Wisconsin dairy and food and weights and measures department. No. 14 1914

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BULLETIN NO. 14

WISCONSIN
Dairy and Food and Weights and Measures Department

ISSUED BY
J. Q. EMERY, DAIRY AND FOOD COMMISSIONER
EX OFFICIO STATE SUPERINTENDENT OF
WEIGHTS AND MEASURES

DECEMBER, 1914

ORGANIZATION

J. Q. Emery, Dairy and Food Commissioner, *ex officio* State Superintendent of Weights and Measures.

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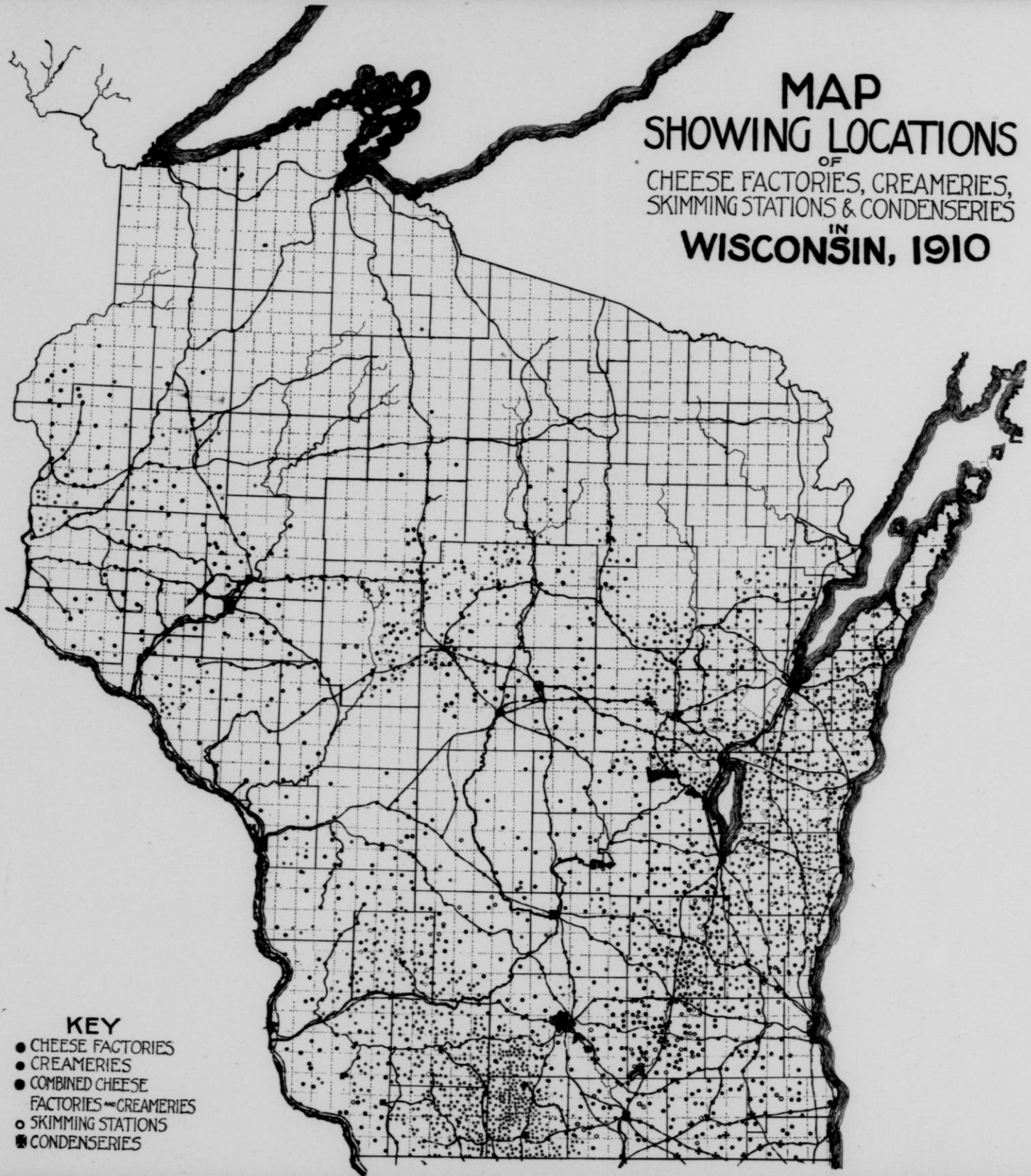
MAP
SHOWING LOCATIONS
OF
CHEESE FACTORIES, CREAMERIES,
SKIMMING STATIONS & CONDENSERIES
IN
WISCONSIN, 1910
KEY
CHEESE FACTORIES
CREAMERIES
COMBINED CHEESE FACTORIES AND CREAMERIES
SKIMMING STATIONS
CONDENSERIES

INTRODUCTION.

The following is a summary of analyses, inspections, prosecutions, etc., during the biennial period ending June 30, 1914. This summary covers only a portion of the activities of the dairy and food and weights and measures department.

Analyses and tests:		
Samples of foods, linseed oils, turpentine, white lead, etc., analyzed by chemists	1428	
Samples of milk and cream from creameries, cheese factories, city supplies, etc., tested by dairy and food inspectors	4336	
Sanitary inspections:		
Groceries, meat markets, etc.	3313	
Cheese factories, creameries, cream routes, dairies, etc.	5436	
Sediment tests of milk	19163	
Milk cans	48850	
Oleomargarine inspections	1472	
Weights and Measures:		
Total number of weighing and measuring appliances tested by inspectors	167585	
Total number of weighing and measuring appliances found incorrect	40192	24%
(The above totals include 31,692 tests of cream test scales and weights, moisture scales and weights, and Babcock cream and milk test bottles and milk pipettes, of which number 3642 or nearly 11.5% were found incorrect).		
Number of establishments at which packages weighed by dealers for delivery were reweighed by inspectors	3060	
(Many discrepancies were found due to carelessness in weighing or measuring or to using incorrect scales or to including heavy wrapping paper in weight of commodity).		
Conventions addressed by members of department	111	

Prosecutions:		
Dairy and food department	641	
Weights and measures department	41	
Convictions—Dairy and food department.....	631	98.44%
Weights and measures department	34	82.93%

Among the many other activities, the assistant commissioners have each month, under authority of section 1410d of the statutes, and with the approval of the Governor, acted as judges in the cheese and butter scoring exhibitions conducted at the University of Wisconsin dairy school.

CHARACTER AND EXTENT OF FOOD ADULTERATION

The following extracts from biennial reports of dairy and food commissioners disclose in a comprehensive way the character and extent of food adulteration in this state, the elimination or reducing to a minimum of which is one of the objects for which the dairy and food department is maintained:

From the report of the first dairy and food commissioner, Honorable H. C. Thom, (1890):

"The first article which was given any considerable attention was vinegar. A large number of samples were taken from dealers and manufacturers in various parts of the state. The department soon discovered that nearly every vinegar that had a brown color was sold for pure cider vinegar and labeled as such. The analysis showed that but a very small percentage was cider vinegar as represented by the labels."

"The sole object of the department is to give the buyer exactly what he pays for, thus protecting his pocket book and his health and at the same time place the manufacturers of spurious goods in such a position that that are unable to displace honest goods by misrepresentation."

"We find that adulteration of many of our food products results in cheapening the product of the farm, thus lessening the profits of the husbandman and robbing both consumer and producer. The great evil lies in the practice of selling a cheapened article under a false name at the same price of the pure article, thus defrauding the producer out of the price which he might have received for the genuine product, while at the same time the consumer is made to pay for what he does not ask and what he does not want."

"A cow that skims her milk to less than 3% is liable under the law and holds her owner responsible for damages."

