisfactory
G - 1634	Hartford Bergren's Dairy Bergren's Dairy Bryant & Chapman Cloverdale Dairy Cloverdale Dairy Farmers' Co-op. Dairy Highland Dairy Co. A. C. Petersen A. C. Petersen Lincoln Dairy Lincoln Dairy R. G. Miller & Son	C.L.O. Conc. (Vitex)	400	Satisfactory
H - 464		C.L.O. Conc. (Vitex)	400	Pass
G - 1739		C.L.O. Conc. (Vitex)	400	Satisfactory
H - 266		Irradiated Ergosterol	400	Below guaranty
H - 463		C.L.O. Conc.	400	Below guaranty
H - 268		C.L.O. Conc.	400	Satisfactory
H.G. - 1276		C.L.O. Conc. (Vitex)	400	Pass
H - 2171		C.L.O. Conc. (Vitex)	400	Satisfactory
H - 518		C.L.O. Conc. (Vitex)	400	Satisfactory
H - 1631		C.L.O. Conc. (Vitex)	400	Satisfactory
H.G. - 1275		C.L.O. Conc. (Vitex)	400	Satisfactory
G - 1741		C.L.O. Conc.	400	Pass
H - 2134		Kensington Ferndale Dairy, Inc. Ferndale Dairy, Inc.	C.L.O. Conc. (Vitex)	400	Satisfactory
J.L. - 326	C.L.O. Conc. (Vitex)		400	Satisfactory
G - 1536	Litchfield Toll-Gate Farms Toll-Gate Farms	Yeast feeding	430	Satisfactory
G - 1965		Yeast feeding	430	Satisfactory
H - 186	Manchester North Elm Dairy West Side Dairy	C.L.O. Conc.	400	Satisfactory
H - 60		C.L.O. Conc. (Vitex)	400	Satisfactory
H - 95	Millford Cold Spring Farm	Yeast feeding	430	Satisfactory

TABLE 3. ASSAYS OF VITAMIN D MILK—CONTINUED

No.	Dairy	Process	Units Vitamin D claimed per quart	Remarks
H - 2369	New Britain United Milk Co.	C.L.O. Conc. (Vitex)	400	Satisfactory
B - 193	New Canaan Sheffield Farms Co.	C.L.O. Conc.	400	Satisfactory
H - 524	New Haven Brock-Hall Dairy New Haven Dairy New Haven Dairy Sagal-Lou Products Story's Dairy Story's Dairy	C.L.O. Conc. (Vitex)	400	Satisfactory
H - 525		Irradiated Ergosterol	400	Satisfactory
H - 2172		Irradiated Ergosterol	400	Satisfactory
H - 62		C.L.O. Conc. (Vitex)	135	Satisfactory
G - 1964		Irradiation	135	Satisfactory
H - 2030		irradiation		
G - 1966	Newington Spring Brook Farm Spring Brook Farm	Activated Ergosterol	400	Satisfactory
H - 2132		Activated Ergosterol	400	Satisfactory
H - 187	New London Radway's	C.L.O. Conc. (Vitex)	400	Satisfactory
W.S. - 369	New Milford Sunny Valley Farms	C.L.O. Conc. (Vitex)	400	Satisfactory
H - 94	North Haven Knudson Bros.	Yeast feeding	430	Satisfactory

