

Bulletin 401

September, 1937

THE FORTY-FIRST REPORT ON
FOOD PRODUCTS

AND THE TWENTY-NINTH REPORT ON
DRUG PRODUCTS

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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:					
Carbonated.....	861	0	79	79	6
Cider.....	862	0	2	2	0
Cherry cider.....	863	0	3	3	....
Orangeade.....	863	2	6	8	....
Cheese.....	866	0	4	4	0
Egg and egg products.....	866	0	4	4	1
Fats and Oils:					
Olive oil.....	866	19	25	44	8
Butter.....	866	1	4	5	1
Butter "dressing".....	867	0	1	1	....
Fruits, etc., for spray residue:					
Apples.....	867	0	128	128	16
Experimental, etc.....	867	103	0	103	....
Celery.....	867	1	1	2	1
Ice cream.....	867	0	5	5	0
Maple syrup.....	867	0	11	11	0
Meat Products, etc.:					
Hamburg steak.....	868	0	34	34	16
Hamburg preservatives.....	868	0	2	2	1
Frankfurt sausage.....	869	5	48	53	10
Milk and Milk Products:					
Vitamin D milk.....	870	0	62	62	6
Plain milk.....	871	712	21	733	5
Evaporated milk.....	871	0	12	12	0
Goats' milk.....	872	3	0	3	....
Cream, etc.....	872	23	8	31	....
Tomato Products:					
Tomato juice.....	872	1	11	12	....
Canned tomatoes.....	872	0	1	1	....
Tomato purée.....	872	0	2	2	2
Vinegar.....	872	0	3	3	0
Miscellaneous foods.....	873	57	13	70	....
<i>Total for foods.....</i>		927	490	1,417	73
DRUGS, ETC.					
Ergot, Fluid extract of.....	874	0	23	23	15
Phenol, 5 percent solution.....	874	0	65	65	49
Witch hazel, extract of.....	876	0	1	1	1
Miscellaneous drugs, etc.....	876	22	15	37	....
Physicians' stocks.....	879	0	16	16	2
<i>Total for drugs.....</i>		22	120	142	67
MISCELLANEOUS					
Materials examined for poisons.....	880	97	0	97	....
Fuels (gasolene, coal).....	881	6	4	10	....
Collaborative work, narcotics, etc.....	881	93	0	93	....
<i>Total for miscellaneous.....</i>		196	4	200	....
<i>Total for all samples.....</i>		1,145	614	1,759	140
Babcock glassware, etc.....	881	2,430	0	2,430	8

The Forty-first Report on Food Products and the Twenty-ninth Report on Drugs

E. M. BAILEY

THIS REPORT summarizes food and drug work for the year 1936 including samples submitted by the Dairy and Food Commissioner and those taken by the Station agent or submitted by health departments and others interested.

Inspection and analysis of feeding stuffs, fertilizers and insecticides also falls within the scope of work carried on by this department, and a considerable amount of time is necessarily given over to those activities. Collaboration with the Storrs Station and with other departments of our own Station involves much analytical work.

In 1935 food and drug control was enlarged to include regular biological tests of vitamin D milk and this feature of control is still in operation.

The efficient coöperation of the entire staff of this department, including Doctor Hubbell and her assistants in biological work, is gratefully acknowledged.

FOODS

BEVERAGES

Carbonated Beverages

During the summer months 75 official samples of carbonated beverages were submitted by the Dairy and Food Commissioner. These were of the "soda water" type and were examined chiefly for sugar, solids and saccharin.

Sugars in all cases exceeded the minimum of 5 percent fixed by Statute. No saccharin was found, and artificial color and/or flavor were declared, if present, in all excepting six samples.

Sugar content was generally between 10 and 14 percent. Only nine samples showed less than 10 percent; and the lowest found was 7.5 percent.

A sample of ginger ale, 64873, and two samples of concentrates, 64871 and 64872, used in making it were tested. The presence of Epsom salt was suspected but no evidence of such salt was found. The finished product contained lime juice according to evidence submitted. Lime juice is a proper ingredient of ginger ale concentrate and hence need not be declared on the label, but since the manufacturer elected to name the ingredients, and had omitted lime juice, he was advised that the lime ingredient should be declared.

Another sample of ginger ale concentrate, 64874, was examined and passed.

Cider

The terms *cider* and *sweet cider* properly refer to apple juice, fermented and unfermented, respectively.

In 1900 the Food Standards Committee of the Association of Official Agricultural Chemists defined *cider* as the fermented juice of fresh apples. Later, in 1907, the Joint Standards Committee of that association and the Association of State and National Food and Dairy Departments adopted a schedule of definitions and standards for apple juice and its products. The schedule was never promulgated by the United States Department of Agriculture however, and no corresponding schedule appears in current definitions and standards for food products approved by the Secretary of Agriculture.

The definitions referred to recognized apple juice, apple must, and sweet cider as synonymous; *cider* as synonymous with hard *cider*; and sparkling *cider* as synonymous with champagne *cider*.

In 1915, a committee composed of representatives of the Department of Agriculture, the Treasury and the Department of Justice agreed upon the following definitions as a guide for their several administrative purposes:

Cider is a word properly applied only to the fermented product made by the normal alcoholic fermentation of apple juice by the usual cellar treatment, and contains not more than 8 percent by volume of alcohol.

Sweet Cider is apple juice or a product resulting from partial fermentation of apple juice, and contains not more than 2 percent by volume of alcohol.

Apple Juice or *Apple Must* is the fresh juice obtained by the first pressing of fresh, ripe fruit of *Pyrus malus*, and contains not more than 0.5 percent by volume of alcohol.

These definitions evidently were designed to clarify the understanding of the several terms from the standpoint of alcoholic content.

Canadian regulations¹ define Apple Juice, Apple Must, Sweet Cider and Cider as synonymous, and in common with fruit juices generally, 2 percent of alcohol by volume is allowable. Hard Cider under these regulations is a separate identity, not synonymous with *Cider*, and the limit of alcoholic content is 7 percent by volume.

There is no doubt that in colonial times the term *cider*, unqualified, referred to hard *cider*, the fermented product. Since those rugged days the popular conception of *cider* has probably inclined to the sweeter beverage, and perhaps the Canadian regulations are nearer to present day understanding. However, the following definitions suggested to the Dairy and Food Commissioner for administrative purposes in this State are probably more advisable since they are in harmony with the present general definition of *fruit juice* and in accord also with the views of the several Federal departments above cited as to the question of alcohol content.