"There is not an article of commerce that requires greater skill in handling in order to secure favorable markets than cheese. No industry has been so perverted. No business exists that has been so basely manipulated, and no article of food has been so degraded by counterfeiters. In no time has the honest manufacturer met with

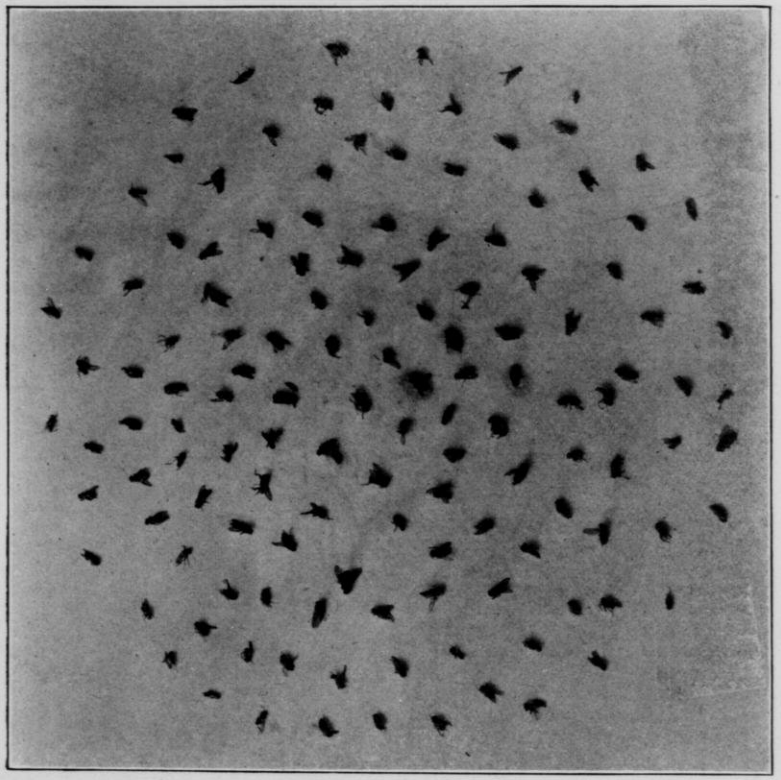

Fig. 2.—Picture of 140 flies taken by one of the assistant commissioners from a can of milk offered at a creamery.

such dishonest competition. Matters have come to such a pass that the genuine article is under the ban of suspicion at home and abroad."

"Factorymen within the confines of the state have hauled skim milk in wagons six miles into Illinois and there added foreign fats to make filled cheese."

"No man can live in a business sense and place his butter in competition with tallow and cottonseed oil so manipulated that it requires an expert chemist to detect the difference between the compound and dairy butter."

"Butter has worked all these years to make for itself a market and a demand. Now that they are established it should not be robbed by an imitation. The attack has but just begun. No corner of the state is too remote for its presence. No table so humble, no dining room so grand, no lumber camp so rough, that oleomargarine, with its mellow name, will not walk upon and into, with a deceitful bow and brazen smile, with the claim that its name is butter."

"Secretary Rusk said in his address to the Ohio state fair: 'More than one half of the income of the average wage earners of the human race is spent for food. The special sphere of the agricultural department is to enlarge the facilities for providing food. Let it also be the special sphere of the department to see that the food supply be pure and wholesome. Every product must be sold for what it is. The adulteration of foods is injurious to public morals.'"

"The samples of ground spices examined in the laboratory confirm the results found in other states and prove that in this article of food adulteration is the rule and purity the exception. The high price of the pure spices and the popular demand for a cheap ground article has called forth much skill on the part of the dealer to satisfy the demand."

"A mixture of ground cocoanut shells, buckwheat hulls and a little cayenne pepper for flavoring, passes for pure black pepper. Corn meal, ground olive stones and cayenne pepper pass for white pepper. Corn meal and turmeric and cayenne pass for pure ginger. Wheat flour, turmeric or Martius yellow, and cayenne sell for pure mustard. New adulterations are constantly being discovered and the analyst is constantly called on to identify new adulterants. The adulterations usually found are: 1. The bran and hulls of various seeds, as buckwheat, wheat, mustard and flax seed. 2. Damaged farinaceous substances such as spoilt flour, corn meal, bread, middlings of various kinds. 3. Leguminous seeds as peas, beans, etc. 4. Ground shells of the cocoanut, almond, and peanut. Ground olive stones are largely used. 5. Various coloring matter as turmeric, Martius yellow, charcoal, sienna and red ochre, etc."

"Spices are found containing the following adulterants:

Allspice: adulterants, spent cloves, clove stems, cracker dust, ground shells or charcoal, mineral color, yellow corn.

Cayenne: adulterants, rice flour, salt and ship stuff, yellow corn, turmeric, mineral red.

Cassia: adulterants, ground shells, crackers, turmeric, minerals.

Cinnamon: adulterants, cassia bark, peas, starch, mustard hulls, turmeric, minerals, cracker dust, burnt shells, sugar.

Cloves: adulterants, spent cloves, clove stems, minerals, allspice, roasted hulls, wheat flour, peas.

Ginger: adulterants, cereals, turmeric, mustard hulls, cayenne, peas, exhausted ginger.

Mace: adulterants, cereals, buckwheat, wild mace.

Nutmeg: adulterants, starch, wild nutmeg.
Pepper: adulterants, pepper dust, ground crackers, rice, mustard hull, charcoal, cocoanut shells, cayenne, beans, bran, white and yellow corn, ground olive stones.
Mustard: adulterants, flour, turmeric, Martius yellow, peas, corn meal, gypsum, ginger, salt."

From the report of Honorable H. C. Adams, dairy and food commissioner, 1895–96:

"The manufacturers of filled cheese, extracting by the separator process, all the cream, except a trace, contained in the milk brought to their factories, making that cream into butter and getting from the milk the entire butter value, taking the skim-milk which was left and adding to it for the purpose of replacing the butter fat, neutral oil, costing only one fourth as much as the fat which it replaced, were enabled to make large profits in the business."

"There is more or less fraud perpetrated in the manufacture and sale of cream of tartar adulterated with corn starch and alum, coffee adulterated with chickory, coffee beans with imitation pellets, made of rye or other flour and artificially colored, baking powders of inferior strength, honey with glucose, buckwheat flour with corn meal and wheat flour, spices with numerous foreign ingredients, jellies with salicylic and other acids, maple sugar with cane sugar and glucose, and lard with cotton seed oil."

"The adulteration of butter consists in the addition of foreign fats, the addition of perservatives, loading with water, and the introduction of large amounts of casein, buttermilk and water by the use of rennet compounds."

From the report of Commissioner Adams for 1897–98:

"The condition of a considerable portion of the milk dairies in the vicinity of the larger cities, and notably of Milwaukee, was such as to prejudice the public health and warrant the state in making official examinations. During the winter of 1898 Mr. Norton J. Field, inspector, inspected 200 dairies in the city and vicinity of Milwaukee. A very considerable percentage of these dairies were found to be in a most filthy condition. Cows were being kept in close, poorly-ventilated, filthy stables, with little light, no regard for order or cleanliness, and fed in some instances exclusively upon distillery slops. Some dairies were found where the cows had little or no exercise, were never cleaned, and were simply walking monuments of filth."

"The most common violations of the pure food law have been in the sale of low wine vinegars for cider vinegars, of glucose syrups for cane syrups, of wheat middlings and low grade wheat flour for buckwheat flour, of lemon and vanilla extracts containing no lemon or vanilla, of artificial jellies for pure fruit jellies, of all manner of adulterated spices for pure spices, of prepared meats containing chemicals injurious to the public health, of 'coffee essence' which does not exist, of cottolene sold for pure lard, of coffee and chicory sold for pure coffee, of imported canned vegetables colored or treated with poisonous chemicals, of alum baking powders sold for cream of tartar baking powders, and of pure honey adulterated with glucose."

Fig. 3.—So-Called Maraschino Cherries. This label would lead one to believe that the article is in fact maraschino cherries. A chemical analysis of a product bearing this label shows, however, that such product is not maraschino cherries. For many years attempts have been made from time to time by dealers to palm off as maraschino cherries a product made in about the following manner: Cherries bleached with sulphur dioxide and preserved in strong solutions of salt are imported as the material to be used. In the course of preparation it is necessary to remove from the same the salt as well as the sulphur dioxide. This can best be accomplished by leaching, that is, washing out in running water these substances. While the salt and sulphur dioxide are being washed out, naturally the soluble fruit acid, fruit flavor, and fruit juice are washed out, so that there is left practically only the cellulose. This cellulose, however, is in the shape of a cherry and lends itself to further treatment as follows. The skeletons of the cherries are placed in baths of coal-tar dye where they are dyed a beautiful deep red. They are still without flavor, so they are next treated with solutions of benzaldehyde to give them what is supposed to be a maraschino cherry flavor. Being thus dyed and flavored they are packed in syrup in bottles to be labeled and sold as maraschino cherries. As the process shows, there is in fact little other than the cellulose that is left of the original cherry.

The genuine maraschino cherry is prepared as follows: The marascha cherry, a small black variety in Europe, is preserved in the fermented juice of the marascha cherry flavored with the bruised pits.

This illustrates how by the use of so-called harmless coal-tar dyes articles of food are colored in such a way as to deceive the public.