TABLE 3. ASSAYS OF VITAMIN D MILK—CONTINUED

No.	Dairy	Process	Units Vitamin D claimed per quart	Remarks
B - 2331	Norwalk Mitchell Dairy Mitchell Dairy Strawberry Hill Strawberry Hill	Irradiated Ergosterol	400	Satisfactory
B - 194		Irradiated Ergosterol	400	Satisfactory
B - 2394		Irradiation	400	Satisfactory
B - 195		Irradiation	400	Pass
H - 2028	Norwich Browning's Dairy Browning's Dairy	C.L.O. Conc. (Vitex)	400	Below guaranty
H - 2289		C.L.O. Conc. (Vitex)	400	Satisfactory
B - 192	Pennington, N. J. Sheffield Farms	Yeast feeding	430	Satisfactory
B - 1612	Plainsboro, N. J. Walker-Gordon Co.	Yeast feeding	430	Satisfactory
H - 3133	Putnam Deary Bros. Deary Bros.	C.L.O. Conc. (Vitex)	400	Satisfactory
H - 462		C.L.O. Conc. (Vitex)	400	Pass
B - 1790	Springdale Maplehurst Dairy Clear View Dairy	C.L.O. Conc. (Vitex)	400	Satisfactory
B - 1794		C.L.O. Conc. (Vitex)	400	Satisfactory
B - 1804	Stratford Deering Dairy	C.L.O. Conc. (Vitex)	400	Satisfactory
H - 2301	Thompsonville Allen Bros.	C.L.O. Conc. (Vitex)	400	Satisfactory

TABLE 3. ASSAYS OF VITAMIN D MILK—CONTINUED

No.	Dairy	Process	Units Vitamin D claimed per quart	Remarks
G - 1518	Torrington Creamery	Irradiation	400	Below guaranty
G - 1675	Torrington Creamery	Irradiation	400	Satisfactory
W.H. - 935	Torrington Creamery	C.L.O. Conc. (Vitex)	400	Satisfactory
H - 2304	Waterbury			
H - 2368	Borgeson Bros.	C.L.O. Conc. (Vitex)	400	Below guaranty
H - 1677	Borgeson Bros.	C.L.O. Conc. (Vitex)	400	Satisfactory
H - 519	Brock-Hall Dairy	C.L.O. Conc. (Vitex)	400	Satisfactory
H - 2303	Brookside Dairy, Inc.	C.L.O. Conc. (Vitex)	400	Satisfactory
H - 521	Brookside Dairy, Inc.	Activated Ergosterol	400	Satisfactory
H - 2302	R. F. Worden & Sons, Inc.	Activated Ergosterol	400	Satisfactory
H - 520	R. F. Worden & Sons, Inc.	C.L.O. Conc.	400	Satisfactory
H - 93	Watertown			
	Sanford's Overlook Farms, Inc.	C.L.C. Conc. (Vitex)	400	Satisfactory
	West Haven			
G - 1968	West Haven Creamery	Yeast feeding	430	Satisfactory
B - 2395	West Haven Creamery	Yeast feeding	430	Satisfactory

SPRAY RESIDUE

C. E. SHEPARD

During the harvest season of 1940, ninety-five official samples of apples were examined for spray residue. Only lead was determined. Two samples of cherries were examined for both lead and arsenic.

Samples were judged on the basis of tolerances announced by the U. S. Public Health Service and adopted by the Food and Drug Administration. The new figures are .05 grain per pound for lead and .025 grain per pound for arsenic and are much more liberal than any hitherto in effect.

None of the samples examined exceeded the tolerance for lead, and only two were in considerable excess of the tolerance (.025 gr. per lb.) in effect for the two years prior to 1940. The samples of cherries were also within the old tolerance.

In the 10-year period 1931-40, of approximately 1,000 samples examined over 90 percent were passed judging by the tolerances in effect for those years. If the tolerance of .025 gr. per lb. lead had been in effect for the whole period, 96 percent would have passed. Few, if any, would have exceeded the liberalized limits recently announced.

MISCELLANEOUS FOODS, ETC.

Dough Conditioner

C-629. A white powder used in baking as a dough improver or conditioner.

From analysis the following calculated composition was indicated:

Moisture 7.42 percent; dextrose 38.10 percent; sodium chloride (salt) 9.18 percent; tricalcium phosphate 0.25 percent; other mineral matter 0.88 percent; undetermined, largely starch, 44.17 percent.

Starch was identified microscopically and appeared to be wheat starch. Not more than a trace of nitrogenous matter was found, and no fat could be extracted. Reducing sugar was present and dextrose was identified by the melting point and microscopic appearance of the osazone.

Yeast Food

C-630. This preparation resembled yeast food analyzed in this laboratory, Station Food and Drug Report 1917, p. 115.

It contained calcium, sodium, chloride, sulphate, ammonium salts and a trace of bromate in a flour or other starchy vehicle.