Apple Juice, *Apple Must*, is the unfermented juice obtained from the first pressing of sound, ripe apples, *Pyrus malus*. It has a specific gravity (20°) not less than 1.0415 nor greater than 1.0690; and contains in 100 cubic centimeters (20°) not less than 6 grams, nor more than 20 grams of total sugars in terms of invert sugar, and not less than 24 centigrams nor more than 60 centigrams of apple ash. The ash contains not less than 50 percent of potassium carbonate. Apple juice containing not more than 0.5 percent by volume of alcohol will be regarded as "unfermented".

¹ Order in Council, August 1934, Dept. Pensions and National Health, Ottawa.

Sweet Cider is the juice obtained from the first pressing of sound, ripe apples, *Pyrus malus*. It contains not more than 2 percent by volume of alcohol, and in other respects conforms to the limits fixed for apple juice.

There is, perhaps, an inconsistency in postulating the same minimum for total sugars in sweet *cider* as in apple juice when the former may contain 1.5 percent more alcohol. It is believed, however, that apple juice will seldom contain as little as 6 grams of total sugars per 100 cc., 8 or 9 grams being a more probable minimum, and that a minimum of 6 grams is not too low for a partially fermented juice containing not more than 2 percent of alcohol. This is in accord with Canadian regulations pertaining to the same constituents.

Two samples of *cider* were submitted by the Dairy and Food Commissioner and both were passed as genuine. One was examined for evidence of spray residue contamination. No lead was found and not more than a possible trace of arsenic.

Cherry Cider

Three samples of *cherry cider* were examined. The composition of these products is rather indefinite and variable. So far as we have information of them they are essentially sugar solutions, 10-15 percent, the flavor wholly or in part artificial and the color generally artificial also.

The analyses of the three samples examined this year and others previously analyzed are given in Table 1.

Orangeade, etc.

Orangeade is a beverage characterized by a substantial amount of orange juice. Regulations in this and some other states provide that the orange juice content shall not be less than 15 percent.

Recently, October, 1936, the United States Department of Agriculture issued a tentative definition and standard for orangeade which provides that the orange juice content shall be not less than 25 percent, and recognizes that the acidity of the product may be enhanced by the addition of lemon juice. Until this tentative proposal is affirmed we continue to judge market products on the basis of the minimum of 15 percent above mentioned.

We have used the ash content of orange beverages as a basis of approximating the proportion of juice present, although it has been suggested that the P₂O₅ content is a better index. In a limited number of trials orange juice prepared in the laboratory at various times from market oranges has shown very close to 0.4 gm. of ash per 100 cc. of juice. Figures reported to us by a control chemist in a neighboring state are of about the same magnitude, 0.36 to 0.45 gm. per 100 cc. The P₂O₅ may be expected to constitute from 10 to 15 percent of the ash.

The vitamin content of orangeades is generally stressed in advertising. Vitamin C in fresh orange juice appears to be in the range of 0.4 mg. to 0.6 mg. per cc. and is influenced by variety and probably also by soil conditions. Two samples of laboratory-pressed juices gave values of 0.51

TABLE 1. CHERRY CIDER¹

No.	Brand	Solids	Ash	Sucrose	Invert sugar	Total sugars	Acidity	Alcohol by vol.	Benzoic acid	Flavor	Artificial color
9993	Williams.....	% 13.26	% 0.12	% 7.93	% 3.66	% 11.59	% 0.35	% 0.58	None	Cherry	None
45604	.....	14.51	0.13	5.78	6.44	12.22	.....	2.02	.....	Apple cider	Present
45649	Gernand.....	16.04	0.12	11.88	2.36	14.24	.....	0.28	0.033	Benzaldehyde	Present
46010	.....	12.28	0.03	11.21	0.23	11.44	0.23	0.09	0.003	No benzaldehyde flavor	Present
52150	Williams.....	11.95	.....	4.85	5.72	10.57	0.22	0.82	.....	.....	None
64875	Riverside Farm...	11.00	0.02	6.23	3.82	10.05	0.10	0.69	None	Weak cherry	Present
64876	Hummon.....	12.44	0.05	7.16	3.39	10.55	0.53	0.00	Present	Cherry	Present
64877	Q Garden Farm...	16.69	0.01	6.01	8.41	14.42	0.31	0.25	None	Benzaldehyde	Present

¹No saccharin detected in any sample.

mg. per cc. Conditions that favor oxidation result in a diminution of vitamin C. Orangeades prepared from orange concentrates suffer rapid losses of vitamin C at 75° F. and notable losses at even 40° F., (Mack, Fellers, Maclinn and Bean, Food Research, 1, 223, 1936), judged by titration methods.

During the year several samples of orange products have been examined. Results are summarized in Table 2 together with results for similar products examined last year. Bul. 388, 1936. One sample of lemon juice, prepared in the laboratory from fresh lemons, is included.

TABLE 2. ANALYSES OF ORANGE PRODUCTS

No.	Product	Ash gm./100 cc.	P ₂ O ₅ gm./100 cc.	Vitamin C mgm./cc.	Estimated Orange Juice content (basis of ash)
64131	Orangeade—Bacon Bottling Co., Hartford	0.051	0.003	.....	% 13
64891	National Spring Water Co., Stamford.....	0.045	0.005	0.008	11
3355	Grove Dairy Orange (concentrate).....	0.243 ¹	.....	0.228 ²	.....
4016	Eze-Orange Beverage Base.....	1.06	0.112	0.77	.....
4015	Compound Wonder Orange Dairy Base....	1.03	0.103	0.77	.....
3983	Mission 100% Pure Orange juice.....	0.404	0.041	0.33	100
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 ³	.....	0.510	.....
923	Orange juice, fresh.....	0.41 ³	.....	0.510	.....
3380	Lemon juice, fresh.....	0.26	0.018	0.48	.....
1704	Orange juice, canned— Absopure Fruit Products, Inc.....	0.41	.....	0.42	100

¹ Gm. per 100 gms.

² Mgm. per gm.

³ Conn. Agr. Exp. Sta., Bul. 329, 1930.

Samples 64131 and 64891 show 6 and 9.6 percent respectively of P₂O₅ in the ash. On the basis of P₂O₅ content the former would indicate only about 6 percent of juice and the latter about 9 percent, fair agreement in one case but not in the other. In 3983 both ash and P₂O₅ would indicate undiluted juice.

Samples 4015 and 4016 represent concentrates about 2.5 times that of the original juice. Directions require that sugar be added in preparing the base for beverage purposes.

