

THE FORTY-SEVENTH REPORT ON  
**FOOD PRODUCTS**  
AND THE THIRTY-FIFTH REPORT ON  
**DRUG PRODUCTS**  
1942

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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		
<b>FOODS</b>					
Beverages, carbonated, etc. ....	447	...	126	126	6
Brazilian "tea" or maté .....	447	...	2	2	2
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Miscellaneous foods .....	458	68	21	89	...
Total .....		325	692	1017	167
<b>DRUGS</b>					
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Iodine, mild tincture of .....	461	...	6	6	4
Iron, quinine and strychnine, elixir of ....	461	...	19	19	1
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THE FORTY-SEVENTH REPORT ON FOOD PRODUCTS

and the

THIRTY-FIFTH REPORT ON DRUGS

1942

E. M. BAILEY

SO-CALLED "pure food" legislation came about in the United States through the efforts of a few chemists who had followed the development of food control measures in England and other European countries, and who appreciated the need for similar effort here. The purpose of such legislation was to safeguard the consuming public against fraudulent and deleterious sophistication of foodstuffs. Adulteration of foods was common and some of it harmful, so the public health and welfare interest has been a controlling factor in this effort from its beginning.

In the early eighties the movement achieved popular recognition in several states in the form of special laws relating to individual food products. Thus in Connecticut the General Assembly of 1886 passed an act "To Prevent and Punish Fraud" (in foods) and created the office of "Dairy Commissioner" which was charged with the collection and examination of samples suspected of being "imitation butter." Later the scope was extended to include vinegar and molasses. The act provided that the Commissioner might have the samples examined by this Station or by a state chemist. In practice the Station was called upon for this work.

In the meantime, the Station was already actively interested in food inspection and analysis of foods in general, and in 1895 a general food law was passed. This statute did not repeal those relating to the Commissioner's activities, and the Station continued to perform the analytical work required by that office as well as its own special duties.

There was no corresponding federal law until 1906 when what is sometimes called the "Wiley Pure Food Law" was enacted. This act included drugs as well as foods within its scope. Following this national legislation, state laws were revised to conform to it, and the law in this State was so revised in 1907.

The advantages of having state and federal legislation in this field as nearly uniform as possible are plainly evident, and in keeping with such policy our legislature in 1939 enacted the present Food, Drug and Cosmetic

Act which conforms to the federal act of the same name which was enacted in the preceding year.

The question might be raised as to why an agricultural experiment station, dedicated as it is to the promotion of the interests of agriculture, should be concerned with regulatory work in the field of foods, drugs and cosmetics. As to why such an institution *should* be so concerned is perhaps debatable, but explanation of the fact that it *became* identified with such activities is to be found in the historical picture of the growth and development of this movement briefly outlined here.

When the efforts of the pioneers in this field had commanded sufficient public sympathy and support to effect legislation, the question arose as to who should administer the measures enacted. Quite naturally the task was so allocated that the services of those workers who had pioneered in the field and were most familiar with the problems involved would be available. In the several states these workers were identified with various public agencies, experiment stations, departments of agriculture, departments of health and special commissions. So, it is clear that the allocation of duties was made with a view to securing the services of those men best equipped for them by scientific training and experience, regardless of the public agencies with which they were affiliated.

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

This report summarizes examinations of official samples of foods, drugs and cosmetics submitted by the Commissioner, and other work of related interests for the calendar year 1942. It also summarizes collaborative work done for other state and station departments.

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

In the past year 1,826 samples of food, drugs and miscellaneous materials have been examined; and 2,850 pieces of Babcock glassware and thermometers used in pasteurization plants have been checked for certification.

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

## FOODS

### CARBONATED BEVERAGES, ETC.

H. J. FISHER AND R. T. MERWIN

One hundred and twenty-two samples of carbonated beverages of the "soda" type were examined for the Dairy and Food Commissioner.

Approximate sugar content (solids by refraction) was determined in 119 samples. The minimum sugar indicated was 6 per cent and the maximum 18 per cent. Twenty-three contained less than 10 per cent of sugar; 89 contained between 10 and 14 per cent; and seven contained over 14 per cent. Dextrose was present in some cases as a supplement to cane sugar, indicated by a plus polarization at 87° C. after inversion. Under these conditions cane sugar gives a reading of zero and any appreciable plus reading indicates dextrose. Dextrose is a wholesome sugar, derived from starch in commercial practice, but its sweetening power is somewhat less than that of cane sugar. Thirty-two samples gave readings of +0.5 or more at 87° C., the highest being +6.0.

Saccharin, an illegal sweetening agent, was present in three samples.

One sample of flavor base, evidently old stock, had decomposed and developed an off-taste; and it was also misbranded.

Three samples of so-called fruit juice beverages were examined. One, KC-136, was an imitation lime juice and so labelled, but it was misbranded in that the ingredients were not stated, and it was artificially colored without proper declaration. Another sample, S-57, grapefruit juice, was a flavored, carbonated drink with no appreciable grapefruit flavor. The third sample, KC-29, was pineapple juice, apparently genuine.

### BRAZILIAN "TEA" or MATÉ

Two samples of Brazilian "tea" were submitted by the Dairy and Food Commissioner. The product consists of the dried and coarse-ground leaves of a South American shrub, *Ilex paraguayensis*. The infusion made from it is maté, sometimes referred to as Brazilian or Paraguay "tea". The beverage is prized by South Americans, but the uninitiated will not be likely to find it an acceptable substitute for tea.

True tea consists of the tender leaves, leaf buds and tender internodes of different varieties of *Thea sinensis* L., prepared and cured by recognized methods of manufacture. Any labelling that confuses maté with the article that we know as tea constitutes misbranding.

Both samples were packed in cellophane so that the contents were plainly visible to the purchaser and he could question its identity if in doubt;

nevertheless, as a matter of informative labelling the name "Brazilian tea" does not clearly inform him that the article is not true tea.

Samples of maté previously examined<sup>1</sup> had a caffeine content of about 1.3 per cent. The two samples mentioned above showed less caffeine—0.99 to 0.79 per cent respectively.

## COFFEE

C. E. SHEPARD AND E. M. BAILEY

One hundred and twenty-one samples of coffee were examined. Of these, 117 were official samples submitted by the Dairy and Food Commissioner and four were submitted by health officers and others.

Thirty-six of the official samples represented bulk coffee beans embargoed by the Commissioner pending examination to determine its fitness for sale. A fire had occurred on the premises and it was thought that damage might have resulted from water or chemicals. The coffee appeared normal except in a few cases in which the beans were slightly moist. These dried out quickly in a current of air at room temperature. No evidence of adulteration or of contamination was found.

Seventy official samples of packaged ground coffee were examined. Sixty-eight of these were labelled as "coffee" and no evidence of adulterants was found in any of them. Two samples were labelled to show the presence of added non-coffee material (chick peas).

Eleven official samples of coffee in the bean were examined. Five of these (possibly all originally from the same lot) were held to be adulterated and unfit for use. The beans showed evidence of infestation with beetles, and mold was present. The beans had an offensive (garbage-like) odor, which persisted in the ground coffee and to some extent in the extracted oil. Many of the beans showed borings made by the beetles, and dead beetles (roasted in the beans) were found. The infestation could have occurred prior to importation or during storage in transit. The presence of mold suggests that the beans had been held under improper conditions. The explanation of the offensive odor is not clear; it may have been due to odors absorbed from adjacent materials in storage or to some other obscure circumstance.