Analysis: Ash 46.81 percent; total N 3.30 percent; ammonia nitrogen 2.64 percent; ammonium chloride (calc. from NH₃) 10.08 percent; protein (N x 6.25) 4.13 percent.

SKUNK CABBAGE

It has been observed that ruffed grouse and pheasants feed freely on the fruit of skunk cabbage. Samples of such fruit were submitted by Professor Moss of the Forestry Department of the University of Connecticut at Storrs.

Seeds and pulp were examined separately, the conventional feed analysis being based on the fresh material as received.

ANALYSES OF SEED AND PULP OF SKUNK CABBAGE

	7704-A (Pulp) %	7704-B (Seed) %	7937-A (Pulp) %	7937-B (Seed) %	7938 (Seed) %
Moisture	84.63	46.84	79.20	42.49	43.70
Ash	1.27	1.82	1.56	1.82	1.68
Protein (N x 6.25)	2.71	16.38	2.83	14.74	16.00
Fiber	1.02	2.02	1.21	2.26	2.12
Carbohydrate other than fiber....	6.68	13.21	9.74	17.23	16.14
Fat (ether extract)	3.69	19.73	5.46	21.46	20.36

FRUIT OF THE ROSE

In some European countries it is said (Science News Letter, Sept. 7, 1940) that wild roses are planted, not for decorative purposes but because the fruit (rose hips) is rich in vitamin C.

Mr. C. S. Burr of Manchester submitted two samples which were examined for vitamin C content.

	Ascorbic acid (Vit. C) mgms./gm
No. 8412 Rose hips, <i>Rosa Rugosa</i>	0.22
No. 8413 <i>Rosa Multiflora Japonica</i>	0.04

Sample 8412 has about the same vitamin C content as ordinarily found in tomato juice. Sample 8413 is much lower. Whether these values are normal for the varieties named we cannot say; we have no data for comparison.

EXAMINATIONS FOR POISONOUS OR FOREIGN MATERIALS

Seventy-six samples of miscellaneous foods and other materials, including articles suspected of containing foreign or poisonous substances, have been examined for health officers and others. In most instances results revealed nothing to warrant suspicion. A sample of meat (bait) submitted by the State Police was found to contain

strychnine. A sample of cream soda submitted by the Dairy and Food Commissioner contained bacterial growth. Ingredients used in the manufacture of cream puffs, also submitted by the Commissioner, showed no evidence of common chemical poisons. This was in connection with an investigation of alleged poisoning; the symptoms, if due to eating cream puffs, were more probably of bacterial origin.

Acute food poisoning definitely attributable to metallic contaminations of foods is apparently of rare occurrence. Trace amounts of metals are not likely to be significant as causes of acute symptoms. Grosser contamination usually can be traced to accident, inadvertance or ignorance. The toxic nature of lead and arsenic have long been recognized and more attention has been given to these than to other metals from the standpoint of both acute and chronic effects. Zinc, tin, aluminum and copper are not in the category with lead and arsenic as health hazards and are not generally regarded as significant of food poisoning unless the amounts involved are extraordinary. Thus cases of zinc poisoning have been cited due to consumption of beverages of an acid nature prepared or kept in galvanized pails; and there is considerable literature on the effects of copper when taken into the system over periods of time. The healthfulness of foods prepared in aluminum ware has been questioned at times in the past, but there is ample evidence that such apprehension is needless.

Kaplan and Karff ("Food Research" 1, 529, 1936), have reviewed the role of antimony in food poisoning and conclude that it is of relatively minor importance although instances of illness due to it are cited.

Of interest, too, are the recent citations of cadmium poisoning by Fraut and Kleeman (Jour. Am. Med. Assoc., July 12, 1941, p. 86). Ingestion of acidic beverages contaminated by contact with cadmium plated utensils was the cause. The symptoms were those of acute gastritis and they developed shortly after the eating of the contaminated food. The amounts of cadmium involved in the several cases cited varied from 67 p.p.m. to 530 p.p.m. This recalls a sample of white wine, suspected of having caused illness, that was submitted to this laboratory by a health officer about two years ago. The sample contained 39 p.p.m. of cadmium. An original bottle of the same brand of wine, however, contained no cadmium. We have no information as to how contamination may have occurred in this case.