Referring to the time when the first pure food law of Wisconsin was enacted, 1897, that report states:

"With the shelves of jobbers and manufacturers containing large quantities of adulterated goods, and merchants all over the state being stocked with the goods to a greater or less extent, it was deemed inexpedient to undertake a rigid and universal enforcement of the law, until the dealers in food products in the state who were sincere in their desire to comply with it should be informed of its provisions and have a reasonable time in which to adjust their business to the new order of things."

"Strained honey has perhaps been more subject to adulteration than most articles of food. The common adulterant is glucose syrup."

"The syrups on the market are sold largely under fanciful trade names, such as 'Crystal Drips,' and are seldom sold as cane syrup or otherwise. All of the syrups so far examined have been found to contain glucose."

"Since the passage of the U. S. law governing the compounding of flour, additions of corn flour to wheat products without proper labeling have practically ceased. Samples of suspected wheat flour sent for examination have invariably been found to contain excessive amounts of low grade flour approaching middlings.

Buckwheat flour has been much adulterated in the past."

"The use of preservatives in all kinds of food products is becoming more and more prevalent. Several brands are on the market for use in chopped meats, oysters and salted fish. Substances used in meats generally consists of sodium sulphite, where it is intended to be used in chopped meats, or of borax and boracic acid where intended for oysters or for use in brines or pickled meats.

Sausage preservatives also contain aniline coloring matter. One sample examined was found to be composed of salt niter, borax and boracic acid and majenta coloring.

Ammonium acid fluoride and the fluo silicates are also sold as meat preservatives.

Compounds containing sodium salicylate and salicylic acid are sold under trade mark names as canning processes."

From the report of Commissioner Adams for 1899–1900:

"The manufacturers of oleomargarine and the dealers continue to evade and defy the law of this state relative to counterfeit butter to the extent of their power. Their policy is the same in every state in the Union. Their contempt for public judgment as expressed in law is supreme. They claim to know more about the public interest than state legislatures and more about the constitutionality of laws than courts."

"Horse meat is made into sausage in Milwaukee, but there is no law to prevent it, and its sale is not an offense if not sold under a false or misleading name. The Milwaukee product, however, is made for export."

"Chemical preservation of food products has increased so rapidly and in so many directions of late that no form of adulteration now practiced is so much in need of control.

Milk is preserved with borax, boric acid and formaldehyde; butter and cream cheese with boric acid and borax; sausage, Hamburger steak and chopped meats with borax, boric acid, niter, sodium sulphite and bi-sulphite, and the fluorides; fruit juices, cider and non-alcoholic beverages with salicylic acid; soda water syrups and crushed fruit with salicylic and benzoic acid; beer with salicylic acid, sulphites and fluorides; hams and bacon with borax and boric acid, used both in the brine and in a dry state for packing; oysters, clams and fresh, dry and smoked fish, with boric acid and compounds containing it. Game is dressed with similar preservatives before shipment. Catsups and meat dressings commonly contain salicylic acid; and canned goods, such as corn and tomatoes are similarly dosed with formaldehyde and sulphites. Moreover, in non-alcoholic beverages sugar is frequently substituted by coal-tar products, saccharin and dulcol, substances which have an intense sweetening power but no food value. It would seem that no perishable food product has escaped."

"While the milk at factories, and even in cities, is improving steadily, adulteration of city milk by the addition of preservatives has been rapidly on the increase. As a result, most of the prosecutions in cities for the adulteration of milk have been for this offense.

Agents selling the preservatives argue that 'All of the other milk men use them;' that 'They are perfectly harmless;' that 'They go off as a gas;' 'cannot be detected,' 'act the same as ice,' and worst of all, give circulars purporting to come from mothers advising their use in infants' milk."

From the report of Honorable H. C. Adams, dairy and food commissioner, for the years 1901–02:

"Men cannot be made honest by law, but law can make dishonesty pay a penalty when it steals the livery of honest products to serve a dishonest purpose In every civilized land, and in a few where civilization is not as radiant as in our own, fierce competition and unbridled greed have undertaken to profit by the adulteration of nearly every article of food used by the human family. As in every other department of human effort, there has been wonderful progress during the last half century. The clumsy wooden nutmeg of Connecticut, that even a policeman might detect, has given way to artificial eggs which no hen would recognize and to artificial butter that never knew milk. The universal demand for cheap things brings a supply. Wheat flour is adulterated with corn flour; buckwheat with wheat middlings. Vermont maple syrup is made that never saw Vermont, and is made from the sap of trees that grow in the heart of Chicago. Glucose has dethroned cane syrup. Cider vinegar is distilled from grain. A good portion of the strained honey of commerce never produced any strain upon the bees. Milk is robbed of its cream, filled with lard and sent all over the world to ruin the reputation of American cheese. Borax and formaldehyde go into milk to kill babies and weaken invalids. Oysters are practically embalmed with chemicals. Lemon extracts are made without lemon oil and vanilla extracts without vanilla. The hogs of the north compete with the cheap cotton seed oil of the south and mix in the same tub under the banner of lard. Artificial smoke is made for hams out of poisonous drugs. Jellies colored in imitation of the natural fruits and sold as fruit jellies flood the market, although

Fig. 4.—Purchased on the Wisconsin market labeled as above. Product contained no lemon oil and was artificially colored with the coal-tar dye, naphthol yellow S.

they are almost as destitute of fruit juice as a bar of pig iron. The embalmed beef business has been exaggerated, but we do not need any either for soldiers or civilians. Canned fruit is preserved with antiseptics which delay the digestive processes. Baking powder under misleading names crowd the markets. Spices enriched with pepper hulls and ground cocoanut shells are manufactured and sold by the ton. The close partnership which has existed for so many years between coffee and chickory does a thriving business in many states under the firm name of coffee. Cheapness is secured by these adulterations and false labeling, but the people are defrauded."

"It is not fiction that unhealthful adulterants are used in many food products. Under the labels of 'Freezine,' 'Preservaline,' 'Liquid Sweet,' 'Liquid Smoke,' 'Rosaline,' and other fanciful names, they are manufactured by hundreds of tons, placed in every market in the United States, shipped to foreign countries in immense quantities, and advertised with a skill and effectiveness that compels public attention. One firm in New York, with a branch in Chicago, sent to Australia during the last year 150 tons of preservaline, a large portion of which was used in the butter which that country shipped to England. These mixtures are antiseptics and contain boracic acid, formaldehyde, and sulphide of soda. They are used to preserve milk, cream, butter, oysters, fish, canned goods, and meat. They are of a poisonous character, and their introduction into a food delays or stops the digestive process. France prohibits the use of these preservatives in all domestic wines, except those exported. Germany has the same regulation of the manufacture of beer. England prohibits the use of deleterious antiseptics."

"The force which has been behind most of the pure food legislation of the United States for the last fifteen years has been the farmer. Since he engaged in the battle for honest food products most of our pure food legislation has been enacted. The dairy commissions of the several states have been brought into light because the farmers demanded not only laws but the machinery to enforce them. When the American farmer is roused he keeps everybody busy. He may be childish sometimes, but nobody accuses him of being weak when he stirs his class to action in a movement that is right. The American farmer can get along without flattery. He ought not to get along without justice. He sometimes nods and sleeps over public questions, but when he goes at it in earnest to take a hand in their settlement, political rings are broken, unwise political bosses go up in the air, golden collars become a rope of sand and popular judgment is crystallized into law."

"This question of the character of the food supply of 75,000,000 of people is not one to be settled by doctrinaires or hair-splitting constitutional lawyers. It will not be settled by all the money and all the brains that are at the command of the manufacturers of counterfeit products. It will not be settled by ridicule, abuse or misrepresentation of the men who till the farms of the nation and produce most of its foods. It will not be settled by court decisions that in effect deny the statement of Judge Harlan, that the Constitution of the United States guarantees to no man the right to perpetrate a fraud. It will not be settled by the pleading of any class for the privilege of plundering somebody. It will not be settled by chemists and experts hired to give opinions. It will not be settled by legislators who do not care for the public good and who do not fear public judgment. It will be settled, as it is being settled, by the voice of the consumer of food products, demanding laws which compel these products, if sold, to be honest and healthful, and by the American farmer claiming the right of way for the honest products of honest labor."

From the report of the chemist in the dairy and food commissioner's report for 1903–04:

"Of the 58 samples of baking powder, 43 were either adulterated or not lawfully labeled."

"Of the 7 samples of honey analysed, 5 were adulterated."

"Of the 10 samples of beverages analysed, 5 were adulterated."

"Of the 31 samples of buckwheat flour analysed, 25 were adulterated."

"Eleven samples of jellies and preserves were analysed and 8 of them were adulterated."