Sample 3355 is a syrup requiring only dilution with water for beverage purposes.

The samples show loss of vitamin C in varying degrees, in some instances very marked. Some of the factors effecting such losses have been noted.

It would appear that under present conditions it is not possible to insure sufficient retention of vitamin C in orangeades prepared from orange base products to warrant advertising stress on vitamin content.

CHEESE

Four samples of cheese were submitted by the Dairy and Food Commissioner. Analyses are given in Table 3.

TABLE 3. ANALYSES OF CHEESE

No.	Dealer	Moisture	Fat	Fat, moisture- free basis
		%	%	%
63190	King Cole Store, New Britain (Edam type)	40.27	24.02	40.22
63191	King Cole Store, New Britain (American Swiss type)	31.09	31.82	46.17
63192	King Cole Store, New Britain (American)	28.94	37.34	52.54
63193	King Cole Store, New Britain (Cream cheese)	58.43	28.68	69.00

There is no standard for fat in Edam cheese but the partial analysis given is in accord with published analyses. Moisture appears excessive in the cream cheese but fat in the moisture-free substance is not deficient. Fat on the moisture-free basis meets the standard in the other two samples for products of their respective types.

EGGS AND EGG PRODUCTS

Three samples of frozen egg products, whole egg, yolks and white were examined and no evidence of unfitness for food purposes was found. Odor and appearance were normal and ammoniacal nitrogen was not excessive.

One sample of eggs in the shell was examined. The eggs were stale and their edibility doubtful. Ammoniacal nitrogen was high (8.3 mgm. N/100 gms.).

FATS AND OILS

Olive Oil

Twenty-five official samples of olive oil were examined for the Dairy and Food Commissioner. Eight of these were adulterated and seventeen were passed. Adulterants found were cottonseed, sesame and teaseed oils. Artificial color was present in several samples and there was indication of corn oil.

Nineteen unofficial samples were tested for purchasers.

Butter, etc.

Three official samples of butter were examined. Two of these were apparently genuine and conformed to the standard for fat (80 percent) and the moisture was not excessive. One, said to be creamery butter used

for popcorn dressing, was deficient in fat (75.3 percent) and excessive in moisture (21.2 percent). The refraction of the fat was within the limits for butter.

One sample was tested for evidence of renovation but no evidence of such treatment was detected.

A sample of so-called butter dressing was examined for evidence of gelatine. It was claimed that .03 percent was added. The presence of gelatine could not be confirmed. The method employed was that described by Jacobs and Jaffe (Ind. Eng. Chem. Analyt. Ed., 4, 419, 1932).

One unofficial sample of butter was tested and found to conform to standard.

SPRAY RESIDUE

Apples

Orchard surveys for fruit bearing excessive spray residue have been continued by the Dairy and Food Commissioner during the season 1936, and some samples have also been taken from packed stock.

Of 128 official samples examined, 26 exceeded the tolerance for arsenic or lead or both, but in only 16 were the excesses greater than .002 grain. Only three samples showed more than .016 grain of arsenic or .03 grain of lead per pound of fruit. The tolerances used in judging samples are .01 grain of arsenic (as As_2O_3) and .018 grain of lead per pound of fruit.

Fruit and Other Materials

One hundred and three unofficial samples have been examined for lead or arsenic, or both. Most of these were required in connection with studies of various solvents for removal of residues and were done in collaboration with the Department of Entomology.

Celery

A sample of celery, 68857, submitted by the Dairy and Food Commissioner, was found to contain .036 grain of arsenic per pound. There was not more than a possible trace of lead. This celery had been sprayed with Bordeaux mixture, a sample of which showed arsenic equivalent to 3.23 percent of calcium arsenate. Since there is no arsenical ingredient in Bordeaux mixture, the presence of arsenic in the sample submitted indicated contamination, or a mistake in making the spray mixture.

Another sample of celery, 2312, submitted by a consumer, was suspected because of a greenish residue at the base of the stalks. This proved to be a harmless residuum of Bordeaux spray and contained no arsenic.

ICE CREAM

Only five samples of ice cream were examined. All exceeded the standard for milk fat which is 10 percent for plain ice cream.

MAPLE SYRUP

Eleven samples of syrups sold as genuine maple syrup were examined and all were passed as conforming to label.

No samples of syrups plainly labelled as mixtures of cane and maple syrups were collected.

Since the collection and examination, it has been found that maple syrup and sugar may be contaminated with lead through the use of lead-containing equipment during the production process. Attention has been called to the situation by government food control officials and by state food control agencies in the areas where maple products are made. In New England the chief producing areas are Vermont and New Hampshire, and in both of these states instructions have been given to producers as to how contamination with lead may be avoided or reduced to a minimum.

The examination of 54 samples of maple syrup is reported in *Health News*, a publication of the New Hampshire State Board of Health. The results there recorded show that in only three samples was the lead content in excess of the tolerance (2.57 p.p.m.) recognized for fruits and vegetables. Seventy percent of the samples contained less than one-fifth of that amount; and in 60 percent the lead present was in negligible traces, *i.e.*, less than 0.1 p.p.m.

The bulletin cited points out, very properly, that the situation presents no cause for consumer alarm or apprehension. The corrective measures taken are precautionary and by another season lead contamination will no doubt be greatly reduced if not entirely eliminated.

MEAT PRODUCTS

Hamburg Steak

The use of sodium sulphite or other salts of sulphurous acid in the preparation of hamburg steak enhances the red color of the meat and serves to destroy the odor of decomposition. The effect is to conceal the odor of tainted meat and, together with the bright color, give a false impression of freshness. The use of sulphites in meat and meat products is contrary to State regulations.

Thirty-four samples were submitted by the Dairy and Food Commissioner. Sixteen were found to contain sulphites (SO₂) in amounts ranging from 0.27 to 3.67 gms. per kilo. No evidence of sulphites was found in the other samples.

A sample of "hamburg spice", said to have been used in one of the samples found to contain sulphite, was examined and the following composition was estimated from the analysis:

Moisture.....	1.59%
Salt (sodium chloride).....	77.01
Sodium sulphite.....	0.79
Sodium sulphate.....	1.81
Sugar.....	18.45
Undetermined (by difference).....	0.35

Some of the sulphur present as sulphate may have originally been in the form of sulphite.