DRUGS

SEDATIVES, ETC.

H. J. FISHER

IN our report for 1939 (Bul. 437, p. 479) a number of sedative drugs were discussed and analyses given. The drugs here reported were collected at that time (prior to effective date of present law) but analyses were not completed in time for inclusion in the bulletin above mentioned.

S-1129. *Yeast-Vite*. J. A. Johnson, New Haven. Yeast Vite (U.S.A.), Inc., Niagara Falls, N. Y. Declared, grains per tablet, acetphenetidin 0.37, found 0.42; amidopyrine declared 0.75, found 0.64; ammonium bromide declared 0.16, found 0.04; potassium bromide declared 0.21, found 0.34; caffeine declared 0.54, found 0.10; sodium bicarbonate declared 2.14, found 1.95; yeast declared 2.30, found present, amount not determined. Because of presence of amidopyrine can now be dispensed only on prescription, Sec. 17 (k).

S-1133. *Dysco tablets*. Nichols and Harris Co., New London. Abbott's. (Not in original package). Contained 1.58 grains amidopyrine per tablet. Other medicaments, if present, not detected. Can now be dispensed only on prescription, Sec. 17 (k).

S-1139. *Seequit tablets*. Weldon Drug Co., Manchester. Seequit Corp., New York. Contained aspirin 7.26 grains per tablet; caffeine 0.60 grains per tablet. Other medicaments, if present, not detected. Under present law this product should bear statement of net contents of package, Sec. 17 (b) (2); ingredients, Sec. 17 (e) (2); and cautionary statement regarding use, Sec. 17 (f) (2).

S-1142. *Benzedo Compound*. Vincent Pharmacy, Rockville. Swan-Meyers Co., Indianapolis. Declared grains per tablet, benzedo 3, amidopyrine 2, phenobarbital 0.25. Found amidopyrine 1.89 grains per tablet. A crystalline substance was isolated which on recrystallization from alcohol was white and melted at 75° C. It gave negative tests for N, S, P, and for halogens (Mulliken I, 10); and had a neutralization equivalent to 230 (Ibid. I, 77). "Benzedo" is calcium o-benzyloxy-benzoate. The melting point of o-benzylbenzoic acid is 75° C (Beilstein) and its neutralization equivalent is 228. Thus the presence of "benzedo" appears to be established; but its separation from phenobarbital could not be effected for quantitative determination, nor could phenobarbital itself be separated for identification.

S-1145. *Compral* (brand of Cyrinal). Hillside Pharmacy, Hartford. Winthrop Chemical Company, Inc., New York. Declared, grains per tablet, pyramidon 2.75, found 2.58; trichlorethyl urethane 2.25, found 2.01. Because of presence of amidopyrine (pyramidon) this article can now be sold only on prescription, Sec. 17 (k). Label on this package states that this product should be used only as prescribed by physicians.

Note. A preparation of trichlorethyl urethane was granted a U.S. patent in 1922 and was introduced on the German market in 1923 under the name "Voluntal". Compral was introduced as a compound of Voluntal and Pyramidon (amidopyrine) and was patented in the United States in 1932. Pfeiffer and Seydel, Z. physiol. Chem., 178, 81, 1928, showed by freezing-point curves that a compound was actually formed between these two substances although the union is so weak that it can be broken by selective solvent extraction.

Analysis of this sample was made essentially according to A.O.A.C. Methods of Analysis, 1940, p. 573, 41, except that before making ammoniacal the acid solution was extracted five times with chloroform, the extracts evaporated and weighed as trichlorethyl urethane. The M.P., 64-66° C., agreed with that observed by Pfeiffer and Seydel.

S-1165. *Alphebin*. Bisco Drug Co., New Britain. A physician's sample package. Ganes Chemical Works, Inc., New York. Contains 2.26 grains amidopyrine per tablet. Other medicaments, if present, not detected. No evidence of aspirin, caffeine, acetanilide, phenacetin or antipyrin was found. This product can now be retailed only on prescription, Sec. 17 (k).