"Four samples of lard were analysed and all were adulterated."

"Of the 88 samples of lemon extracts analysed, 51 were adulterated."

"Of the 25 samples of maple syrup, 15 were adulterated."

"Of the 39 samples of meat, 23 were adulterated."

"Of the 68 samples of milk and cream analysed, 30 were adulterated."

"Of the 11 samples of spices analysed, all were adulterated."

"Of the 9 samples of vanilla extracts, 7 were adulterated."

"Of the 118 samples of vinegar, 61 were adulterated."

From the report of the dairy and food commissioner for 1905–06:

Referring to a very thorough inspection of the milk supply of the larger Wisconsin, cities, the following statements are made:

"Of the 201 samples of milk and cream gathered and tested, not one showed the presence of a chemical preservative. Only 2 samples were found to fall below the legal standard."

"Of 133 samples tested by the Wisconsin curd test, 112 showed curds of a close, firm texture and of clean, agreeable odor, indicating that the milks which yielded these curds were produced under clean and suitable conditions and were suitably cared for. * * * The test showed that 85% of the samples tested were excellent and above reasonable criticism as to cleanliness and suitable care."

"In the 44 Wisconsin cities where an inspection of the city milk supply was made, 596 samples of milk were taken. Of this number only 5 fell below the legal standard of 3% butter fat and only 16 fell below the legal standard in solids not fat. About one third of the 596 samples were tested for chemical preservatives and none was found. Of this total number, 477 samples or about 80 % gave curds of a character showing that the samples taken were normal milk of excellent character and above criticism as to cleanliness and the care received."

"Most of the adulterated beverages examined were artificial preparations sailing under the names of natural fruit products, artificial coloring, generally with coal-tar dyes, aiding in the deception. In many cases saccharin was employed as a sweetening agent, while salicylic and benzoic acids were found as preservatives."

"Wheat flour, generally of a low grade, remains the most common adulterant of buckwheat flour, although in four samples large quantities of corn flour were found and in a few instances rye flour was present."

Fig. 5.—"Ideal" for what? Surely not for food purposes as it contained wood alcohol, a rank poison. Falsely branded as being of "Triple" strength. Such products have been driven from the Wisconsin market.

"Most of the canned goods analysed were pronounced unlawful because of the presence of artificial coloring matter and of preservatives."

"A sample of canned peas was found to contain considerable amounts of tin and zinc salts, the source of the zinc being doubtless a zinc flux used in soldering, the can not having been washed previous to filling."

"A single can of blueberries examined contained the equivalent of over three grains of metallic tin. In both of these cases the inside surfaces of the cans were strongly corroded, due either to the use of cheap and defective tin plate or to inside soldering or both."

"Of the 52 samples of catsups analysed, only 6 were found to meet the requirements of the law. Almost all of the unlawful samples were artificially colored, generally with coal-tar dyes and preserved with benzoic acid or a salt thereof, while several samples in addition were sweetened with saccharin."

"Of 82 samples of cream examined, one was found to contain gelatin and boric acid, while 33 were below the legal standard of 18% in milk fat content."

"Thirty samples of so-called 'Evaporated Cream' were examined, all of which were simply unsweetened evaporated milk ranging in milk fat content from 7.33% to 9.6%."

"All of the adulterated cream of tartars were found to contain no cream of tartar whatsoever, but to be composed of calcium acid prosphate, calcium sulphate and corn starch."

"Seventeen samples of drugs and medicines were analysed. Of these, 8 samples, all procured from one firm, were found to contain wood alcohol, of these, 4 were purchased, while 4 were taken from the container upon the refusal of the proprietor to sell."

"Of the 73 samples of vanilla extracts and flavors analysed, 64 samples, covering 53 brands, were adulterated. In some cases the preparations were entirely artificial. * * * Four samples were found to contain wood alcohol."

"Eighty-five and one half per cent of all the jams, jellies, and preserves analysed were pronounced unlawful. The great majority of these were artificially colored, contained glucose and were preserved with salicylic or benzoic acids. Some were made from fruit refuse (probably the residue after expressing the juice), apple pomace, starch paste, and artificial coloring and flavoring; a few contained little or none of the fruit from which they were supposed to be the sole product. A submitted sample of imitation raspberry preserves contained glucose, starch paste, coal-tar dye, benzoic acid, a few raspberry seeds (free from pulp) and a large number of millet seeds."

"Of the 359 samples of chopped meats and sausages analysed, 130 or 36% were found to contain chemical preservatives, or artificial coloring matter or both. The actual condition of the Wisconsin markets with respect to these foods before the fall of 1905 is perhaps better indicated by the results of a complete inspection of the Madison markets made in August of that year, when 60% of the samples of chopped meat and sausages purchased were found to be adulterated. To the publicity given the prosecutions which resulted, the lower percentages of adulteration found in other cities must doubtless be ascribed. At the present time, on account of the large number of convictions secured all over the state, very little adulteration of the above character is practiced in this class of foods. The preservatives generally found in sau-

sages were boric acid and borax, while sodium sulphite was the chemical usually added to chopped beef. The use of the latter seems particularly objectionable. Its true preservative action is slight, but it causes the meat to take on and retain a bright red color while at the same time it destroys odors of decay. Its use takes from the purchaser or consumer about the only means he has for judging the wholesomeness of the meat. A sample of chopped meat purchased on the market and found to contain sodium sulphite was kept for three days in the laboratory during hot weather in August. At the end of that time it was still red and odorless and although slightly mushy might still have been accepted as wholesome food by the ordinary purchaser; a bacteriological examination, however, showed that it contained a very large number of putrifactive organisms, and that the meat was in fact in an advanced stage of decomposition."

"Of the 507 milk samples reported below 190 were pronounced unlawful, being either below the legal standard of 3% in milk fat or below that of 8.5% in solids not fat (these conditions being generally due to skimming or watering or both), while in three instances preservatives were present. This proportion of unlawful samples does not by any means represent the true condition of the Wisconsin milk supply, since almost all the samples analysed were suspected of being adulterated.

Sixty of the adulterated samples were taken by inspectors of the commission from city milk supplies; 115 were samples delivered by patrons at creameries and cheese factories, while 18 were submitted by persons outside the commission. Of samples submitted by inspectors as suspicious, 72% were found unlawful."

"Eleven samples of ground black pepper were found to be adulterated, the common adulterants used being ground and roasted cereals, olive pits, pepper shells, and cocoanut and other nut shells."

"Forty-four samples of maple sugar were analysed, of which only 5% were passed as lawful. Of the adulterated samples many contained little or no maple sugar, being frequently made from cane sugar with the addition of caramel and maple flavor."

"Of 115 samples of maple syrup analysed, 71%, covering 58 brands, were found adulterated. Most of these adulterated samples contained little or no maple syrup, being mainly composed of cane sugar syrup, artificial coloring and 'maple flavor.' Several of the syrups had been made from decoctions of maple wood and bark while others had obtained their 'maple flavor' from corn cobs. Still others were mixtures of maple syrup and cane sugar syrup in varying proportions. One sample was also found to contain saccharin. Most of the adulterated maple syrups have either been driven from Wisconsin markets or are at present being sold for what they are; viz., as 'Syrups' or as 'Compound Maple and Cane Syrups.' Deception is, however, still frequently practiced by showing maple groves, maple leaves or other misleading devices on the label."

"Besides maple syrup, 48 other syrups and saccharine solutions, including fruit syrups, sorghums, molasses, table syrups and maple syrup substitutes were analysed, of which 33 were pronounced adulterated or misbranded. Most of the samples sold as rock candy syrup or drips, table syrup, sugar syrup and cane sugar syrup, and so labeled, were found to be compound glucose mixtures containing but little cane syrup. Several samples sold as pure sorghum were found to consist mainly of glucose."

"Of the 250 samples of vinegar analysed, 198 were declared unlawful. Of these, 27 were below the legal standard in acetic acid or cider vinegar solids or both; 9 samples of white spirit vinegar were sold as white wine vinegar; 85 samples sold as cider vinegar were found to be adulterated."

From the report of the dairy and food commissioner for 1907–08:

"If the working man or any other man wishes to invest his hard-earned dollar in butter, he should be sure to get butter for that dollar; and if he wishes to invest it in oleomargarine, he should be sure to get oleomargarine at oleomargarine prices and not at the price of butter. That is what he can now do in Wisconsin because of her oleomargarine law and its enforcement."