Four samples were examined for health officers and for consumers.

The official samples were collected by inspectors at a time when rationing of coffee was imminent and the survey showed generally no disposition on the part of packers to market coffee mixed with non-coffee diluents. The article sold as coffee was genuine; and in the two cases where non-coffee material was present it was declared.

The first inspection of coffee made under the food law of 1895 showed that 58 out of 64 samples sold as coffee were adulterated. Roasted peas,

<sup>1</sup> Conn. Agr. Expt. Sta. Bul. 373: 506, 1935.

chicory and "imitation coffee" (a roasted paste made from wheat flour middlings, pea hulls or pea meal) were the adulterants found. Roasted and ground date stones were also used. In one of these early inspections a sample of "date stone coffee" was examined. It had the microscopic character of date stone material and its analysis was essentially that of date stones as the following data show.<sup>1</sup>

	Date stone "coffee" Per cent	Stones from light dates, sugar cured Per cent	Stones from dark dates, molasses cured Per cent
Water	5.52	7.71	10.83
Ash	1.75	1.05	1.02
Albuminoids	6.69	5.16	5.75
Fiber	15.84	24.07	22.06
Nitrogen-free extract	59.00	53.06	52.29
Fat	11.20	8.95	8.05

The practice of adulterating coffee largely disappeared after a few years and later became rare. In 1895 our inspection records show that nine out of every 10 samples sold as coffee contained non-coffee material, and hence were adulterated. By 1902 the situation was reversed; 90 per cent of the samples examined were the genuine article. For the most part this improvement was actual and not a technical one; in other words, it was not due merely to proper labelling of mixtures of coffee with non-coffee materials.

Coffee adulterants have never entirely disappeared from the market, but when found they are almost always in ground, bulk coffee rather than in commercially packed products.

Obviously, ground coffee is more easily adulterated than is coffee in the bean. Our records show that even in the earliest inspection only two out of 26 samples of unground coffee were found to contain non-coffee material.

Coffee rationing under war-time regulations has aroused an interest on the part of some consumers in ways and means of stretching their quota of coffee. The true coffee-lover will probably prefer not to deny himself of the full character and quality of genuine coffee and will satisfy himself with fewer cups a day. Those less meticulous may elect to maintain their daily volume consumption by stretching their coffee quota with non-coffee diluents. Such diluents will be the classic adulterants already cited, and perhaps other materials of like substance and character, such as soybean, which received some recent publicity as a new kind of "coffee" that could be grown in this State. Such diluents, of course, are harmless so far as the consumer's health and well-being are concerned, and if from choice or necessity he uses them, he can be guided by his own taste and his own ideas of economy.

Products for breakfast and other meal-time beverages composed of non-coffee material have long been on the market. They are sold under special names, and designed for those who cannot tolerate coffee or who, for personal reasons, prefer them to coffee. Some of these have been cited in earlier reports of this laboratory. Thus in 1898 there were two products consisting of roasted cereals and sold under the names Graino and Postum

<sup>1</sup> Conn. Agr. Expt. Sta. Report for 1897.

cereal; two malt products consisting of roasted barley kernels; one made from roasted pea hulls and wheat flour middlings; and one made from roasted ground wheat. Later (1917) other products of like character were examined, including Drinket; Old Grist Mill, a mixture of "whole wheat, vegetables and a small amount of coffee for flavor"; Jaffee, a product "made wholly from fruits and grains"; Calumet Cereal, the latter, like Old Grist Mill, containing a little caffeine from a small amount of coffee. Present day products in this category are Postum, composed of roasted wheat bran, whole wheat and molasses; and Instant Postum, a dried and powdered water extract of the ingredients of Postum.<sup>1</sup>

So-called "prepared" coffees are dried and ground water extracts of genuine coffee. They contain all of the water soluble constituents of coffee, including the caffeine. A product of this type, G. Washington Prepared Coffee, has been analyzed in this laboratory.<sup>2</sup> Being a concentrated extract of coffee, only about one-fourth as much is required to make a cup of coffee as is necessary with ordinary ground coffee.

Coffee may be practically freed from caffeine by commercial and patented processes. Analyses of such products show a reduction in caffeine from the normal, which is about 1.2 per cent, to a magnitude of 0.1 per cent or less. Products of this type which we have examined are Kaffee Hag and Sanka.<sup>3</sup>

### SHELL EGGS

H. J. FISHER

Thirty-four samples of shell eggs were examined for the Dairy and Food Commissioner. Of these, 21 samples were passed as fresh; seven were not fresh but were edible, and six were unfit for food.

Freshness was judged by the state specifications for fresh eggs as determined by candling. Examinations of the yolk and white on breaking out of the shell, and determinations of ammoniacal nitrogen are also made.

Our experience has shown that eggs conforming to the specifications for fresh eggs on candling will generally have an ammoniacal nitrogen content of less than 2 milligrams per 100 grams of egg. Cold storage eggs may yield ammoniacal nitrogen of about the same order but they will show considerably enlarged air spaces unless they have been "dipped" in some protective covering before being placed in cold storage. Examination of the shell in such cases should indicate the fact of dipping. Stale eggs will show large air spaces and high ammoniacal nitrogen.

### FATS AND OILS

H. J. FISHER AND W. T. MATHIS

#### Olive Oil

Of 64 official samples of olive oil submitted by the Dairy and Food Commissioner, 51 were adulterated or misbranded, or both. The scarcity

<sup>1</sup> Accepted Foods, Council on Foods, Am. Med. Assoc., p. 366.

<sup>2</sup> Conn. Agr. Exp. Sta. Report for 1916, p. 186.

<sup>3</sup> Conn. Agr. Exp. Sta. Reports for 1915, 1916, 1921 and 1929.

of this commodity has encouraged the substitution of common vegetable oils, such as corn, cottonseed and peanut oils, for olive oil and the marketing of them under false or misleading labels. The large proportion of illegal sales represented by this inspection is not to be taken as a true picture of general market conditions because many of the samples were taken on complaint or suspicion. Artificial coloring and flavoring of domestic oils to simulate olive oil and short volume packages were the chief violations.

Twenty-three samples were submitted by health officers and others, 12 of which were apparently genuine so far as the usual tests indicated.

### Butter

The Food, Drug and Cosmetic law in this State, like the federal act of the same name, requires that the presence of any artificial flavoring or coloring or chemical preservative in or on foods be declared in the labelling of such articles. The federal act however, exempts butter, cheese and ice cream from this requirement. Our state statute does not provide such exemptions but places these products on the same basis as other foods in this respect.

A limited survey of butter as sold in the State showed that of 17 official samples eight showed no evidence of added color; added color was declared in five; and in four it was present and not declared.

Two samples were examined for evidence of filth but no evidence of such contamination was found.

### Milk-Butter Mixtures

Rationing of butter has invited recipes for use in the home to "stretch" the available supply. Such of these as we have seen depend on the incorporation of milk with butter, with or without the addition of a stabilizing substance, such as rennin or gelatin, to give added firmness to the finished product.

An analytical picture, in terms of food nutrients and calories, illustrates the basic plan and effect of this practice, and is taken from a war-time bulletin issued by this department in 1918 (Bul. 201).