S-1185. *Mylin*. A. A. Bonneville, Danielson. Mifflin Chemical Corp., Philadelphia. Contained, grains per capsule, amidopyrine 3.25, caffeine 0.89, ginger present. Other medicaments, if present, not detected.

A.M.A. Council on Pharmacy and Chemistry Reports 1930 cites this article as containing in each capsule 3.5 grains amidopyrine, 1 grain caffeine, 0.25 grain oleoresin of ginger and 0.25 grain starch.

Article can now be retailed only on prescription, Sec. 17 (k).

BISMUTH SUBGALLATE

Dried at 100° C this drug yields on ignition not less than 52 percent and not more than 57 percent of bismuth trioxide.

The five official samples tested came within these limits.

TABLE 4. ANALYSES OF BISMUTH SUBGALLATE

No.	Pharmacist	Moisture %	Bi ₂ O ₃ (dry basis) %
S-1169	John's Drug Store, Waterbury	5.15	55.40
S-1178	Sewall Pharmacy, Hartford (Merck)	6.50	56.66
S-1190	Hamden Pharmacy, Hamden (Squibb)	4.84	56.41
S-1206	Moodus Drug Store, Moodus (N. Y. Quinine & Chem. Works)	4.19	56.14
S-1218	Metcalf Drug Store, Rockville (Powers, Weightman & Rosengarten, Philadelphia)	5.03	53.50

CAFFEINE SODIO - BENZOATE

Caffeine with sodium benzoate when dried at 80° C contains not less than 47 percent and not more than 50 percent of anhydrous caffeine; and not less than 50 percent and not more than 53 percent of sodium benzoate.

Two official samples were examined.

S-1173, Ideal Drug Co., Hartford. Sample contained caffeine 48.39 percent and sodium benzoate 48.90 percent. Sample passed.

S-1181. Bliss Pharmacy, Inc., Hartford. Sample contained caffeine 48.57 percent and sodium benzoate 48.58 percent. Sample passed.

Above figures are on the dry basis. Each sample contained about 1 percent moisture.

COMPOUND SOLUTION OF IODINE

(Lugol's Solution)

Compound Solution of Iodine should contain in each 100 cc. not less than 4.5, and not more than 5.5, gms. of iodine; and not less than 9.5, nor more than 10.5, gms. of potassium iodide, according to the requirements of the U. S. Pharmacopoeia.

Thirty-seven samples were examined, six of which varied from the above limits by more than 10 percent. In one case the variation was a matter of over strength, in the other, of deficiencies. Sample S-1336 was very dilute. It was labelled Amend's Solution Iodine Comp. and there was nothing to indicate that it was not of official strength.

Analyses are given in Table 5.

TABLE 5. COMPOUND SOLUTION OF IODINE

D.C. No.	Dealer	Manufacturer	Iodine gms./100 cc.	Potassium Iodide gms./100 cc.	Remarks
S-1337	Bethel The English Drug Co.	Own make	4.5 - 5.5	9.5 - 10.5	U.S.P. Standard
S-1336	Danbury Stevens Drug Store	Own make	4.41	8.97	Pass
S-1187	Danielson The M. H. Bertheaume Drug Co.	Amend Laboratories, Inc., New York, N. Y.	0.43	0.13	Below standard in iodine and potassium iodide
S-1184	Essex Hyde Drug Co.	Geo. L. Clafflin Co., Providence, R. I.	5.11	10.20	O.K.
S-1207 S-1393	Glastonbury Franklin Pharmacy Glastonbury Drug Co.	Own make Own make	5.04	10.21	O.K.
S-1191	Hamden Concord Pharmacy	Own make	4.81 3.48	9.13 8.91	Pass Below standard in iodine
S-1342 S-1175	Hartford The Alderman Drug Co. Burr Pharmacy	Own make Own make	5.16	10.28	O.K.
			5.01 4.01	9.64 9.70	O.K. Below standard in iodine