Another preservative powder for hamburg was found to consist essentially of salt 81.6 percent, sodium benzoate 14.10 percent, moisture 0.85 percent and undetermined material 3.44 percent. The undetermined substance included spices among which cloves were indicated. Not more than a possible trace of sulphite was found and no evidence of sulphates, phosphates, nitrates, borates or sugar was found.

Frankfurt Sausage

Forty-eight samples of frankfurt were examined. In 17 no fillers were detected; 21 bore the required declaration, and in 10 samples fillers were present but not declared.

Five additional samples were examined for consumers.

Frankfurts belong to the class of sausages that are smoked and cooked in the course of preparation. In the usual commercial practice the sausage meat is treated with salt and spices and finely ground in the presence of limited quantities of water or ice, to facilitate filling the comminuted meat into casings. The sausages are then chilled for 12 to 18 hours after which they are "sweated" for several hours at room temperature. Following this they undergo exposure to hard wood smoke in smoke houses at temperatures of 70° to 180° F. for periods that vary from one-half hour to several hours. Cooking in water is the next step, the process being regulated to insure a temperature of 137° F. in the sausages to destroy trichinae. After rinsing in a spray of hot water, the sausages are chilled and allowed to hang in a cold room at 38° to 45° F. to dry. The product is then ready for packing and distribution.

After the smoking operation frankfurts become wrinkled and shrunken due to loss of water. The subsequent cooking process restores the smooth, plump condition necessary for a merchantable article.

In some grades of frankfurts it is customary to comminute, with the sausage meat, cereals, flours or meals, or skim-milk powder. Such additions serve to enhance the absorptive power of the meat mix and are not objectionable in reasonable amounts. Obviously the practice lends itself to abuse and government and state regulations have been established to check undue additions of such materials. The amount is limited to 3.5 percent and suitable label declaration is required.

For the detection of soy bean flour, the urease test and the microscopic identification of the characteristic spool-shaped cells of the spermoderm of the soy bean are sufficient.

Meat normally contains no significant amount of sugars but sucrose is used in curing processes and dextrose apparently is sometimes used. The presence of lactose in frankfurt sausage is presumptive evidence of the addition of a milk product such as skim-milk powder. The osazone test serves to identify lactose qualitatively, but the presence of dextrose interferes with its quantitative determination by the usual reduction methods.

The quantitative determination of lactose in the presence of dextrose may be readily effected by means of a simple procedure based upon the selective adsorptive action of live yeast upon fermentable sugars. If a mixture of dextrose and lactose is treated with a suspension of washed yeast, dextrose is removed quantitatively from the solution and lactose remains in the filtrate and may be determined by the usual reduction method. Sucrose may not be entirely adsorbed, but being non-reducing, it does not interfere. Non-adsorbable sugars other than lactose are not likely to be present.

A procedure that has been found to work very satisfactorily for magnitudes of dextrose and lactose such as are found in frankfurts is given here. It is an adaptation of work reported by Somogyi¹, Raymond and Blanco², and Jones.³

¹ Jour. Biol. Chem., 75, 33, (1927).

² Ibid. 79, 649 (1928).

³ Jour. Dairy Research, 7 (1936).

DETERMINATION OF LACTOSE IN THE PRESENCE OF DEXTROSE IN FRANKFURTS

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

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

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

MILK AND MILK PRODUCTS

Vitamin D Milk

The present status of vitamin D milk is discussed in a report of the Council on Foods of the American Medical Association published in the Journal of that association in the issue of January 16, 1937.

The rôle of vitamin D in nutrition has been intensively studied in the last 15 years. Most common foods are lacking in notable quantities of this essential diet factor. Body needs for the effects that this vitamin produces are obtained by adequate exposure to sunshine, but it is now known that similar effects may be obtained by artificial irradiation with lamps furnishing requisite wave lengths, or by feeding fish liver oils or foods suitably fortified. It is not to be assumed, however, that artificial means of supplying vitamin D provide all the benefits of exposure to sunlight.

Vitamin D is particularly necessary to the well-being of infants and very young children; adult needs, except in certain circumstances, are not so clearly defined. Curiously enough milk, which is preëminently the food of infants and children, is not well supplied with this dietary essential, but of all common foods, it is perhaps the best adapted to serve as a vehicle for added amounts of this vitamin.

Milk fortified with vitamin D has become a commodity of considerable importance. There are more than 40 producers of it in this State. Fortification is a distinct process that requires the same care and attention as do other processes in production, e.g., pasteurization; and it is in the interest of both producers and consumers that systematic checks upon the character and quality of the finished product be made.

In June, 1935, the Milk Regulation Board officially recognized vitamin D milk and called upon the Dairy and Food Commissioner to undertake inspection and assays of the product as a regular control project. The plan of control is the same as that in effect for other types of market milk and for foods generally. It is done at public expense with funds appropriated for food control and the technical service is rendered by this Station.

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

Biological tests such as are necessary to check the unitages of vitamin D claimed are time-consuming and frequent tests of the product from a given source are not possible. The effectiveness of the control lies in the fact that the product of any producer may be sampled and assayed at any time.

Vitamin D milk marketed in this State is produced by one of three processes: By irradiation, by addition of cod liver oil concentrate, or by yeast feeding.

During the calendar year of 1936, the period covered by this report, 62 samples were tested, representing the products of 40 producers. The products of 17 producers were tested twice; on those of one producer four tests were made (one each being in collaboration with the sponsors of the process); and of 21 only one test was made. Some of the latter group, however, were included in tests made late in the preceding year.

A summary of tests made from the beginning of the inspection, September, 1935, to the end of 1936 is as follows:

	By Irradiation	C.L.O. Concentrate	Yeast Feeding
1935			
Satisfactory.....	4	2	4
Passed.....	..	2	..
Below standard.....	1	1	..
1936			
Satisfactory.....	9	20	20
Passed.....	..	2	4
Below standard.....	..	..	7

The seven samples found deficient in 1936 represented the products of four producers.

Results of tests are reported by the Commissioner to the producers and to the licensors of the several processes. Deficient or questionable samples are investigated and retests made to make certain that corrective measures have been taken and that the products are satisfactory.

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

Plain Milk

Twenty-one official samples were tested for evidence of watering or skimming. Sixteen were passed, four were below standard and one was watered.

Seven hundred and twelve samples of milk were tested for dairymen who wished to check their own herd production or the quality of milk from individual cows in their herds.