Substance	Composition	Calories
1 pound butter	85 parts solids, 15 parts water, 82.5 parts fat	3,478
1 pound milk <sup>1</sup>	12 parts solids, 88 parts water, 4 parts fat	305 <sup>2</sup>
2 pounds milk-butter mixture	97 parts solids, 103 parts water, 86.5 parts fat	3,783
or, per pound of mixture	48.5 parts solids, 51.5 parts water, 43.3 parts fat	1,892

The finished product is not butter and, of course, could not legally be sold as such, but there can be no objection to the practice in the home.

<sup>1</sup> One pint of milk is approximately 1 pound.

<sup>2</sup> Basis of 4.5% sugar and 2.8% protein.

The milk-butter mixture, per unit of weight, obviously contains one-half the food values of the original butter plus one-half those of the added milk.

The housewife may find this an ingenious method of serving half-portion of butter while creating the illusion that the family butter supply is back to normalcy.

#### FLAVORING EXTRACTS, ETC.

Forty-eight official samples of flavoring extracts were examined, chiefly for evidence of deceptive packaging.

Food is misbranded "if its container is so made, formed or filled as to be misleading." The outside containers (cartons) of many of these samples were much larger than the bottles of extract required, the waste space being as much as 70 per cent in some cases.

Of the 48 samples submitted by the Commissioner, 35 were deceptively packaged in the above respect, 10 were otherwise misbranded and three were passed as satisfactory. Of the 10 otherwise misbranded, the violation was for short volume or for failure to declare net volume of contents or to state the name and address of the manufacturer, packer or distributor.

#### DECEPTIVE FOOD PACKAGES

The law provides that food is misbranded if its container is so made, formed or filled as to be misleading. Single containers may be slack-filled, or outer cartons may be deceptive as to the size of the actual inner container.

Six samples were submitted by the Dairy and Food Commissioner in four of which the waste space was from 28 to 84 per cent of the capacity of the containers. Two were not regarded as deceptive; waste space was about 20 per cent or less. Other instances of deceptive containers are cited under "flavoring extracts."

#### FOODS EXAMINED FOR EVIDENCE OF FILTH OR CONTAMINATION

Food products are adulterated if they consist wholly or in part of any diseased, contaminated, filthy, putrid or decomposed substance, or if they are otherwise unfit for food.

Sample W-81, bulk raisins, were moldy and infested with worms; and two samples of flour showed worm infestation. Blueberries, canned, D-18 showed no evidence of maggots and no other contamination or unfitness was detected.

Foods are also adulterated if they are produced, prepared, packed or held under unsanitary conditions whereby they may have become contaminated with filth, or rendered unwholesome or injurious to health.

Fourteen samples of flour were adulterated under these provisions. Stained areas on flour bags showed characteristic fluorescence when exposed to ultra-violet light, indicating urine stains, and the contamination was evident in the flour in areas adjacent to the stains. Positive urease tests and the formation of urea oxalate crystals completed the identification. Fluorescence in ultra-violet light is exhibited by many substances and this evidence alone is not specifically informative; but in connection with inspection data as to circumstances and conditions found where food products are stored, the test is convenient and valuable.

This provision in the present food law focuses attention on a phase of food inspection that its importance deserves, viz., the fitness of premises for the manufacture and storage of food products. Incidentally, food control officials have pointed out the opportunity that commercial pest control companies have for greatly enhancing the value and effectiveness of the service they render. Their efforts could well be directed not merely to ridding premises of rodent and insect infestations by temporary measures that must be periodically repeated, but also, and chiefly, to permanent measures that will keep food establishments free from rodent and insect life. Such service would insure manufacturers against financial loss through condemnation of contaminated stocks, and insure the consumer against the health hazards arising from such contamination.

#### MEAT AND MEAT PRODUCTS

C. E. SHEPARD, H. J. FISHER AND E. M. BAILEY

Four official samples of chopped meat (hamburg steak) were submitted by the Dairy and Food Commissioner, and 10 were examined for health officers and others. Three samples of horse meat and three samples of beef, pork and lamb fats were examined for experimental purposes. One of the unofficial samples of hamburg contained sulphites. None was detected in the others.

The appearance of horse meat in markets in some sections of the State has aroused suspicions of its presence in comminuted meat products such as hamburg steak. The only allowable meat in hamburg steak is beef, with or without added suet and/or seasoning. No limit is fixed for the suet that may be added, and with meat rationing there have been complaints of excessive additions of fat. Limits on fat content that have been proposed range from 20 to 25 per cent. In samples that we have examined only one has substantially exceeded 25 per cent; it contained 37 per cent of fat.

The admixture of meats other than beef in hamburg steak without suitable declaration would constitute adulteration and misbranding, but the consumer's objection to horse meat is not due to this legal aspect of the matter but rather to his prejudice against horse meat as an article of food. In this connection, the writer recalls the presidential address of Professor Trowbridge<sup>1</sup> delivered before the Association of Official Agricultural

<sup>1</sup>North Dakota Agricultural College, Fargo, N. D.

Chemists at their annual meeting in Washington, D. C., in 1919. He discussed the economic and other aspects of meat production, and remarked incidentally on the seriousness of food shortages such as had arisen in the years immediately preceding the World War, and the need for utilizing animal flesh foods other than those to which we are accustomed. Speaking of horse meat he said:

"Horse meat is more like beef than it is like pork or mutton. In fact, most of us could not tell a roast of horse from one of beef. Our prejudice against eating an animal which has been of such service to man is hard to overcome. I hope the time may come when the meat of the horse will find its place on our tables without prejudice, yet I would not wish the stress of necessity to force us to it as was the case with Europe."

Now, 25 years later, horse meat is again in the food picture; however, it is through stress of necessity, and not without some prejudice.

On gross examination, the few samples of horse meat that have come to our attention are of a darker red color than beef; and the fat is of an intense yellow or orange-yellow color quite unlike that of beef, pork or lamb. In comminuted meat mixtures the yellow fat particles should be distinguishable.

A chemical test is described by Paschke<sup>1</sup> for the detection of horse fat in the presence of the fat of beef, pork and mutton. It depends on the fact that horse fat, unlike the other fats just mentioned, contains significant amounts of linolenic acid, the hexabromide of which is determined by a procedure which is given in detail. The method (translated) is as follows:

#### Method for Detection of Horse Fat:

Ten grams of fat are refluxed one-half hour on the water bath with 100 cc. half normal alcoholic potash, whereby the fat is quantitatively saponified. About 80 cc. alcohol are then distilled off using a wire gauze. The residue is diluted with 250 cc. distilled water and shaken in a separatory while still warm with about 15 cc. five normal sulphuric acid, 250 cc. saturated salt solution and 50 cc. ether. After 10 minutes standing, the aqueous solution is drawn off and the ether solution washed three times with about 15 cc. saturated salt solution. After filtration through a folded filter it is then ready for the bromination.