TABLE 5. COMPOUND SOLUTION OF IODINE—CONTINUED

D.C. No.	Dealer	Manufacturer	Iodine gms./100 cc.	Potassium Iodide gms./100 cc.	Remarks
S-1174	Colt's Park Pharmacy	Own make	4.95	9.60	O.K.
S-1344	G. Fox & Co.	Own make	4.99	10.09	O.K.
S-1345	Griswold Drug Co.	Own make	4.66	9.72	O.K.
S-1341	Liggett's Drug Store	United Drug Co., Boston, Mass.	5.11	10.27	O.K.
S-1343	Roma Pharmacy	The Sisson Drug Co., Hartford	4.80	10.74	Pass
S-1179	Roosevelt Drug Co.	Own make	5.86	10.92	Pass
S-1340	Sobol Drug Co.	Own make	5.17	10.66	Pass
S-1231	D. G. Stoughton Co.	Own make	3.63	10.07	Below standard in iodine
S-1407	D. G. Stoughton Co.	Own make	4.52	9.65	O.K.
S-1339	Willen's Pharmacy	Own make	5.88	11.03	Pass
S-1180	Wilmore Pharmacy	Own make	4.95	11.75	Too strong in potassium iodide
S-1382	Hazardville Hazardville Pharmacy	Own make	4.73	10.09	O.K.
S-3	New Canaan Cody's Pharmacy	Own make	5.61	10.33	Pass
S-2	Runyon's Pharmacy	Own make	5.13	10.56	Pass
S-1226	New Haven Heyl & Lynch, Inc.	Own make	3.73	8.02	Below standard in iodine and potassium iodide
S-1216	Edward F. McGuinness	Own make	3.75	9.46	Below standard in iodine
S-1215	Sullivan Drug Co.	Own make	4.75	10.27	O.K.

TABLE 5. COMPOUND SOLUTION OF IODINE—CONTINUED

D.C. No.	Dealer	Manufacturer	Iodine gms./100 cc.	Potassium Iodide gms./100 cc.	Remarks
S-1194	Plainville Plainville Pharmacy	McKesson & Robbins, Bridgeport	5.00	9.95	O.K.
S-1229	Simsbury Hofert's Pharmacy	Own make	4.96	10.40	O.K.
S-1230	Lincoln Drug Store	Own make	5.07	9.46	Pass
S-1219	Stafford Springs Williams Pharmacy	Lee & Osgood Co., Norwich	4.11	11.52	Pass
S-1347	Terryville Pelchar's Pharmacy	Own make	4.99	10.06	O.K.
S-1335	Wallingford W. Marx Pharmacy	McKesson & Robbins, Bridgeport	4.81	9.49	Pass
S-1221	Washington Depot The Rexall Store	Eli Lilly & Co., Indianapolis, Ind.	4.24	9.99	Pass
S-1346	Waterbury Martin's Drug Store	Apothecaries Hall Co.	4.18	9.41	Pass
S-1	Westport Achorn Pharmacy	Own make	5.18	9.87	O.K.
S-1205	Wethersfield Wethersfield Pharmacy	Own make	4.20	8.04	Below standard in potassium iodide
S-1214	Winsted Seecy & Ivory	Own make	4.79	10.38	O.K.

SWEET SPIRIT OF NITRE

This preparation should contain not less than 3.5, nor more than 4.5, percent of ethyl nitrite. It should be kept in small, well-filled and tightly corked containers, in a cool dark place remote from fire. These are the directions given in the Pharmacopoeia and if carefully observed the preparation will keep for a long time without serious deterioration. There is still some practice on the part of pharmacists to manufacture this drug themselves, but many prefer to buy the article from pharmaceutical supply houses. The latter can not, of course, be responsible for careless handling of their products by retailers.

Eighteen samples were less than 90 percent of the minimum U.S.P. standard; and 7 were less than 30 percent of that minimum. The total of samples tested was 43.

Results are given in Table 6.

MISCELLANEOUS DRUGS, ETC.

Fifteen samples of miscellaneous drugs, cosmetics and other materials were examined for health officers, physicians, the Dairy and Food Commissioner, and others.

The following are recorded for reference.