Evaporated Milk—Lead Content

The following 14 brands of evaporated milk were tested for lead using a modification of the dithizone procedure: I.G.A., Sealect, Evangeline, Borden's irradiated, Carnation irradiated, Libby, McNeil and Libby, Van Camp's, White House, Hebe, Pet, Nestle's irradiated Land-O-Lakes, Mohawk and Amboy. If any lead was present it was in amount below the sensitivity of our test and of an order of 0.1 p.p.m. or less, which is a negligible trace.

Goats' Milk

Lactose and chlorine were determined in three samples of goats' milk. Lactose ranged from 2.74 percent to 4.46 percent and chlorine from 1.49 percent to 1.73 percent. Chlorine was determined by ashing the milk with sodium carbonate and determining the chlorine volumetrically.

Miscellaneous Milk Products

Thirty-one miscellaneous milk products, mostly cream, were examined for the Commissioner and for producers.

TOMATO PRODUCTS

Tomato Juice, etc.

Twelve samples of tomato juice and one sample of canned tomatoes were examined for vitamin C content.

Vitamin C content is expressed in terms of milligrams of ascorbic acid (or cevitamic acid) per gram of sample. The method employed was that of Bessey and King, Jour. Biol. Chem., 103, 693 (1933). We have no values of our own for judging the results obtained on the products examined, but accepting the values found by the authors cited, some of the juices are below the average which appears to be of the order of about 0.23 mgms./gm. Climatic and soil conditions no doubt influence the vitamin content as do methods of processing also. Probably some loss of vitamins is unavoidable in the process of preparation. Whether a somewhat higher vitamin C content is characteristic of yellow tomatoes we do not know.

The results obtained are as follows:

No.	Material and Brand	Vitamin C mgm./gm.
63199	Canned tomatoes, Sachem's Head.....	0.20
63197	Tomato juice, canned, Libby.....	0.20
63198	Tomato juice, canned, Kemp's.....	0.18
64050	Tomato juice, canned, Iona (A. & P.).....	0.14
64051	Tomato juice, canned, Ritter.....	0.18
64052	Tomato juice, canned, Welch's.....	0.14
64053	Tomato juice, canned, Campbell's.....	0.17
64054	Tomato juice, canned, Sachem's Head.....	0.12
64055	Tomato juice, canned, Beechnut.....	0.14
64056	Tomato juice, canned, Heinz.....	0.26
64059	Tomato juice, canned, Ann Page (A. & P.).....	0.22
64061	Tomato juice, canned, Carolina (Yellow).....	0.32
1703	Tomato juice, canned, Health Mode.....	0.18

Tomato Purée

Two samples of tomato purée of local production were examined. Mold count showed 62 percent and 56 percent of positive fields respectively. Mold count refers to the number of microscopic fields in a standard area showing evidence of mold. Above 50 percent is regarded as excessive. The products examined for us by courtesy of the New York laboratory of the Food and Drug Administration showed excessive mold but are considerably better than was found on former inspections.

VINEGAR

Three samples of vinegar were examined and passed.

MISCELLANEOUS FOODS

Seventy samples of miscellaneous foods were examined. Thirteen of these were submitted by the Commissioner and the remainder by health officers and others. Reports have been made to the departments or individuals interested and no detailed mention is required here excepting a few instances which are noted for reference purposes.

67212, 4440, *Tendra*. Tendra Kitchens, Cincinnati. This is a liquid preparation for the treatment of meats in the kitchen to make them more tender and palatable. It is claimed that all meats are improved by the application of this tenderizing liquid, but its most obvious advantage appears to be for improving the quality of tough and inferior cuts of beef and other meats. It should be noted that the product is for culinary use in preparing meats for the table and not an improver to be applied to meat as offered for sale.

From the advertising literature it is apparent that the product is, or contains, a vegetable extract or principle that acts upon meat tissue. It is, of course, well known that certain fruits contain enzymes that have the property of transforming or "digesting" protein. The pineapple, for example, contains such an enzyme (bromelin), and the papaya fruit, from which *Tendra* is derived, contains papain. It is said that the Indians recognized the effects of the papaya upon flesh foods and commonly wrapped meats in the fresh leaves of this plant for a time before using the meats for food.

The enzyme activity of *Tendra* was tested in this laboratory and for comparison the expressed juice of a fresh pineapple was likewise examined. The procedure used was that described by Balls, Swenson and Stewart, Jour. A.O.A.C., 18, 140 (1935).

The pineapple juice and *Tendra* were assayed with and without activation by means of hydrogen sulphide. Activation was done by treating the samples with an equal volume of saturated hydrogen sulphide water. Results are expressed as mgms. of sample necessary to contain one papain unit. A papain unit is that amount of enzymic activity which, by the assay method employed, will produce sufficient acidity to neutralize one cc. of N/10 alkali. Obviously the smaller the amount of sample necessary to contain one enzymic unit, the greater is the activity of the sample.

The sample of fresh pineapple juice, unactivated, was evaluated at from 9,000 to 10,000 mgms. per papain unit, while the corresponding value for the activated juice was about four times as great, 2,300 mgms. per unit. We were unable to find any marked activity with our sample of *Tendra* without activation; but the activated liquid showed enzymic activity of 800 to 900 mgms. per papain unit, or about three times that found for activated pineapple juice.

Activation of enzymes may be accomplished in a variety of ways; numerous organic and inorganic substances serve that purpose. Hence it may be that the activity of *Tendra* is initiated or enhanced by substances contained in the meats to which it is applied.

1242. *Jackson Meal*. This is a breakfast food similar in character to *Roman Meal*. The preparation consists of, or contains, cracked wheat, wheat bran, some rye and rice products and a small amount of ground flaxseed. No phenolphthalein or vegetable cathartic drugs were found.

FLUID EXTRACT OF ERGOT

Twenty-three samples of fluid extract of ergot were examined by the A.O.A.C. colorimetric chemical method of assay. The official test for this preparation is the biological method outlined in the U. S. Pharmacopoeia. This test evaluates the biologically active alkaloids of ergot whereas the chemical method measures the total alkaloids, active as well as inert. Quite recently a new alkaloid has been isolated from ergot and it has been demonstrated that the characteristic biological effects of fluid extracts of this drug are largely due to this new constituent rather than to the alkaloids formerly known. The present chemical method appears to need revision in order to evaluate ergot preparations more closely in terms of the active constituent.

Of the 23 samples examined, 4 contained less than 0.1 mgm. per cc. of ergot alkaloids expressed as ergotoxine ethanesulfonate, and 11 contained less than 0.3 mgm. per cc. The range found was 0.04 to 0.66 mgm. per cc. Where dates of manufacture were available it was found that the low values were identified with old stock.