"Of 53 samples of butter analyzed, 36 complied with the Wisconsin standard. Of the 17 unlawful samples 10 were oleomargarine and one was renovated butter sold either as butter or as creamery butter; two contained excessive amounts of moisture; two had some foreign fat incorporated; one contained previously melted butter fat; while one was pronounced unlawful because of its rancidity. * * * One of the samples of butter contained 51% of moisture, a condition made possible by the use of extraneous matter, probably rennet."

"Three samples of candy were analysed, all of which complied with the standard."

"The laws of Wisconsin prohibit the sale of canned fruits, vegetables, meats, fish and shell fish containing saccharin, formaldehyde, sulphurous acid or sulphites, salicylic acid or salicylates, or any substance, article or ingredient other than sugar, salt, vinegar or spices possessing a preservative character or action or any copper compound or other artificial coloring or any bleaching compound or any article injurious to health.

Of the 25 samples pronounced unlawful, 16 were samples of colored, or bleached and colored, canned cherries sold as 'Maraschino cherries.' Eight were canned peas colored with a copper salt, while one was canned asparagus labeled and sold as 'Asparagus Tips,' although containing mostly cut-up stems with but a few tips."

"Of 21 samples of catsup pronounced unlawful, 17 contained artificial coloring matter, 3 contained saccharine and several contained benzoic acid or a benzoate without having that fact declared on the label. At the present time the markets of the state have been practically cleared of catsup containing artificial coloring matter or saccharin, and a number of brands are being put up by different manufacturers without benzoic acid or benzoates or other preservative except salt, sugar, vinegar and spices. * * * Contrary to statements formerly made by manufacturers, catsup of a very pleasing color can be made with the use of fresh, ripe tomatoes without artificial color, while poor, raw materials yield inferior looking products."

"Two hundred samples of cream were analysed by the chemists of this commission, 98 being samples delivered by inspectors, purchased by them for the greater part from city milk supplies, although a few were samples delivered at creameries by patrons; the other 102 were submitted samples of uncertain origin. Of the inspectors' samples 28 were below legal standard in fat and 5 contained formaldehyde. The large percentage of unlawful samples is accounted for by the fact that

inspectors in the field generally make a preliminary test of samples of milk and cream, only submitting suspicious samples to the laboratory for further analysis."

"During the last two years the first systematic attempt was made to determine the quality of drugs as sold by druggists throughout the state. The drugs to which most attention was given were alcohol, ammonia water, hamamelis water (witchhazel), hydrogen peroxide, white wax, lime water, Fowler's solution, olive oil, sweet spirit of nitre, spirit of camphor, sublimed sulphur, tincture of iodin and laudanum, many of which are manufactured by most druggists and all of which can be readily tested by a competent pharmacist. The results showed deplorable conditions for out of 1496 samples analysed, 833 were found to be below the standard of the latest, the eighth decennial, revision of the U. S. Pharmacopoeia."

"Six samples of unsweetened evaporated milk were sent in by inspectors during the early part of the period, bearing false label: 'Evaporated cream.' Since that time manufacturers have been changing the labels on these products so that at the present time all, or nearly all, of these goods are sold under their true names, 'unsweetened evaporated milk.'"

"Of the 206 samples of flavoring extracts analysed, ten samples, all of them old stock, were found to contain wood alcohol. This shows great improvement over the previous biennial period, during which 63 samples were found so adulterated. Of 104 samples of lemon extracts analysed during the last two years, 97 were pronounced unlawful, of which 8, representing 6 brands, contained wood alcohol; 28 representing 24 brands, contained no lemon oil; 43, representing 21 brands, were deficient in oil; while 49, representing 30 brands and including some above enumerated, were artificially colored."

"Ninety-seven samples of vanilla extracts and substitutes were analysed of which 88, representing 65 brands, were pronounced not lawful. Most of these contained little vanilla extract but were made with the addition of tonka extract or of prune juice and vanillin, while still others were entirely artificial, being solutions of vanillin, coumarin and caramel. Of 15 other flavoring extracts, only one was passed as lawful, two containing wood alcohol, while the others were either deficient in strength or artificially colored or both."

"A great improvement is noticeable in the purity of buckwheat flour on the Wisconsin market for while in former years pure buckwheat flour was the exception, most of the samples containing low grade wheat, rye, or corn flour, comparatively few cases of adulteration are now met with in this product."

"Three samples of honey were analysed, all of which were passed as lawful."

"Eight samples of ice cream were analysed, all of which were above the legal standard in milk fat, but one contained gelatin and three contained vegetable gums."

"Considerable improvement is noticeable in jellies, jams and preserves. The use of artificial coloring has almost been entirely abandoned, preservatives are rarely employed and greater honesty in labeling is practiced. Accompanying this there has been decided improvement in quality, the sale of the cheapest products, composed of glucose and fruit refuse with perhaps a starch filler, having greatly fallen off since deception due to artificial coloring and false labeling has been stopped."

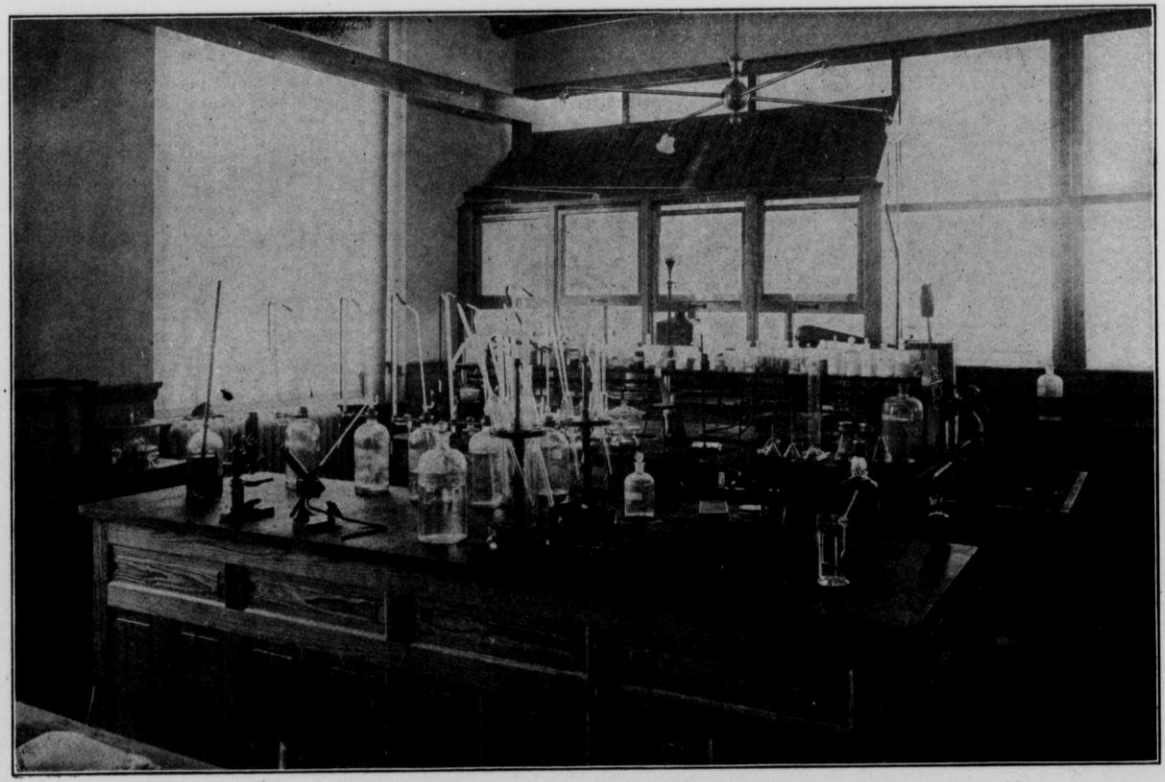

Fig. 6.—View in Laboratory of Wisconsin Dairy and Food Commission.

"Of five samples of maple sugar, one was found to be adulterated, while of 43 samples of maple syrup, 19, or 44.2% were not pure maple syrup. This shows a great improvement over the previous biennial period, when 88.6% of all maple sugars and 71% of all maple syrups analysed were found adulterated. At present very few adulterated maple sugars or syrups are found on the Wisconsin market."

"Two hundred and eighty-nine samples of meat and meat products were analysed of which 113 were pronounced unlawful. Of 103 samples of Hamburger steak, 34 or about one out of every three samples were found to contain sulphites. While this shows a considerable improvement over the previous biennial period when 45 of the samples of Hamburger steak analysed were found to contain this preservative, the actual condition all over the state is doubtless very much better than these figures indicate since almost all of these samples were purchased in places where no previous meat inspection has been made. Of 178 samples of sausage 21 or 11.8% contained chemical preservatives, 19 contained boric acid or a borate and two contained sulphites; whereas 26.5% of the sausages analysed during the previous two years contained chemical preservatives. Only one sample was artificially colored, compared with 14% so adulterated during the preceding period, while in only three instances had the casings been artificially colored, a practice very common a few years ago."