S-1353. *Tam.* G. Fox and Co., Hartford. E. Fougere and Co., New York, Distributors. A dark brown, semi-solid paste with sweet, fruity taste. Sold as an aid in relief of constipation, not a food jam, and stated to contain no artificial drugs or chemicals; not habit-forming.

The paste consisted of, or contained, emodin-bearing substances. Tests for aloes and rhubarb, and for alkaloids were negative.

Microscopic examination revealed fruit seed that appeared identical with known specimens of fig seeds; also other unidentified plant material including leaf fragments.

The preparation is a fruit or vegetable paste containing vegetable cathartic principles (possibly senna or cascara) and figs. No evidence of habit-forming drugs or of chemical cathartic salts was found.

The article resembles somewhat a product, "Les Fruits", examined by us in 1921, Station Bulletin 236, p. 283.

C-632. *Inecto* hair dye. G. Fox and Co., Hartford. Inecto, Inc., New York. This is a coal tar dye preparation labelled with the cautionary statement describing a sensitivity test to be made by the purchaser before using; and stating that it can not be used for dyeing eyelashes or eyebrows without danger of causing blindness. The labelling is in compliance with provisions of the Food, Drug and Cosmetic law.

The dye is a para-phenylenediamine and the companion bottle, a part of the treatment, contains hydrogen peroxide.

TABLE 6. SWEET SPIRIT OF NITRE

D.C. No.	Dealer	Manufacturer	Ethyl nitrite found, %	Remarks
.....	.....	.....	3.5 - 4.5	U.S.P. Standard
S-1208	Branford Brewer's Drug Store	Own make	2.49	Below standard
S-1209	The Spaulding Co.	Own make	3.66	O.K.
S-1338	Burnside Lerner Drug Co.	Exeller Chemical Co., Garfield, N. J.	3.55	O.K.
S-1369	Canaan Freeman Dempsey	Benedict Laboratories, Waterbury	2.76	Below standard
S-1213	Chester Warner's Drug Store	John Wyeth & Bro., Philadelphia, Pa.	4.08	O.K.
S-1183	Chester R. M. Callenon	McKesson & Robbins, Bridgeport	4.26	O.K.
S-1186	Danielson John E. Moran	Charles Osgood Co., Norwich	3.22	Pass
S-1195	Forestville Forestville Pharmacy	Schieffelin & Co., New York, N. Y.	4.08	O.K.
S-1210	Guilford Frank F. Douden	Own make	3.23	Pass
S-1192	Hamden Centerville Drug Shop	Own make	3.57	O.K.
S-1193	College Pharmacy	Royal Drug Co., New Haven	3.50	O.K.
S-1334	Country Club Pharmacy	Own make	4.71	Pass

TABLE 6. SWEET SPIRIT OF NITRE—CONTINUED

D.C. No.	Dealer	Manufacturer	Ethyl nitrite found, %	Remarks
	Hartford			
S-1228	Blue Hills Pharmacy	Purepac Corp., New York, N. Y.	1.04	Below standard
S-1196	Percy G. Buck	Own make	3.48	Pass
S-1354	Eddie's Pharmacy	Own make	3.60	O.K.
S-1176	T. R. Griswold	The Sisson Drug Co., Hartford	1.67	Below standard
S-1223	Harris Pharmacy	Own make	3.94	O.K.
S-1408	Iversyd Drug Co.	Own make	2.50	Below standard
S-1222	L. J. Madsen & Co.	Own make	3.34	Pass
S-1333	Merkin's Pharmacy	Own make	1.78	Below standard
S-1397	A. D. Pierce & Sons	Own make	2.47	Below standard
S-1182	Rialto Drug Co.	Mallinckrodt's Chemical Works, St. Louis, Mo.	0.81	Below standard
S-1232	The Windsor Ave. Pharmacy, Inc.	Own make	2.95	Below standard
S-1177	Zito's Pharmacy	Purepac Corp., New York, N. Y.	0.13	Below standard
S-1394	Middletown Joseph P. Kinsella	Own make	3.99	O.K.
S-4	New Canaan Lang's Cut Rate Store	Good Products Co., Inc., Bridgeport	3.27	Pass
S-1189	New Haven C. L. Ballou	Strong, Cobb & Co., Cleveland, Ohio	3.53	O.K.
S-1188	Edgewood Pharmacy	Own make	4.37	O.K.
S-1224	Eld Pharmacy	Sharp & Dohme, New York, N. Y.	1.00	Below standard
S-1225	J. Rosin	Mallinckrodt's Chemical Works, St. Louis, Mo.	0.08	Below standard
S-1409	North Haven Broadway Pharmacy	Own make	3.76	O.K.