Five cc. of this solution are now measured with a pipette into a 50 cc. Erlenmeyer flask, corked and cooled in an ice-salt mixture to at least  $-15^{\circ}\text{C}.$ , together with another 5 cc. of pure ether in another flask. Forty-five hundredths cc. bromine is then added with shaking to the cooled ether. The cooled bromine-ether solution is added in five to six portions in the course of one or two minutes to the ether solution of the fatty acids. The temperature should not rise above  $0^{\circ}\text{C}.$  When mixed, the solutions are left about 10 minutes more in the ice-salt solution and then allowed to stand 15 to 18 hours at  $5$  to  $10^{\circ}\text{C}.$

It is recommended, that is, in this case, not to filter immediately as in the original directions, but only after several hours, since the small amount of hexabromide involved is only then quantitatively precipitated. Before filtration the solution is allowed to warm to  $13-15^{\circ}\text{C}.$  by standing briefly in a warm room, in order that the precipitated fatty acids may go into solution again. It is then filtered through a weighed Allihn tube and the precipitate washed twice with 3 cc. ether cooled to minus  $10^{\circ}\text{C}.$ ; it is important that the

<sup>1</sup> Bruno Paschke. Z. Unt. Lebensm., 76:476 (1938).

precipitate remain covered with ether until the washing is finished. Further washing is not to be recommended, because too much hexabromide goes into solution. The precipitate is now dried at  $100^{\circ}\text{C}.$  in the oven and, after cooling again to room temperature, washed with 5 cc. ether to remove the last trace of fatty acids. (The drying is done before further washing because hexabromide dried at  $100^{\circ}\text{C}.$  is more difficultly soluble in ether than is the freshly precipitated compound). After further drying at  $100^{\circ}\text{C}.$  for one hour and standing for half an hour, it is weighed. An actual determination of the fatty acid content of the ether solution is unnecessary since, for the small amounts of hexabromide in question, it is unimportant from a practical sense whether the fatty acids are 0.9 or 1 gram.

Paschke applied the method to the several fats, individually and in various mixtures, and found a marked difference between horse fat and the three other fats as a group. Trying the same procedure on a limited number of samples we have found an equally marked distinction, although our absolute values in all cases are considerably higher. The results are given below and include four samples of fat from hamburg and two of fat from frankfurts.

	Hexabromide mg./gm.	
	Paschke	Fisher
Horse fat (1)	41.2	110.0
(2)	...	127.4
(3)	...	86.1
Beef fat	3.0	5.6
Pork fat	2.8	6.3
Mutton fat	3.3	9.2
Hamburg fat (1)	...	2.8
(2)	...	2.9
(3)	...	3.9
(4)	...	9.1
Frankfurt fat (1)	...	6.0
(2)	...	6.2

The reason for the uniformly higher values for the individual fats as found in our trials is not apparent; however, in both series the values for horse fat are widely different from the other fats as a group. Further experience with the method may explain these apparent discrepancies.

It is obvious that this procedure does not necessarily afford a basis of estimating the proportion of horse meat in mixtures; if lean horse meat were added, the limitations of interpretation are evident. But the method has diagnostic value in a qualitative way in mixtures containing these animal fats.

## MILK AND MILK PRODUCTS

### Market Milk, etc.

O. L. NOLAN

Of four official samples of market milk tested, three were passed and one was found below standard.

Two hundred and eight samples were tested for milk fat. The samples were largely from individual cows and had been submitted by producers

for purposes of herd improvement. Three samples of cream were also tested for producers.

### Vitamin D Milk

R. B. HUBBELL AND E. M. BAILEY

Vitamin D milk is produced in this State in considerable volume by some 50 or more dairies. Significant amounts of vitamin D are lacking in most common foods. Milk is an appropriate vehicle for wider dietary distribution of this necessary food factor because of its composition and because it is consumed regularly and in substantial quantities.

In practice vitamin D is incorporated in milk in several ways. Vitamin D concentrates prepared from cod liver or other fish liver oils are added directly to milk. Examples of such concentrates are Vitex prepared by the Zucker process and Clo-Dee prepared by the Barthen process. Milk may be irradiated by means of apparatus especially designed for that purpose, the process being under control of the Wisconsin Alumni Research Foundation. Producers using this process are licensed by that Foundation.

So-called metabolized vitamin D milk is produced by feeding cows irradiated yeast mixed in suitable proportions in their feed. This method is under the joint control of Standard Brands and the above-named Foundation. A concentrate of activated ergosterol (viosterol), manufactured by the Special Commodities Division of General Mills, Inc., is also used.

During the past year, 101 samples have been assayed for the Dairy and Food Commissioner. Of these, 80 fully met the guaranteed unitages of vitamin D claimed for them; 10 were sufficiently close to the claimed unitages to be passed, and 11 failed to meet guaranties.

As the following summary shows, about 500 samples have been tested since 1935 when regular inspection of vitamin D milk was undertaken in this State. Of these 75 per cent fully met the unitages claimed, 12 per cent were sufficiently close to the guaranties to be passed, and 13 per cent were definitely below their guaranties.

#### SUMMARY OF VITAMIN D MILK ASSAYS, 1935-1942, INCLUSIVE

Year	No. of samples tested	Satisfactory	Passed	Below guaranty
1935	14	10	2	2
1936	62	49	6	7
1937	78	65	6	7
1938	87	79	3	5
1939	84	63	10	11
1940	77	63	8	6
1941	92	62	14	16
1942	101	80	10	11

TABLE 1. SUMMARY OF ASSAYS OF VITAMIN D MILK

City or town	Dairy	No. of samples tested	Satisfactory	Passed	Below unitage claimed	
Avon	Woodford Farm	3	2	..	1	
Bridgeport	Beechmont	2	2	..	..	
	Dewhurst	2	2	..	..	
	Marsh	2	1	1	..	
	Mitchell	2	1	..	1	
	Mutual Farm	1	1	..	..	
	Round Hill	1	..	1	..	
	Bristol	Elton's	2	1	1	..
	Clinton	Burr	3	2	1	..
	Danbury	Rider	2	2	..	..
	Fairfield	Wade's	2	1	1	..
Greenwich	Round Hill	1	1	..	..	
Hamden	Brock-Hall	1	1	..	..	
Hartford	Bayer	1	..	..	1	
	Bergren's	2	2	..	..	
	Bryant & Chapman	3	3	..	..	
	Cloverdale	2	..	1	1	
	Farmers' Co-Op.	2	2	..	..	
	Highland	2	2	..	..	
	Lincoln	2	2	..	..	
	Miller & Sons	2	2	..	..	
	Peterson	2	2	..	..	
	Kensington	Ferndale	2	2	..	..
	Litchfield	Toll Gate	2	1	1	..
	Manchester	Dart's	2	1	..	1
		West Side	2	1	1	..
		Milford	Cold Spring	2	2	..
	New Britain	United Milk Co.	2	1	..	1
New Haven		Brock-Hall	1	1	..	..
New Haven	Knudsen's	2	2	..	..	
	New Haven	2	2	..	..	
	Sagal-Lou	2	1	..	1	
	Story's	3	2	..	1	
	West Haven	2	2	..	..	
	New London	Radway's	2	2	..	..
	New Milford	Sunny Valley	2	1	1	..
		Newington	Spring Brook	2	2	..
	Norwalk	Moylan	1	1	..	..
		Harrick's	2	2	..	..
Strawberry Hill		2	2	..	..	
Norwichtown	Norwich	3	1	..	2	
	Oakville	Overlook Farms, Inc.	1	1	..	..
Putnam	Deary Bros.	2	2	..	..	
	Shelton	Von Werder	1	..	1	..
Springdale	Clear View	2	2	..	..	
	Maplehurst	2	2	..	..	
	Stratford	Deering's	2	2	..	..
Thompsonville	Skipton's	2	2	..	..	
Torrington	Torrington Creamery	2	2	..	..	
Waterbury	Borgeson Bros.	1	..	..	1	
	Brock-Hall	2	2	..	..	
	Brookside	1	1	..	..	
	Worden, R. F. & Son	2	2	..	..	
	Walker-Gordon (Plainsboro, N. J.)	1	1	..	..	
			101	80	10	11



### SALVAGED FOODS

Twenty-seven samples of miscellaneous foods were submitted by the Dairy and Food Commissioner from a stock of salvaged foods in tins or other containers about to be sold at retail.