"Of 80 samples of black and white pepper examined 22 were found adulterated, the most common adulterant being a mixture of ground olive pits with roasted cereals."

From the report of the dairy and food commissioner for 1909–10:

"During the decade terminating with this biennial period, food laws have been enacted and enforced in Wisconsin whereby the cloak of fraud and deception in the sale of a multitude of food products has been removed and the statement of the truth on the label has been compelled."

"The masquerading of oleomargarine in the garb of butter has been stopped and the selling of oleomargarine for what it is and at oleomargarine prices has been compelled as the universal practice.

The sale of glucose, a product made by treating starch with hydrochloric acid, as and for sorghum, pure Louisiana molasses, fancy table syrup, honey, honey drips, etc. has been halted.

The sale as and for maple syrup of a product that never formed any part of a maple tree, a practice once common, is now almost entirely done away.

The fraudulent sale of a product consisting of glucose and the extracted juice of cores and skins of apples, rejected in drying, artificially colored with coal-tar dyes to resemble genuine fruit products and sold as fruit jellies, jams, and preserves, has been throttled.

The fact that drugs below standard were being sold as genuine has been exposed to public scorn, and offenders have been prosecuted and fined.

Saccharin, a coal-tar derivative, and a fraudulent substitute for sugar in beverages and other food products, has been driven from its hiding.

Pure pepper has been given the place on the Wisconsin market formerly occupied with a product adulterated with fifty to eighty per cent of ground olive pits, cocoanut shells, mustard hulls or cereals.

Laws have been enacted and enforced that have squeezed the kerosene oil out of linseed oil and the barites and other adulterants out of white lead and zinc white.

Notwithstanding the opposition of special interests formed into great state and national organizations, food laws making wrong-doing hard and right-doing easy have been enacted and enforced, having as their object the only legitimate purpose of such legislation, namely, the protection of the consuming public against the harmful consequences of the manufacture and sale of adulterated or misbranded articles of food."

From the report of the dairy and food commissioner for 1911–12:

"Food products loaded with poisonous or deleterious chemical preservatives have been almost completely driven from the Wisconsin market.

This means in part that salts of copper, acid, lead and decayed substances have been eliminated from canned goods; that red lead and chromate of lead are no longer ingredients of cayenne pepper; that artificial essences and dyes and chemical preservatives no longer masquerade in the garb of jams, jellies and preserves; that aniline dyes and impure essence of almond are not common constituents of ice cream; that caustic lime is no longer used to whiten lard; that chromate of lead, sulphate of lime, Martius yellow, gypsum, and terra alba are no longer deleterious adulterants of mustard; that boric acid, borax, salicylic acid and formaldehyde are no longer milk adulterants; that sodium sulphite, borax and aniline dyes are eliminated from chopped meats and sausages; that salts of copper are no longer constituents of canned peas; that sand and red clay have been expelled from pepper; that poisonous colors and flavors, terra alba, talc, barytes, chrome yellow, arsenic, sulphate of copper, prussic acid, fusel oil and aniline dyes have been driven from candy; that salts of tin, salts of lead, terra alba, sand and gypsum have been driven from sugars; that sulphuric, hydrochloric, and pyroligneous acids are no longer constituents of vinegar; that artificial flavors, coal-tar dyes, chemical preservatives, salicylic acid and hydrofluoric acid and saccharin have been driven from ciders; that saccharin and salicylic acid have been expelled from pops; that poisonous wood alcohol is no longer found in Jamaica ginger, lemon and other extracts and in tinctures; that boric acid and borax are no longer used to embalm fish and oysters. In short, it means that the health of the people of the state of Wisconsin has been greatly conserved."

"The end sought to be accomplished by the efforts of the dairy and food department of the state in the enforcement of the dairy and food laws, has been the protection of the consuming public by eliminating from the Wisconsin markets the adulterations and frauds in food and drug products hereinbefore set forth, with the results that today those conditions are greatly improved. Pure foods and pure drugs of proper strength and truthful labeling, now take the place upon our markets of former adulterated and fraudulent food products. Adulterated or fraudulent food products are now an exception and not the rule as a result of the enactment of the state food laws and their vigorous enforcement by this department. As the adulterations and frauds in food and drug products have been enormous in their extent, so the work of this department in their elimination has also been enormous."

"I forbear to undertake to estimate what has been saved in life and health to the people of Wisconsin. Such a saving cannot be measured in dollars and cents. A study of the reports of the dairy and food department and of the statements quoted in this report of the extent and character of food adulteration, will disclose that in the early history of this struggle, milk, the common food of babes and invalids, was preserved with poisonous chemicals; that chopped meats and sausages, the

chief reliance of the laboring class, were doped with borax; sodium sulphite and other substances deleterious to health; that extracts were made with poisonous wood alcohol; that numerous food products were artificially colored with harmful coal-tar dyes; that salicylic acid was used as a preservative in many beverages; that saccharin, a coal-tar product five hundred times as sweet as sugar, was a common adulterant, and that in general there was a riot of artificial coloring and harmful chemical preservatives in very general use in food products. These harmful chemical preservatives and deleterious artificial colors have been almost completely driven from the food products marketed in this state. It must follow that this result has caused an immense saving as to the lives and health of the people of Wisconsin. * * *

Until the year 1909, the work of sanitary inspection by this department was limited under the dairy and food laws of the state to cheese factories, creameries and dairies. While unsanitary conditions in a cheese factory or in a creamery or in a dairy barn might be corrected by officials of this department, we had no authority to correct like or even more unsanitary conditions in groceries, meat markets and other places where food for man was manufactured for sale or stored or offered or exposed for sale. But as a result of the public sentiment aroused by the work done by this department along various lines, the legislature of 1909 enacted a law requiring of this department the inspection of groceries, meat markets and other places where food is manufactured for sale and fixed penalties for manufacturing for sale or offering or exposing for sale food unless securely protected from filth, flies, dust or other contamination or other unclean, unhealthful or unsanitary conditions.

The legislature of 1911 added to these provisions both by extension and by making more specific the penalties for violation of law. The results of the work of this department in the enforcement of these statutes is a matter of common knowledge. There has been a general cleaning up in the places herein referred to. Instead of the unsanitary display of foods on the streets and in the places of business, suitable coverings of glass or metal or other material are being provided, and in the main food products are now reasonably well protected in striking contrast with the bad conditions of a few years ago. Still a great work along these lines yet remains to be done. Remembering the possible contamination by the many forms of disease germs which have been demonstrated by science, the importance of strict sanitary inspection and enforcement of sanitary laws can scarcely be over estimated."

To such an extent was the adulteration and misbranding of food carried that it was too near the literal truth that he that asked bread received a stone and he that asked a fish received a serpent. The manufacturers and purveyors of food were the parties responsible for those conditions and the actuating motive was greed. This is a never-to-be-forgotten fact in dealing with this subject. This statement is made with reference to these classes as a whole, but is not intended to apply to each individual member of the class, for there is a portion of food manufacturers and purveyors who not only are not to be put in this food adulterating class, but are openly, actively, and strongly opposed to food adulteration and frauds and who by their prac-

tices demonstrate that food adulteration and misbranding in any of its forms are wholly unnecessary.

With such conditions prevailing, one of several courses of procedure might be followed:

In the face of the testimony of able and honest chemists who had made analyses of the various food products taken from the market and who reported the conditions which have been set forth, it might be denied that such conditions prevailed and the claim put forth that our manufacturers and purveyors of food were too honorable and too high minded to engage in such practices,—a sort of reasoning well illustrated by the traditional farmer who after long contemplation of the unique characteristics of the giraffe, turned away with the remark ,"Dang it, they aint no such animal!"

Another attitude that might be assumed under the condition was, if the purchaser did not know that the articles purchased were adulterated or counterfeit, he was just as well satisfied and happy as though he had obtained what he asked for and paid for. Therefore, why interfere with the business in which the manufacturers and purveyors were greatly prospering? Let business be undisturbed!

The old legal maxim *caveat emptor* could be invoked. Let the purchaser beware! and if he is defrauded in the purchases he has made, let him go into court and there establish the fact that he has suffered injury. Let the laboring man or the laboring woman or the person of moderate means or of even less than moderate means employ a lawyer to conduct his case, employ a chemist to furnish the testimony of the adulteration or deception and by so doing establish in court that he has suffered injury and the extent of that injury, to do which he must contend with able lawyers and able chemists employed by multi-millionaire corporations who are able as a result of the high profits in their business to pay very large compensation. Such course of action would be an exemplification of the biblical proposition, that unto every one that hath shall be given and he shall have abundance, but from him that hath not shall be taken away even that which he hath.