Through the coöperation of one of the pharmaceutical firms interested, tests were made of three of our samples by the U.S.P. biological method thus affording some comparison with our tests by the chemical method. Both assays were made within an interval of approximately one month.

The comparison is as follows:

No.	Ergotoxine Ethanesulfonate mgm./cc.	
	By U.S.P. Method	By A.O.A.C. Method
70517	0.18	0.33
S-35	0.33	0.54
S-23	0.12 (less than)	0.06

The U.S.P. standard for fluid extract of ergot is a potency equivalent to not less than 0.5 mgm. of ergotoxine ethanesulfonate per cc. of extract. With due allowance for the difference between the two methods of assay there is sufficient parallelism to permit conclusions as to the strength of samples examined. It is evident that a product of minimum U.S.P. potency should rate considerably above that minimum when assayed by the present chemical method and that many of the samples examined were substandard and some quite inert. The reason for this is, no doubt, largely or entirely due to deterioration from long standing on the druggists' shelves.

PHENOL SOLUTION, 5 PERCENT

Sixty-five samples of phenol solution were collected and examined, the inspectors calling for a 5 percent solution in each case. It is not expected that a preparation of exactly 5 percent strength will be obtained but solutions within the range of 4.5 to 5.5 percent would represent satisfactory accuracy. Only 16 of the samples showed that degree of accuracy in compounding.

A 5 percent solution involves no difficult pharmaceutical technique. Five grams of phenol (carbolic acid) diluted to 100 cc. with water at room temperature will make a solution testing 4.9 percent phenol, assuming that phenol of minimum U.S.P. purity is used.

Last year only 17 percent of the samples tested were within the limits of accuracy suggested above. This year 25 percent may be regarded as satisfactory.

Results are given in Table 4.

TABLE 4. ASSAYS OF 5 PERCENT SOLUTION OF PHENOL

No.	Dealer	Phenol	Remarks
		%	
S-37	Branford Pharmacy, Branford.....	1.86	Too weak
70527	People's Drug Store, Burnside.....	2.05	Too weak
70529	Powell Drug Co., Burnside.....	5.49	Pass
70524	Warner's Drug Store, Cheshire.....	6.53	Too strong
S-13	Chester Pharmacy, Chester.....	4.76	Pass
S-28	McNamara's Pharmacy, Collinsville.....	2.38	Too weak
S-14	La Place's Pharmacy, Deep River.....	2.81	Too weak
S-36	Holcomb Drug Co., Inc., East Haven.....	2.87	Too weak
S-25	Chatham Pharmacy, East Hampton.....	4.46	Pass
70530	Aircraft Pharmacy, East Hartford.....	4.80	Pass
70532	Prospect Pharmacy, East Hartford.....	5.98	Too strong
S-15	Hyde Drug Co., Essex.....	4.07	Too weak
70533	G. M. Proctor, Forestville.....	1.77	Too weak
70534	Kent's Pharmacy, Forestville.....	4.61	Pass
70531	Franklin Pharmacy, Glastonbury.....	5.47	Pass
70520	Ridgeview Pharmacy, Hamden.....	2.72	Too weak
S-44	The Bliss Pharmacy, Hartford.....	2.04	Too weak
S-40	Burr's Pharmacy, Hartford.....	2.14	Too weak
S-47	Campfield Pharmacy, Hartford.....	3.56	Too weak
K-12	Louis Champeau, Hartford.....	2.12	Too weak
S-50 ¹	Clifford Drug Co., Hartford.....	2.74	Too weak
S-51	College Pharmacy, Hartford.....	5.51	Too strong
S-45	Franklin Pharmacy, Hartford.....	8.81	Much too strong
S-49	Freeman Drug Co., Hartford.....	2.36	Too weak
S-48	Goodwin Park Drug Store, Hartford.....	3.70	Too weak
S-42	T. H. Griswold, Hartford.....	2.50	Too weak
S-38	Ideal Drug Co., Hartford.....	5.44	Pass
K-14	Inersyd Drug Co., Hartford.....	2.21	Too weak
K-13	Harry Merkin, Hartford.....	3.79	Too weak
S-46	Rialto Drug Co., Hartford.....	5.63	Too strong
S-41	State Pharmacy, Hartford.....	3.90	Too weak
S-43	Wilmore Pharmacy, Hartford.....	4.51	Pass
70515	Adam's Drug Store, Meriden.....	5.75	Too strong
70516	Broderick & Curtin, Meriden.....	4.35	Too weak
K-16	Palace Pharmacy, Meriden.....	3.05	Too weak
K-17	Pelton Drug Co., Middletown.....	2.33	Too weak
K-18	Woodward Drug Co., Middletown.....	1.97	Too weak
S-26	Moodus Drug Store, Moodus.....	2.43	Too weak
K-15	Reffett's Pharmacy, New Britain.....	7.04	Much too strong
K-9	Carroll Cut Rate, New Haven.....	3.40	Too weak
K-11	Eld Pharmacy, New Haven.....	5.11	Pass
K-7	Charles T. Hull, New Haven.....	5.82	Too strong
K-5	Harry A. Lamb, New Haven.....	3.20	Too weak
K-8	Liggett's Drug Store, New Haven.....	2.96	Too weak
K-10	W. H. Wood, New Haven.....	2.46	Too weak
K-6	W. C. Yeager, New Haven.....	4.60	Pass
K-1	North Haven Pharmacy, North Haven.....	2.69	Too weak
S-22	Willis B. Carroll, Putnam.....	5.06	O. K.
S-24	Joseph P. Gagne, Putnam.....	5.35	Pass
S-8	Salisbury Pharmacy, Salisbury.....	1.67	Too weak
S-7	Lincoln's Drug Store, Simsbury.....	5.05	O. K.
70538	Chaffer's Pharmacy, Southington.....	3.61	Too weak
70540	Delmonico Drug Shoppe, Stafford Springs.....	5.05	O. K.
70541	McCormick Drug Co., Stafford Springs.....	10.05	Much too strong

¹ Labeled "phenol in glycerine."