Ten samples were in containers that were clean and the contents showed no evidence of spoilage. They were passed on condition that remaining packages of like character could be identified and properly labelled.

Ten samples were in packages (tin or glass) that were dirty and which bore labels that were defaced. The contents appeared normal and no evidence of spoilage was found. These were passed on condition that remaining packages of like character could be cleaned and properly labelled.

The remaining seven samples were either adulterated, misbranded or of doubtful character and quality.

### SPRAY RESIDUE ON FRUITS

C. E. SHEPARD

One hundred official samples of apples taken at orchards in the State were examined for excess spray residue. Only three exceeded the lead tolerance of .05 grain per pound and the arsenic tolerance of .025 grain per pound. The samples showing excesses contained lead .084, .073 and .074; and arsenic .040, .032 and .038 grains per pound.

The tolerance above cited was first effective in the 1940 season. No excesses were found in 1940 or 1941, a total of 169 samples being examined in those years.

Three samples of grapes were tested for growers. One sample, 4968, exceeded the tolerance for arsenic ( $As_2O_3$ ). It contained 8 p.p.m., or .056 grain per pound, which is over twice the tolerance for arsenical residue on apples and pears.

### TOMATO PUREE

Three samples of tomato puree of local packing showed excessive mold counts of 56, 63 and 63 per cent. Tomato puree of acceptable quality will not exceed a count of 40 per cent by the official mold count procedure.

### MISCELLANEOUS FOODS

Eighty-nine samples of miscellaneous foods and other materials have been examined, many of them for suspected foreign or injurious substances. The samples were submitted by health officers, consumers or others interested. For the most part, examination revealed nothing to justify suspicion. A few, however, are recorded here for reference purposes.

3937 and 4602, *Crab meat, canned*. A state-wide survey of canned fish was made by the Dairy and Food Commissioner late in 1941 in view of numerous inquiries from consumers as to the possible presence of glass fragments in such products, especially canned crab meat. In no case was any evidence found indicating glass, but crystals of struvite (ammonium magnesium phosphate) were more or less conspicuous in practically all of the samples. These crystals are no cause for alarm; they have been found in fresh fish but are more commonly found in canned fish, probably due to the heat processing. This topic was discussed in our report of last year.<sup>1</sup>

One of the samples submitted this year contained the familiar struvite crystals. The other, 3937, contained several small fragments of glass. The purchaser made the discovery in this case, and the contamination may have occurred accidentally in the packing establishment.

4716, *Sugar*. A sample of sugar was submitted through a local department of health on complaint of a consumer who suspected the sugar as the cause of illness following the drinking of tea sweetened with it. The sugar was completely soluble in water, practically neutral to methyl orange but distinctly acid to phenolphthalein, indicating that the acidity was due to a salt or to a very weak acid. The ash content was 0.74 per cent, nearly half of which (0.32 per cent) was silica. The sample contained 0.63 per cent of ammoniacal nitrogen, 3.32 per cent of fluorine, and the acidity to phenolphthalein was equivalent to 1.32 cc. of one normal alkali per gram. Sodium and potassium were present in more than traces by qualitative tests. The presence of fluosilicate was clearly indicated. Calculating the ammonia found as ammonium fluosilicate and the remainder of the fluorine as sodium fluosilicate, we have:

Ammonium fluosilicate, $(NH_4)_2SiF_6$	4.01 per cent
Sodium fluosilicate, $Na_2SiF_6$	1.24 per cent

Only the sodium fluosilicate would be found in the ash and the silica, equivalent to 1.24 per cent of that salt, is 0.40 per cent. This is in reasonable accord with 0.32 per cent silica found by direct determination in the ash.

One or two teaspoonfuls of this sugar would be enough fluorine to cause illness and symptoms of poisoning according to Sollmann, Cushny and others. The sugar was purchased in bulk, but no other complaints of illness were reported, and the only apparent explanation was accidental contamination of the sugar with some fluoride preparation, such as roach powder.

6223. *Doughnut mixture*. This was a cream of tartar flour mixture in which fluoride was found but no silica was detected. It was submitted by an institution and was apparently another case of contamination with an insecticide.

<sup>1</sup> Conn. Agr. Expt. Sta. Bul. 460:429.

5688. *Cooked spinach.* A sample of cooked spinach was submitted by a consumer who complained of nausea and marked weakness after eating it.

Some leafy vegetables contain soluble oxalates. Spinach, rhubarb and beet greens have been cited by various authors and investigators as being in this category. Common experience does not appear to warrant apprehension of danger in the consumption of such foods as usually prepared; moreover they are bulky foods and the quantities eaten are therefore limited. However, it is prudent to drain off and discard the liquor which results from the cooking.

The amount of oxalate in the sample submitted was not satisfactorily determined because of limited material. Ryder<sup>1</sup> found four samples of spinach to range roughly from 0.5 to 0.7 per cent oxalic acid. Presumably this was on the basis of the fresh leaves.

6097. *Rhubarb juice.* This was the expressed juice from stewed rhubarb, and its beverage possibilities were being considered by the producer. The product contained 9.26 grams of solids per 100 cc.; 8.03 grams of total sugars (calculated as dextrose), and 0.15 gram of soluble oxalate, calculated as oxalic acid.

Various investigators have reported the presence of oxalic acid in rhubarb. The portion of the plant commonly eaten is the leaf petiole, but the leaf blade is sometimes eaten as "greens." From 0.3 to 1.11 per cent of oxalic acid in the leaf blades and 0.44 to 0.99 per cent in the petiole have been reported. **Poisoning has been attributed to eating rhubarb leaf "greens";** and leaves containing 10 grains of oxalate per pound (0.144 per cent), have been held responsible for poisoning.<sup>2</sup> Sollmann<sup>3</sup> remarks on this latter citation that "the connection appears rather doubtful." Peterson, Haines and Webster cite 1 dram (3.88 grams) as the smallest recorded amount of oxalic acid having fatal effect; elsewhere 5 grams is cited.

While dosages of the magnitudes cited represent a volume consumption that would be quite extraordinary, and while common dietary experience would indicate that the hazards are probably remote, nevertheless the normal variations in soluble oxalate content, and the susceptibility factor of individuals, raise doubt as to the wisdom of exploiting rhubarb juice as an article of food. Obviously when poisonous constituents are involved the benefit of any doubt should be given to the consumer.

<sup>1</sup> Chem. Abs. 24:2511, 1930.

<sup>2</sup> Jour. Am. Med. Assn. 68:1928, 1917; 73:926, 1919.

<sup>3</sup> Man. of Phar., Seventh Edition, 1942.