There was still another course of procedure open to the people of the various states in relation to the traffic in food in intrastate commerce and to the national government in relation to foods

Fig. 7.—Vanilla Bottles. Each of the bottles shown above holds two fluid ounces of vanilla, although to the eye the bottle on the left appears to be much the larger. This is an example of the deception practiced by certain manufacturers. The large bottle is made of heavier glass and has paneled sides. The heavy glass edges act as a magnifying lens. The net container law now requires the manufacturer or packer to mark the contents of the bottle on the outside thereof so that the purchaser who wishes to buy intelligently can compare different brands.

in interstate commerce. This course was to make it a punishable offense under the statutes to sell adulterated or misbranded articles of food, and to define by law what constitutes adulteration of food and what constitutes misbranding of food, and to provide at public expense officers to enforce these statutes for the protection of the general public.

This latter course has been adopted by the various states and by the national government. Such a course would seem to be in harmony with the terms of section 9 of Article I of the Constitution of Wisconsin, viz.:

> "Every person is entitled to a certain remedy in the laws for all injuries he may receive in his person, property or character; he ought to obtain justice freely, and without being obliged to purchase it, completely and without denial, promptly and without delay, conformably to the laws."

The great changes in recent years in industrial, commercial and economic affairs and especially in great powers conferred on corporations by the state, would seem to make it a duty of the state to extend its strong arm of protection to the individual.

It is pertinent to recall that in the enactment of food laws in this country, the national government did not take the initiative. The states of New York, Massachusetts, Pennsylvania and Ohio took the lead and were followed by other states. The first general food law of Wisconsin was enacted in 1897. Not until 1906 did congress surmount the influence of the food and drug adulterating interests and enact a national food law, though at each session for many years previous, pure food bills had been introduced and as often killed.

Complexity in the character of food laws is unavoidable on account of the dual character of our form of government. State food laws enacted under the police powers of the state must be limited to intrastate transactions, while the national food law enacted under the interstate commerce powers of congress, is limited to interstate transactions. The state in the exercise of its police power may enact measures for the protection of safety, order and morals, though affecting foreign and interstate commerce, subject to the principle that every measure of state legislation, however legitimate in itself, yields to positive regulation of interstate or foreign commerce by acts of congress inconsistent

with such measure or intended fully to cover the same matter. But in *Savage vs. Jones,* 225 U. S., the U. S. Supreme Court has specifically pointed out in unmistakable terms, that as to any matter not covered by the national food law, the states in the exercise of their police power may regulate the same even to the extent of interstate commerce packages sold within the state. It is apparent that an adequate national food law effectively enforced for the protection of the general public becomes a great aid in the enactment and enforcement of state food laws and that to the extent that the national law or its enforcement is lacking in these particulars, it becomes a hindrance to the states.

But it must not be forgotten that when legislative action is sought to correct such evils as have been portrayed, there are opposing forces to be reckoned with. Greed of gain being the impelling motive, the opportunities for the making of such great profits are not to be surrendered without a struggle. For many years there has been a tremendously wealthy and powerful aggregation of manufacturers and purveyors of foods with which state organizations of a similar character are affiliated, exercising such vigilance on the subject of food legislation that not a bill relating to food matters is introduced into congress or the legislature of any state that is not forthwith reported to those employed to take care of such matters. If the bill is regarded as unfavorable to their interests, every means which wealth and power can secure is employed to defeat such legislation. Unseen and impalpable forces work behind and through legislators as a part of the invisible government so aptly characterized by President Wilson.

The *enforcement* of food laws also encounters in certain lines fierce contests with the same or similar powers.

In general, the provisions of the general food law of Wisconsin and the national food law are alike. The details of these laws cannot here be discussed. There are, however, some important differences to be noted in considering the present status of food laws, and some important changes applicable to both. Both declare an article of food adulterated or misbranded if "it" has something added to or taken from or mixed with it, etc., but what "*it,*" namely, the article of food, is at the outset is the important question under the statutes. And this involves the question of standards. Several hundred specific standards for as

many different articles of food are written in the Wisconsin food law. But the national food law is without any such standards and what constitutes a standard in each case has to be determined in court upon the evidence submitted.

Upon the floor of the United States senate while the national food law was pending, the Honorable John C. Spooner, then United States senator from Wisconsin, made the following statements:

"I am persuaded that the lack of standard provided by law, in connection with the offenses denounced in this bill and punished by the provisions of this bill, is very dangerous to it. * * * No lawyer will challenge the proposition for a moment that there is an utter lack of standard, that there is no standard except as to drugs. Whether an article is adulterated or not is a question of fact to be determined by a jury. There is no standard rendering definite the offense. There is nothing putting a man on notice in advance of a standard to which he must live and toward which and in obedience to which he must shape his business."

This lack of standards in the national law is now being complained of by the United States authorities charged with its enforcement as one of its serious weaknesses, and an effort is being made to have standards provided by act of congress. In the absence of positive regulation in the matter upon the part of congress, the fixing of food standards is left open for regulation by the states.

Under the provisions of the national food law and the regulations established in accordance therewith, manufacturers have placed on the labels: "Guaranteed by ..... under the food and drugs act, June 30, 1906." By the terms and operation of the national food law, when the manufacturer thus guaranteed his article, all intermediary dealers were protected against prosecution for the sale of that article, however extensive the adulteration of the same might be. It is the well nigh unanimous opinion of the food officials of this country, that there is nothing which has been more prolific of deception than this feature of the national law, purchasers generally erroneously believing this guarantee to mean that the article has been examined and approved by government authorities. The present national authorities charged with the enforcement of that law are agitating such a change as will do away with this practice.

One of the specifications of the national food law declaring an article of food to be adulterated is "if it contain any added poisonous or other added deleterious ingredient which *may* render such article injurious to health." The United States supreme court has held in the bleached flour case that that language implies that the national authorities must prove not only that the article contains a deleterious substance, but must prove that the deleterious substance in the particular case is present in sufficiently large quantities to render that particular article injurious to health. This language and the interpretation placed upon it by the United States supreme court is a great weakness in the national law, *if the protection of consumers is the object sought.* I am pleased to state that the Wisconsin food law does not contain that language.

Under both the national food law and the food laws of Wisconsin, when it is charged that an article of food contains substances deleterious to health, the burden is on the national government or on the state, as the case may be, to prove that the article is harmful. An amendment to the national law has been or is to be introduced requiring that the burden of proof that the article of food is wholesome shall be upon the manufacturer or purveyor. This, if permissible, under the constitution, would be a great advance over present conditions and would rest upon the principle that consumers rather than manufacturers or purveyors are entitled to the benefit of a doubt. This view was taken by Judge Anderson of the Indiana United States District Court and by the United States Circuit Court of Appeals in sustaining the constitutionality of the Indiana food law prohibiting the sale in that state of foods containing benzoate of soda.

As originally enacted, neither the national law nor the general food law of Wisconsin contained any provision requiring that the net contents of the container of an article of food in package form be stated on the label, but such an amendment both to the national law and to the Wisconsin general food law has been enacted and became effective the third day of September, 1914. Regulations for its enforcement have been promulgated. Upon its face it would seem to be a fair and just law, and yet there are special interests threatening vengeance on those who may dare to enforce it.

Another law of this state of like nature, which makes it a misdemeanor to sell less than the quantity represented, is bitterly denounced by certain special interests as unjust and destructive of their business.

The relation of the states to the national government in regard to foods purchased in one state for shipment into another is difficult and complex, and especially so in regard to the sanitary conditions under which such foods are produced. The officials charged with the enforcement of the national law have recently been calling attention to some of the difficulties involved and the need of coöperative effort. The question of sanitary conditions under which articles of food are produced and sold has in recent years become one of increasing importance, as it is recognized that these conditions are intimately related to public health. The question of proper regulation within the state of the sanitary conditions under which foods are produced, stored, and sold, is not less difficult than important. To secure cleanliness and decency in the conditions under which milk is produced for market or for manufacture into butter or cheese was one of the ends sought by dairy laws early enacted by the legislature of Wisconsin.