TABLE 4. ASSAYS OF 5 PERCENT SOLUTION OF PHENOL—Concluded

No.	Dealer	Phenol	Remarks
		%	
S-20	Latimer's Drug Store, Thomaston.....	4.05	Too weak
70512	Steel's Corner Drug Store, Thompsonville.....	4.57	Pass
K-2	Modern Drug Store, Wallingford.....	4.44	Too weak
70548	Post Office Drug Store, Watertown.....	4.31	Too weak
S-19	D. G. Sullivan, Watertown.....	4.78	Pass
70547	Wethersfield Pharmacy, Wethersfield.....	2.55	Too weak
70514	Wilson Drug Co., Wilson.....	2.19	Too weak
70506	Windsor Drug Co., Windsor.....	3.41	Too weak
S-31	Bannon's Drug Store, Winsted.....	2.08	Too weak
S-30	The City Pharmacy, Winsted.....	3.86	Too weak
S-29	Sceery & Ivory, Winsted.....	3.00	Too weak

EXTRACT OF WITCH HAZEL

One sample was examined and found to contain diethylphthalate indicating that the alcohol used was derived wholly or in part from specially denatured alcohol.

The specifications for this preparation as given in the present National Formulary and by cross reference in the U. S. Pharmacopoeia omit a test for diethylphthalate. This is because the test formerly included is regarded as unreliable. We have long used the procedure as outlined by R. E. Andrew, Jour. Ind. Eng. Chem., 15, 8, 1923, which we believe is reliable and satisfactory.

MISCELLANEOUS DRUGS, ETC.

1319. *Ru-Mari*. Ru-Mari Ltd., London. The sample was submitted by a purchaser.

The sample was analyzed as follows:

Solids 1.33 gms./100 cc., ash 1.24, organic matter (by difference) 0.09.
Sodium (as oxide) 0.54, potassium (as oxide) 0.20, lithium, (as oxide) 0.002.
Calcium, magnesium carbonate and traces of hypochlorite, sulphate and iron present.

Based on the analysis the medicine is a water solution containing 1.33 gms. of solids in each 100 cc. The solids are largely (1.24 gms.) mineral salts and the balance is undetermined material. The estimated composition of the salts is 0.93 gm./100 cc. sodium carbonate, 0.29 potassium carbonate, 0.005 lithium carbonate, and traces of sodium hypochlorite, calcium and magnesium compounds and iron. Other elements or medicinal agents, if present, were not detected.

The efficacy of such a remedy in the treatment of arthritis or rheumatism is not recognized by medical science so far as we are aware and we so advised the purchaser.

A product of the same name and of substantially the same composition is reported in the *Journal of the American Medical Association*, Sept. 12, 1936.

7388. *Emulso Glenzene*. Emulso Corporation, Buffalo, N. Y. The sample was referred to us by the Dairy and Food Commissioner.

From our analysis the composition of the product was essentially a solution of soap, trisodium phosphate, and sodium carbonate.

1270. *Purico Cleanser*. The sample was submitted by the Dairy and Food Commissioner. It consisted of, or contained, a mixture of trisodium phosphate and sodium carbonate, a little sodium sulphate, a trace of salt and .032 percent of sodium hypochlorite.

3354. *Onox*. A preparation for the care and hygiene of the skin; submitted by a purchaser.

From our analysis the calculated composition was as follows in terms of grams per 100 cc:

Zinc chloride 5.50; boric acid 1.43; sodium chloride 2.74; sodium nitrate 2.56; ammonium chloride 0.06. Other medicaments if present, were not identified.

The preparation is said to be especially efficacious as a prophylactic for athlete's foot.

1705. *Calirad Wafers*. The Bayer Co., Inc., New York. The sample was submitted by a purchaser. The wafers are claimed to contain calcium, phosphorus and vitamin D. Three wafers are said to contain more calcium than a pint of milk; and one wafer more vitamin D than two teaspoonfuls of cod liver oil (U. S. P. X, 1934, Revised).

No assay for vitamin D was made but the claim as to calcium content is correct.

Our analysis of the tablets is as follows:

Average weight per tablet 2.505 gms.; moisture 1.98 percent; ash 22.02; acid-insol. ash 2.19; CaO 9.51; MgO, 0.36; P₂O₅ 9.43; other ash (by difference) 0.53; ether extract (Roese-Gottlieb) 4.81; unsaponifiable 0.79; sugars before inversion, as invert sugar, 9.93; after inversion, as invert sugar, 52.38; calcium gluconate (Jour. A. O. A. C., 18, 431, 1934), 9.68.

The analysis suggests the probable essential composition as a mixture of calcium phosphate, magnesium phosphate, calcium gluconate, sugars (probably lactose and sucrose) and fatty material, (probably cocoa butter). There was no fishy odor detected and the source of vitamin D may be irradiated ergosterol.

1257. *Rubbing Alcohol*. The sample was submitted by a purchaser who claimed that its use caused irritation of the face.

The sample was dilute isopropyl alcohol (69.6 percent) containing boric acid and a perfume resembling methyl anthranilate in odor. No other ingredients were detected.

According to Grant (C. A. 16, 312, 1922):

"Innocuous effects were noted after the application of isopropyl alcohol in 50 percent concentrations, as sponge baths, or undiluted in connection with saturated bandages. All the pharmacological data thus far obtained with isopropyl alcohol seems to establish the sufficiently harmless character, by any reasonable criterion, of isopropyl alcohol when used in perfumery and cosmetics."

Attention has been called to the fact that perfume ingredients may be the cause of dermatitis in some instances (Jour. A.M.A. 106, 470, 1936). In the case cited the ingredient was methyl heptene carbonate.

2237. *Faith Avery Medicated Acne Lotion*. Submitted by a purchaser through the office of the Dairy and Food Commissioner.

The product was a colorless liquid with a heavy, pale pink sediment, and a phenolic odor. It was faintly acid to litmus. Qualitatively, zinc was present in quantity, also a little phenol and iron. The sample was similar in composition to the Compound Calamine Lotion of the National Formulary; and much the same as Elizabeth Arden's "Venetian Acne Lotion" (Conn. Agr. Exp. Sta., Bul. 363, p. 710).

2238. *Faith Avery Pore Refiner*. The sample was submitted from the same source as 2237 above.

The preparation was a pale pink cream with a phenolic odor. It consisted of, or contained, a mixture of zinc oxide (at least partly as calamine), and boric acid or borax in a base consisting largely of white petrolatum. Other ingredients, if present, were not detected. The ingredients found in this product and the lotion of the same name, 2237, cannot be regarded as likely to cause skin irritation, except perhaps in cases of peculiar susceptibility.

3444. *Orrine No. 1*. The Orrine Co., Washington, D. C. The sample was submitted through the Dairy and Food Commissioner's Office.