## DRUGS

H. J. FISHER, W. T. MATHIS AND D. C. WALDEN

### TINCTURE OF IODINE

One official sample of tincture of iodine was examined and found to meet the specifications of the U. S. Pharmacopoeia. This preparation is an alcoholic solution of iodine and potassium iodide containing in each 100 cc. not less than 6.5 nor more than 7.5 grams of iodine and not less than 4.5 nor more than 5.5 grams of potassium iodide.

### MILD TINCTURE OF IODINE

The difference between this preparation and tincture of iodine is that the mild tincture **contains less iodine and is made with sodium iodide instead of potassium iodide.** It contains in each 100 cc. not less than 1.8 nor more than 2.2 grams of iodine, and not less than 2.1 nor more than 2.5 grams of sodium iodide.

Six samples were examined, one of which was within the U. S. Pharmacopoeia limits, and another was sufficiently close to those limits to be passed. In the others, iodine ranged from 1.4 to 3.85 grams per 100 cc.; two of them were made with potassium iodide instead of sodium iodide.

### ELIXIR OF IRON, QUININE AND STRYCHNINE

There are two elixirs of iron, quinine and strychnine listed in the National Formulary. In the straight elixir the quinine is in the form of the hydrochloride and is present in the amount of 0.8 gram per 100 cc. In the elixir of phosphates the iron, quinine and strychnine are present as phosphates; and the preparation contains 0.5 gram of quinine phosphate in each 100 cc.

Nineteen samples were submitted by the Dairy and Food Commissioner. They were examined for quinine content only. Twelve samples were substantially correct for the phosphate preparation and five were equally correct for the straight elixir. The label of one was confused as to identity, but the quinine content was low in any case; and in one the quinine declaration was for an **odd (not N. F.), amount,** but correct for the amount declared.

### MINERAL OIL

Medicinal mineral oil, without qualification, is the heavy oil according to U. S. Pharmacopoeia specifications. Light oil should be so labelled. Two official samples were examined, one of which was light oil and not labelled as such.

### QUININE SULPHATE TABLETS

Twenty-one samples of quinine pills and tablets of two-grain and five-grain denominations were examined. Twelve samples were 90 per cent or better of the declared dosage and the remainder were 84 to 88 per cent of the declaration. This is in line with the results of examinations made in past years, and there were no gross deficiencies or excesses found.

### PRESCRIPTION DRUGS

Some drugs are too powerful or dangerous for direct sale to the public because adequate directions for use cannot be given that will warrant their indiscriminate sale. Under these circumstances such drugs should be dispensed only on prescription. Our law (Sec. k) limits retail sales of certain specifically named drugs to prescriptions, if the drugs are for use by man. The application of Sec. j, however, relating to drugs that are "dangerous to health when used in the dosage, or with the frequency or duration prescribed, recommended or suggested in the labelling thereof," operates to bring other drugs into the prescription class.

The retail drug trade in this State has been duly notified by notices from the Dairy and Food Commissioner's office and later from the Pharmacy Commission as to those drugs and/or their derivatives which may be sold at retail only on prescription. The list includes amidopyrine, barbiturates, benzedrine (for internal use), chloral, cinchophen, dinitrophenol, paraldehyde, sulfanilamide and thyroid. For the present, no exception is taken to surgical dressings, bandages and nose drops containing sulfanilamide and/or its derivatives without prescription.

In the past year 32 samples of barbiturates, sold under the names of seconal and nembutal, were examined for the Dairy and Food Commissioner; also one sample of sulfathiazole tablets and one of a preparation suspected of consisting of, or containing, amidopyrine. The latter was a mixture of aspirin, phenacetin and caffeine; no amidopyrine was found. The indiscriminate sale of barbiturates and of amidopyrine has been largely corrected.

### MISCELLANEOUS DRUGS, ETC.

Twenty-three samples of miscellaneous drug and cosmetic preparations were submitted by the Dairy and Food Commissioner, or through his department by state and local health officers and others.

In many of these cases, tests were required to explain alleged injuries caused by their use or application. Generally no definite relation of cause and effect could be satisfactorily established. No doubt individual susceptibility is the explanation in most cases. In one case, eye injury was said to have followed the use of a 2 per cent boric acid solution obtained on prescription. It was found that the preparation was about a 2 per cent solution, but the solvent was 93 per cent alcohol instead of water, which could well explain the effect complained of.

### Preparations for Hair and Scalp Treatment

E. S.—1. *Barbo Compound*. Barbo Mfg. Co., New York, N. Y. Pale yellow powder slightly acid to litmus. This product is the base of the liquid preparation Barbo Hair Treatment for imparting color to faded or gray hair. Qualitative tests showed presence of free sulphur, lead, calcium, sodium, chloride, sulphate and acetate. The active ingredients are evidently free sulphur and lead acetate.

E. S.—2. *Barbo Hair Treatment*. This liquid treatment is prepared from Barbo Compound, bay rum and glycerine. It is a colorless liquid with some nearly white sediment, faintly acid to litmus and having the odor of bay rum.

Analysis: Solids, gm./100 cc., 5.43; ash, 1.73; alcohol by vol., 6.19 per cent. Sulphur, lead and calcium present.

According to the formula for making this preparation, 6.19 per cent of alcohol would indicate 51 per cent of alcohol in the bay rum used. This is within the usual range of alcohol content in bay rum. Considering all of the Barbo Compound and 95 per cent of the glycerine called for by the formula as "solids," the liquid preparation would contain about 5.9 grams of solids per 100 cc.

Full directions for using the treatment and cautions to be observed are given in labelling.

W-1. *Quinine Hair Tonic*. Rotham Sales Co., Inc., New York, N. Y.

Analysis: Alcohol by volume 45.7 per cent; resorcin, gm./100 cc., 0.038; quinine, trace; pilocarpine, trace. Other ingredients not determined.

Claimed ingredients were alcohol, 50 per cent; resorcin, fl. ext., pilocarpine, tinct. cantharides, glycerine and quinine bisulphate.

Quinine is present in trace amount. The name "tonic" in this, and other preparations of like character, is a vague term implying some general improvement or benefit that can hardly be justified by any definite or acceptable evidence.

W-2. *Hair Preparation with Olive Oil and Quinine*. Lander, Fifth Ave., New York, N. Y. This was a clear orange-colored liquid with perfumed, alcoholic odor.

Analysis: Alcohol by volume, 63.1 per cent; quinine bisulphate, gm./100 cc., 0.023; beta-naphthol, 0.011; fatty acids, etc., 0.009; neutral chloroform extract (includes olive oil), 1.49. Other ingredients not determined.

Claimed ingredients: Alcohol, 67.09 per cent; glycerine, 0.19; quinine bisulphate, 0.03; beta-naphthol, 0.02; solutized olive oil, 2.06; aromatics, 0.58.

The claimed ingredients so far as determined, are reasonably substantiated considering the magnitudes of some of them. What "solutized" olive oil may be is not apparent.

Goodman<sup>1</sup> cites drugs commonly used in preparations for the treatment of the hair and scalp, among them cantharides, beta-naphthol, quinine salts,

<sup>1</sup> *Cosmetic Dermatology*, pp. 233-234.

resorcin, sulfur and others, including pilocarpine. The value of these, or of any of them, for promoting hair growth appears to be highly questionable.