TABLE 6. SWEET SPIRIT OF NITRE—CONTINUED

D.C. No.	Dealer	Manufacturer	Ethyl nitrite found, %	Remarks
S-1172	Oakville Spooner Drug Co.	Brewer & Co., Inc., Worcester, Mass.	3.77	O.K.
S-1217	Rockville Arthur Drug Store	Arthur Drug Stores, Inc.	3.42	Pass
S-1370	Salisbury Salisbury Pharmacy	Own make	1.76	Below standard
S-1220	Stafford Springs Delmonico's Drug Store	Own make	3.94	O.K.
S-5	Stamford Wm. H. Jones Drug Store	The De Pree Co., Holland, Mich.	2.81	Below standard
S-1168	Waterbury Brewster's Pharmacy	Apothecaries Hall Co., Waterbury	0.88	Below standard
S-1170	McCarthy Pharmacy	E. R. Squibb & Sons, New York, N. Y.	0.17	Below standard
S-1171	The Pickett Co.	Saxon Laboratories, Duquesne, Pa.	3.13	Below standard
S-1167	Waterville F. B. Carney & Co.	United Drug Co., Boston, Mass.	4.39	O.K.
S-1211	West Haven Mayer's Drug Store	Own make	2.72	Below standard
S-1204	Wethersfield Jordan Lane Pharmacy	Own make	3.14	Below standard
S-1202	Windsor Prouty's Pharmacy	Own make	3.45	Pass
S-1203	Windsor Drug Co.	Own make	3.50	O.K.

COLLABORATION WITH OTHER DEPARTMENTS

A considerable volume of analytical work is done each year for other State and Station departments. Such work for the past year is summarized as follows:

Agency	No. of samples
State Supervisor of Purchases (foods)	9
State Department of Health (narcotics)	18
Station Departments:	
Entomology (apple leaf discs for arsenic)	93
(soils for arsenic)	74
(forest spray experiment, arsenic)	214
Forestry	3
Botany (tree injury)	1
Soils (lysimeter samples, tobacco investigation)	38
Tobacco Sub-station	16
Total	466

BABCOCK GLASSWARE, ETC.

J. E. SHEPARD

As required by Sec. 2463 of the General Statutes, test bottles and pipettes used in testing milk and cream by the Babcock method are examined by the Station and certified if found correct. Sec. 2488 requires similar checking of thermometers that are used in milk pasteurizing plants to check recording thermometers.

This work for the past year is summarized as follows:

	Pieces	Imperfect or inaccurate
Babcock glassware	2,697	2
Thermometers	182	9
Total	2,879	11

INDEX

	Page	Page	
Alphebin	471	Meat products: Italian sausage.. 458, 459	
Babcock glassware	480	Milk and milk products:	
Benzedo compound	470	cream	461
Beverages:		fluid milk	459
fruit juice	452	vitamin D milk	459, 460, 461
Effect-O "stabilizer"	452	Miscellaneous drugs, etc.	476
Bismuth subgallate	471	Miscellaneous foods, etc.	467
		Mylin	471
Caffeine sodio-benzoate	472	Nitre, sweet spirit of	476
Collaborative work	480	Olive oil	458
Compral	470, 471	Sedatives, etc.	470
Dough conditioner	467	Seequit tablets	470
Dysco tablets	470	Shell eggs	458
Examinations for poisonous or foreign materials	468, 469	Skunk cabbage	468
		Spray residue	467
F.L.P. preservative	459	Tam	476
Fruit of the Rose (Rose Hips)	468	Vanillin extract	458
Inecto Hair Dye	476	Yeast food	467, 468
Iodine, compound soln. of (Lugol's Solution)	472	Yeast-Vite	470