Qualitatively the product gave positive tests for gold, chloride, ammonium salts and reducing sugars. The composition indicated is apparently the same as found for "Orrine" and reported in Conn. Agr. Exp. Sta. Report for 1914, p. 260, where it is commented that the "so-called 'gold cure' according to leading authorities has no specific effect on the alcohol habit".

1063. *Hollywood Tan*. Dawn of Hollywood, Cal. The sample was submitted through a local health department for a purchaser who complained that it caused skin irritation.

The sample was a perfumed, brownish-red cream, faintly acid to litmus.

Qualitative and quantitative tests indicated that the preparation consisted of about 51 percent of zinc oxide, possibly as calamine, with ferric oxide in a mixed base of petrolatum and some true fat.

Patch tests made by several persons in this laboratory produced no rash in a period of 24 hours.

70099. *Hair Coloring*. The Guilmar Co., Inc., New York.

64080. *Inecto*. Sales Affiliates, Inc., New York.

Both of these products were submitted through the Dairy and Food Commissioner's Office. The first was of the so-called paraphenylenediamine type; and the second, judging from the analysis of a product of similar name, (Conn. Agr. Exp. Sta., Report, 1929), was of the same class.

In both cases the manufacturer or distributors call attention to the fact that the use of these dyes by sensitive individuals will cause rash and

irritation, and preliminary tests on the skin are recommended before application to the hair. Dyes of this type were formerly sold without such warning.

67237-41. Cosmetics including face powder, rouge, face cream and lip sticks were submitted to be examined for radio-activity. The samples were examined for us by courtesy of the Department of Physics of Yale University. No evidence of radio-active substance was found.

64066. *Milk Bath, Grade A*. Edgar R. Kahn, Inc., New York. Submitted by the Dairy and Food Commissioner.

The product had the composition and character of perfumed skim milk powder. Partial analysis:

Moisture 3.95 percent; fat 2.82, protein 33.88, ash 7.88, sugar by difference 51.47.

DRUGS SAMPLED FROM STOCKS OF DISPENSING PHYSICIANS

Sodium Salicylate Tablets

Five samples were examined. Four were passed as sufficiently close to the declared dosage of medicament, 5 grains per tablet; but one was deficient by slightly more than the accepted tolerance of 9 percent. Our results for sodium salicylate in grains per tablet, determined by three methods were as follows:

A. O. A. C. method.....	4.43
A. O. A. C. method, p. 547.....	4.32
Nat. Formulary method, p. 390....	4.29

Miscellaneous Tablets

Eleven samples of miscellaneous tablets were examined. The results are summarized as follows:

No.	Description	Remarks
70510	<i>Aspirofeine tablets.</i> (Acetphenetidine, acetylsalicylic acid, caffeine citrated).....	Medicaments substantially in quantities claimed.
S- 2	<i>Acetphenetidin and Gelsemium Comp. tablets.</i> (Acetanilid deriv., aspirin and caffeine.....	Medicaments substantially in quantities claimed. Gelsemium not determined.
S- 9	<i>Emagrin tablets.</i> (Acetphenetidin, caffeine and gelsemium).....	Medicaments substantially in quantities claimed. Gelsemium not determined.
S-10	<i>Acetylsalicylic acid and acetphenetidin tablets..</i>	Medicaments substantially in quantities claimed.
S-11	<i>Phensal capsules.</i> (Acetylsalicylic acid, caffeine, gelsemium and Dover's powder)....	Medicaments substantially in quantities claimed. Opium alkaloids present. Gelsemium not determined.
S-12	<i>Doloro Comp. tablets.</i> (Aspirin, phenacetin, caffeine.....	Medicaments substantially in quantities claimed.
S- 3	<i>Acetphenetidin Comp. tablets.</i> (Aspirin, acetphenetidin, mono-bromated camphor, atropin sulph.).....	Low in mono-bromated camphor, otherwise medicaments substantially in quantities claimed.
S-27	<i>Acetanilid Comp. tablets.</i> (Mono-bromated camphor, sodium salicylate, acetanilid, hyoscyamus, gelsemium).....	Hyoscyamus and gelsemium not determined; low in mono-bromated camphor; other medicaments substantially in quantities claimed.
70546	<i>Acetanilid Comp. tablets.</i> (Acetanilid, sod. salicylate, hyoscyamus and gelsemium).....	Acetanilid and sod. salicylate substantially in quantities claimed; hyoscyamus and gelsemium not determined.
70544	<i>Acetanilid Comp. tablets.</i> (Acetanilid, caffeine, sodium bicarbonate).....	Medicaments substantially in quantities claimed.
70545	<i>Quinine sulphate tablets</i>	Declared 2 grains; found 1.55 grains.

Miscellaneous

MATERIALS EXAMINED FOR POISONS, ETC.

Ninety-seven samples of materials suspected of containing poisonous or other deleterious substances have been submitted to the laboratory for examination. Many of these were specimens of viscera of domestic animals where chemical analysis might help to explain the cause of illness or death. Such requests come from the Commissioner on Domestic Animals, from veterinarians and from farmers of the State.

In twenty-four cases, poisons were found in amounts regarded as significant or dangerous. The poisons found were mercury (2), strychnine (5), lead (5), arsenic (2), lead and arsenic (7), yellow phosphorous (3).

FUELS

Four samples of gasoline were submitted and examined as to specific gravity and distillation range.

Six samples of coal were examined. Three were analyzed for water and ash. The others were examined as follows:

No.	Ash %	Volatile %	Fixed Carbon %	Sulfur %	B.T.U./lb. Calculated
1031 ¹	5.80	17.30	76.90	0.88	14913
1032 ²	5.15	17.35	77.50	0.85	14992
4163 ³	8.12	19.21	69.61	....	14493

¹ 3.72% moisture.

² 5.70% moisture.

³ 3.06% moisture.

COLLABORATIVE WORK

Seventy-one samples of tobacco, corn and grass crops were analyzed for nitrogen and ash elements for the Soils Department of this Station; and fifty-nine samples of tobacco have been analyzed for the Tobacco Substation.

Twenty-two samples of suspected narcotic materials were analyzed for the State Board of Health in connection with the enforcement by that department of the statutes relating to narcotics.

BABCOCK GLASSWARE, ETC.

Two thousand, two hundred forty-three pieces of Babcock glassware, including test bottles for milk and cream and milk pipettes, and 187 thermometers for checking pasteurization temperatures have been tested and certified if found correct. This makes a total of 2,430 pieces.

	Passed	Inaccurate	Total
Babcock glassware.....	2,235	8	2,243
Thermometers.....	187	0	187
	2,422	8	2,430

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