### THE "PRESCRIPTION LEGEND"

Section 901 e (f) of the Food, Drug and Cosmetic act provides that a drug is deemed to be misbranded unless its labelling bears adequate directions for use. It is further provided, however, that if no public health risk is involved by the omission of such directions, the administrative officer may exempt drug preparations from that requirement. As a matter of fact, there are very few instances where directions are not essential and only two exemptions have been made. One of these is in case a drug is to be used only for manufacturing or compounding other drug preparations; and the other is in case a drug is "to be used only by or on the prescription of a physician, dentist or veterinarian." This latter exemption has come to be known as the "prescription legend." The justification for both exemptions is clear.

The mere reference to directions of a physician does not necessarily limit sales to prescriptions; thus such directions as "take one tablet after each meal, or as directed by a physician" is a statement of an option, and it does not limit the pharmacist to prescription sales.

Retail pharmacists have voiced objections to the prescription legend on the ground that it is sometimes used on common drugs that are ordinarily sold direct to the public. Probably there have been abuses of this exemption in some cases, but an effective remedy would appear to be in the hands of the retailer himself. The prescription legend indicates one of two things: either it is the honest intent and purpose of the manufacturer to limit sales of the article to prescriptions; or he has neglected to provide proper directions for use and passed that obligation on to the retailer. In the first case, the manufacturer is within his rights and the retailer should respect the legend and limit his sales accordingly. But in the event that the manufacturer has reasoned that the article is one commonly sold direct to the public, and that the retailer will dispense it as usual regardless of the prescription legend, the retailer can circumvent this evasion on the manufacturer's part by demanding that proper label directions be supplied in lieu of the prescription legend. Failing to secure them he can either restrict his sales as the legend directs, or he can refuse to stock the article. In no case should he ignore the legend; in doing so he makes himself liable for an illegal sale.

### COLLABORATIVE WORK

Collaboration with other state and station departments has involved analyses of a large number of samples which are summarized as follows:

State Supervisor of Purchases (foods)	10
U. S. Geological Survey (water)	268
State Department of Health (narcotics)	9
Miscellaneous	12

Station departments:	
Tobacco Substation (tobaccos, etc.)	71
Soils	68
Entomology	250
Botany	10
Genetics	5
Total	703

### BABCOCK GLASSWARE, ETC.

J. E. SHEPARD

Section 2463 of the General Statutes requires that test bottles and pipettes used in testing milk and cream by the Babcock method be tested by the Station and certified if found correct. Section 2488 requires that thermometers used in checking recording thermometers in milk pasteurizing plants be checked and certified.

This work for the past year is summarized as follows:

	Pieces	Imperfect or inaccurate
Babcock glassware	2,726	11
Thermometers	124	0
Total	2,850	11

### U. S. PHARMACOPOEIA XII

The twelfth edition of the U. S. Pharmacopoeia has been official and in effect since November 1, 1942. Many drugs have been added that were not in the U. S. Pharmacopoeia XI, and there have been a number of deletions and other changes. To help Connecticut druggists familiarize themselves with the new edition, the Dairy and Food Commissioner issued a circular citing the following changes in certain of the commoner drugs, and including by name all drugs added to or deleted from the edition now in effect.

The list, prepared in this department at the request of the Commissioner, contains the following changes in some common drugs:

#### Changes in Some Common Drugs

**Ammoniated Mercury Ointment.** The U. S. P. XII preparation is only half the strength of the U. S. P. XI ointment, and has a slightly different base.

**Aromatic Spirit of Ammonia.** The U. S. P. XII formula is the same as that of the U. S. P. XI, but during the war period the oil of lavender may be omitted.

**Belladonna Ointment.** The U. S. P. XII preparation has a Yellow Ointment base.

**Boric Acid Ointment.** Directions for preparing the U. S. P. XII ointment are different. The base is White Ointment plus a little wool fat.

**Chrysarobin Ointment.** The U. S. P. XII preparation contains more chloroform and has a Yellow Ointment base.

**Diphtheria Toxoid.** The U. S. P. XII recognizes Diphtheria Toxoid, Alum Precipitated, as a special preparation which must be labeled "Alum Precipitated".

**Elixir of Phenobarbital** has been taken from the N. F. into the U. S. P. with a different formula containing more glycerine and less syrup, colored with amaranth instead of cudbear.

**Iodine Ointment.** The U. S. P. XII preparation has a Yellow Ointment base.

**Isotonic Solution of Sodium Chloride.** This replaces Physiological Solution of Sodium Chloride U. S. P. XI. There are three varieties, of which the sterile solution for parenteral use must be the one dispensed unless otherwise specified.

**Liniment of Soft Soap.** The U. S. P. XII formula is the same as the U. S. P. XI, but for the duration of the war period, oil of cedar leaf may be substituted for oil of lavender.

**Medicinal Soft Soap,** is the new name for Soft Soap U. S. P. XI. Other vegetable oils than linseed oil may be used in making it.

**Mild Mercurial Ointment.** The U. S. P. XII preparation is only half the strength of the U. S. P. XI ointment, and has a slightly different base.

**Mild Tincture of Iodine.** The tolerance for sodium iodide has been changed so that 100 cc. may now contain as much as 2.6 gm. (instead of 2.5 gm.) of sodium iodide.

**Phenol Ointment.** The U. S. P. XII preparation has a Yellow Ointment base.

**Pine Tar Ointment.** The U. S. P. XII preparation has a Yellow Ointment base.

**Saponated Solution of Cresol.** The U. S. P. XII formula allows the use of other vegetable oils than linseed oil.

**Solution of Iodine.** A new preparation by this name, containing 2 per cent of iodine and 2.4 per cent of sodium iodide, has been added; the name of Compound Solution of Iodine U. S. P. XI has been changed to "Strong Solution of Iodine."

**Spirit of Ethyl Nitrite** has been deleted from the U. S. P. XII but is official in the N. F. VII.

**Synthetic Oleovitamin D** replaces Activated Ergosterol in Oil U. S. P. XI, 2nd Suppl. It may contain either activated ergosterol or activated 7-dehydrocholesterol, and must be labeled to indicate which is present.

**Sulfur Ointment.** The U. S. P. XII preparation has a White Ointment and wool fat base.

**Syrup of Wild Cherry.** The U. S. P. XII formula calls for more glycerine than the U. S. P. XI, but during the war period, to conserve glycerine, the U. S. P. XI formula will remain official.

**Tannic Acid Ointment.** The U. S. P. XII preparation contains sodium sulfite and has a somewhat different base.

**Tetanus Toxoid** has been added to the U. S. P. XII. As with Diphtheria Toxoid, an alum precipitated form is recognized.

**Tincture of Digitalis.** Due to a change in reference standards, Tincture of Digitalis, U. S. P. XII is materially weaker than the U. S. P. XI Tincture.

**Tincture of Iodine.** The tolerance for iodine has been changed so that 100 cc. of the Tincture must now contain not less than 6.8 gm. (instead of 6.5 gm.) of iodine.

**White Ointment** U. S. P. XII is the new name for Ointment U. S. P. XI.

**Yellow Ointment** is a new preparation.

**Zinc Oxide Ointment.** The U. S. P. XII preparation has a White Ointment and wool fat base.

## Drugs Added to the U. S. P. XII

Absorbent Gauze	Eucatropine Hydrochloride
Acetophenetidin Tablets	Exsiccated Ferrous Sulfate
Acetylsalicylic Acid Tablets	Exsiccated Sodium Sulfite
Adhesive Absorbent Gauze	Extract of Ox Bile Tablets
Aluminum Hydroxide Gel	Extract of Rice Polishings
Amaranth	Ferrous Sulfate Tablets
Aminoacetic Acid	Gauze Bandage
Ammonium Chloride Capsules	Glyceryl Triacetate
Amylene Hydrate	Halibut Liver Oil
Anticoagulant Solution of Sodium Citrate	Halibut Liver Oil Capsules
Ascorbic Acid Tablets	Hexylresorcinol
Atropine Sulfate Tablets	Human Immune Globulin
Barbital Sodium Tablets	Human Measles Immune Serum
Barbital Tablets	Human Scarlet Fever Immune Serum
Bentonite	Injections
Bismuth and Potassium Tartrate Injection	Iron and Ammonium Citrates Capsules
Bismuth Subsalicylate Injection	Isotonic Solution of Three Chlorides
Butacaine Sulfate	Magnesium Trisilicate
Butyl Aminobenzoate	Magnesium Trisilicate Tablets
Caffeine and Sodium Benzoate Injection	Menadione
Calcium Gluconate Injection	Menadione Tablets
Calcium Mandelate	Mercuric Salicylate Injection
Carbarson	Mercurophylline Injection
Carbon Tetrachloride Capsules	Mersalyl
Cascara Sagrada Tablets	Mersalyl and Theophylline Injection
Chiniofon Tablets	Methenamine Tablets
Chlorazodin	Morphine Sulfate Tablets
Citrated Normal Human Plasma	Neocinchophen Tablets
Codeine Phosphate Tablets	Neostigmine Bromide
Codeine Sulfate Tablets	Neostigmine Bromide Tablets
Colchicine Tablets	Neostigmine Methylsulfate
Concentrated Oleovitamin A and D Capsules	Neostigmine Methylsulfate Injection
Dextrose and Sodium Chloride Injection	Nicotinamide
Dextrose Injection	Nicotinamide Tablets
Digitalis Capsules	Nicotinic Acid Tablets
Digitalis Injection	Normal Human Serum
Digitalis Tablets	Oil of Chenopodium Capsules
Dihydromorphinone Hydrochloride	Oleovitamin A Capsules
Dihydromorphinone Hydrochloride Tablets	Ouabain
Diphenylhydantoin Sodium	Ouabain Injection
Diphenylhydantoin Sodium Capsules	Pamaquine Naphthoate
Dried Aluminum Hydroxide Gel	Pentobarbital Sodium Capsules
Elixir of Phenobarbital	Phenobarbital Sodium Tablets
Emetine Hydrochloride Injection	Phenobarbital Tablets
Epinephrine Hydrochloride Injection	Phenolsulfonphthalein Injection
Epinephrine Hydrochloride Spray	Picrotoxin
Ephedrine Sulfate Tablets	Picrotoxin Injection
Ergonovine Maleate	Potassium Chloride
Ergonovine Maleate Tablets	Potassium Chloride Tablets
Ergotamine Tartrate	Quinacrine Hydrochloride
Ergotamine Tartrate Tablets	Quinacrine Hydrochloride Tablets
Estradiol Benzoate	Quinidine Sulfate Tablets
Estrone	Quinine Hydrochloride
Ethyl Aminobenzoate Ointment	Quinine Hydrochloride and Ethyl Carbamate Injection
Ethyl Carbamate	Quinine Sulfate Tablets
	Riboflavin
	Riboflavin Tablets
	Rice Polishings
	Saccharin Sodium Tablets

Soda Lime  
Sodium Nitrite Tablets  
Sodium Salicylate Tablets  
Solution of Amaranth  
Solution of Chloroazodin  
Solution of Iodine  
Solution of Tribromoethanol  
Sterile Absorbent Gauze  
Sterile Adhesive Plaster  
Sterile Sulfapyridine Sodium  
Sterile Surgical Silk  
Strophanthin Injection  
Strychnine Sulfate Tablets  
Sulfanilamide Tablets  
Sulfapyridine  
Sulfapyridine Tablets  
Sulfarsphenamine  
Sulfathiazole  
Sulfathiazole Tablets  
Sulfobromophthalein Sodium  
Sulfobromophthalein Sodium Injection

Surgical Silk  
Syrup of Glycyrrhiza  
Tetanus Toxoid  
Tetracaine Hydrochloride  
Tetrachloroethylene  
Theobromine and Sodium Acetate\*  
Theobromine and Sodium Acetate Capsules  
Theophylline and Sodium Acetate Tablets  
Theophylline Ethylenediamine Injection  
Theophylline Ethylenediamine Tablets  
Theophylline Tablets  
Thiamine Hydrochloride Tablets  
Totaquine  
Tribasic Magnesium Phosphate Tablets  
Tribromoethanol  
Trichloroethylene  
Urea  
Yellow Ointment

#### Drugs Deleted From the U. S. P. XII

(Except for those which are starred, these drugs are now official in the N. F. VII)

\*Acetyltannic Acid  
Aconite  
Acriflavine  
Acriflavine Hydrochloride  
\*Albumin Tannate  
\*Ammonium Benzoate  
Ammonium Bromide  
Ammonium Salicylate  
\*Aromatic Sulfuric Acid  
Arsenic Triiodide  
Asafetida  
Bismuth Subgallate  
Calcium Bromide  
Calcium Creosotate  
\*Cannabis  
Cantharides  
Cantharides Cerate  
Cantharides Plaster  
Capsicum  
Carbromal  
Chlorinated Paraffin  
Cinchona  
Compound Mixture of Opium and Glycyrrhiza  
Compound Powder of Senna  
Compound Tincture of Cinchona  
Copaiba  
\*Corn Oil  
Creosote  
Creosote Carbonate  
Dichloramine T  
Diluted Acetic Acid  
Diluted Solution of Sodium Hypochlorite  
Elixir of Glycyrrhiza

\*Emulsion of Asafetida  
Ethylhydrocupreine Hydrochloride  
\*Extract of Cannabis  
Extract of Nux Vomica  
Fluidextract of Belladonna Root  
\*Fluidextract of Cannabis  
Guaiacol  
Iodoform  
Iron  
Kino  
\*Magma of Ferric Hydroxide  
Mass of Mercury  
\*Merbaphen  
\*Nutmeg  
\*Nutmeg Ointment  
Oil of Santal  
Paraffin  
Pepsin  
Pills of Aloe  
Podophyllum  
Potassium Chlorate  
Powder of Ipecac and Opium  
Pyrogallol  
Quinine  
Resin of Podophyllum  
Santonin  
Serpentaria  
Sodium Acetate  
Solution of Ammonium Acetate  
Solution of Ferric Chloride  
Solution of Ferric Sulphate  
Spirit of Chloroform  
Spirit of Ethyl Nitrite  
Squill

Strychnine Nitrate  
Sulfonethylmethane  
Syrup of Ferrous Iodine  
Syrup of Squill  
\*Terebene  
Theobromine with Sodium Salicylate  
Tincture of Aconite  
Tincture of Cantharides  
Tincture of Capsicum  
Tincture of Ferric Chloride  
Tincture of Kino  
Tincture of Squill  
Tincture of Valerian  
Tincture of Veratrum Viride  
Valerian  
Veratrum Viride  
Vinegar of Squill  
Washed Sulfur  
Yellow Mercurous Iodide

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