In the performance of their duties, inspectors of the dairy and food department found that while dairymen who were selling milk produced under filthy conditions were being prosecuted and fined, equally objectionable conditions existed in places where other foods were produced, stored, and sold. As a result of such experience, a law was enacted making it a misdemeanor to manufacture, store, or sell articles of food under insanitary conditions. An effort to specify what should be considered as insanitary conditions failed of passage by the legislature. The dairy and food department was given authority coordinate with local health officials to enforce the provisions of this statute. Although with a very limited force and with very limited authority of law in comparison with the enormous work to be done, revolutionary changes have been wrought in these conditions throughout the state. By this I by no means intend to say that the millennium in this respect has been reached.

Recent legislation has given to the state board of health exclusive jurisdiction over the sanitary conditions of slaughter-houses, hotels, and restaurants, and to the state board of health and the

industrial commission exclusive jurisdiction over the sanitary conditions of bakeries and confectioneries and all places where the products of bakery establishments and confectionery establishments are exclusively sold. But this does not apply to the jurisdiction given the dairy and food commissioner under the general food law where it provides that an article of food is to be regarded as adulterated if it is produced, stored, transported, or kept in a condition that tends to render the article contaminated, diseased, or unwholesome.

In all places where the dairy and food department has jurisdiction over sanitary conditions, the various health officers, state and local, have coordinate jurisdiction. These remarks have reference to general state regulations. Each incorporated city, village, and town has authority to establish and enforce all needful sanitary regulations not inconsistent with the laws of the state. As this is quite a different matter from the detection of adulteration of food requiring skillful analyses by chemists, here is a place where home rule has the opportunity to "run and be glorified". I may add that in my judgment here is a place where the legal maxim *caveat emptor* may well find application. Here is a field in which housewives have duties which cannot well be delegated. Here cooperation between housewives and officers of the law is necessary for the best results. And the same cooperation is necessary to realize the full benefits of the weights and measures laws.

As showing certain phases of present conditions, I have mentioned a few of the defects now recognized as inhering in the national food law, and the present agitation to remedy such defects.

It is not by mere chance or accident that these defects are not now embodied in the Wisconsin food laws, for no sooner had the national food law been enacted than the powerful and wealthy aggregation of food manufacturers to which I have referred, under the specious plea for uniformity, began a most aggressive and persistent movement which has been kept up to this day to force all states to enact laws in exact harmony with the provisions of the national law. From the very outset, the dairy and food commissioner of Wisconsin has vigorously opposed such action. In July, 1907, the year after the national food law was en-

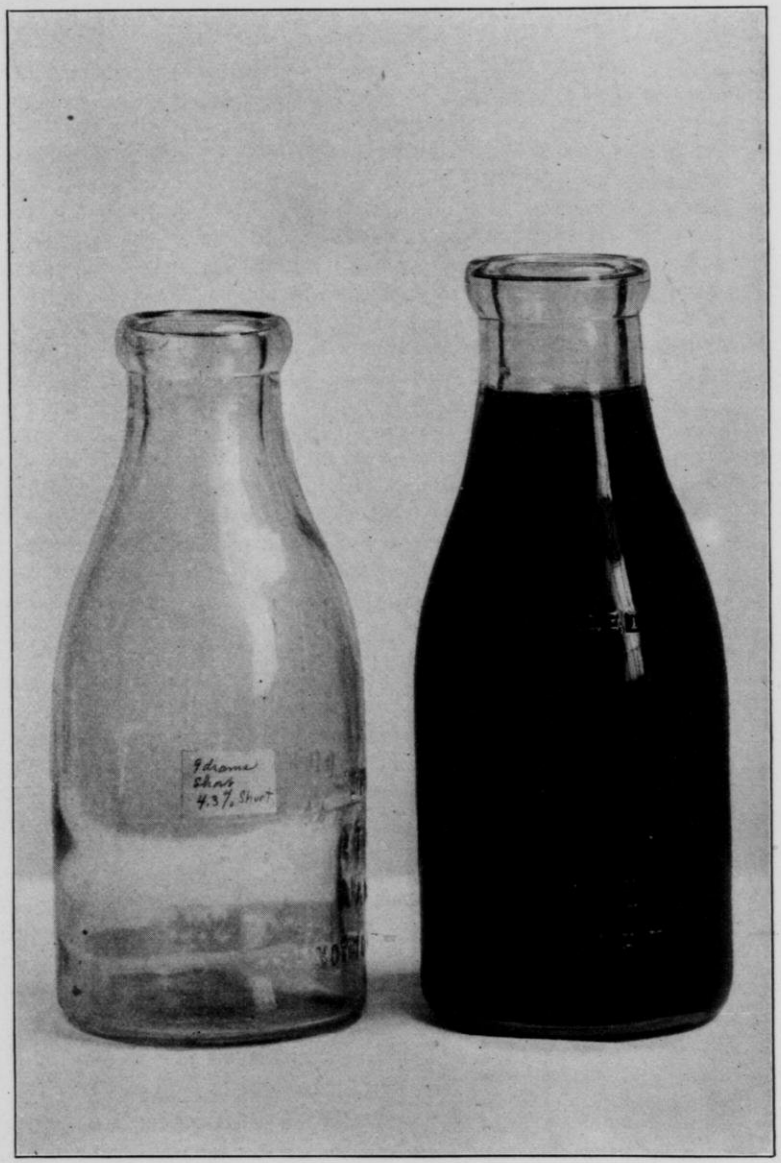

Fig. 8.—Standard and non-standard milk bottle. Non-standard bottle now practically eliminated from use.

acted, he delivered an address to the association of state and national food and dairy departments on the subject "The Element of Uniformity in National and State Food Laws." In concluding that address, he said:

"Because the open and secret enemies of vigorous and effective food legislation may have succeeded in introducing some weak, ineffective or untried elements into the national food law, should the states that for years have been enacting and enforcing food laws abandon strong and effective features of their own laws and adopt instead the less vigorous or effective features of the national law because, forsooth, those features of the state law work a 'hardship' on the trade? If the end sought by food legislation is to remove 'hardships' from the trade, then why not repeal all food laws—state and national? The fact is that the friends of pure food laws accepted the present national law upon the theory that half a loaf is better than no loaf.

I am in favor of such uniform national and state food laws as can be made to comprise the strongest and most vigorous features of present state and national laws, enacted with the purpose and with the effect of protecting the consuming public against adulteration and fraud, *without imposing any hardships on the trade not necessary to the accomplishment of that purpose.* But I am opposed to that uniformity in national and state food laws which comes only to relieve the trade from hardship, by writing into those laws the weakest and least effective features of present laws, with 'such cunning ingenuity' that, while 'bearing a fair countenance,' they carry the element of disaster to the consuming public. If there is a serious desire to enact and enforce effective food laws for the purpose of protecting the consuming public against adulterated or fraudulent foods, let us not hasten to inject into existing state laws any of the weak and defective features of the national law under the clamor of uniformity. Let us wait until it has been shown what features of the national law can be effectively enforced and what protection can be thereby given the consuming public. Let us wait until the questionable features in the national law have been judicially determined. When uniformity comes let it be upon a higher and not upon a lower plane of protection to consumers."

Time and events have fully justified the attitude he then assumed and has ever since maintained.

Quite to the contrary of what may be the common notion, neither the legislature of Wisconsin nor congress has ever made provision for an adequate force for doing the work required by law to be done.

I have shown by competent testimony the conditions calling for the enactment and enforcement of effective food laws for the protection of the public.

I have called attention to the tremendous forces met in the enactment and enforcement of such laws. I have indicated that effective food laws for the protection of the public have not, like the sheet knit at the four corners in Peter's vision, come down to earth from the open heavens with things to eat which God hath cleansed. They have come as the result of a good fight having been fought and they bear the scars of battle.

Grant in his Memoirs says that in his campaign with the army of the Potomac his objective point was at all times Lee's army. So, in the conflict I have referred to, the objective point has been the elimination of conditions hereinbefore portrayed. The result is that these conditions have been well nigh eliminated and that pure and truthfully labeled foods now prevail on the Wisconsin market.

It has been said that eternal vigilance is the price of liberty. It is just as truthful to say that eternal vigilance is the price of cleanliness and freedom from adulteration and misbranding of foods.

From the first report of the *ex officio* state superintendent of weights and measures to the Governor, January, 1912:

"The practice of selling beans, cranberries, hickory nuts and other dry commodities by the liquid instead of the dry quart measure is so common that hardware men had discontinued keeping dry quart measures upon their shelves. The bottomless measure, while recognized as a fraud by some of our merchants, is still in use in many sections of the state. Linseed oil measures are found coated with oil, the mechant not being averse to such condition as it is somewhat of an aid to him in giving his customers short measures. In fact, new measures are found on the shelves of the hardware stores that either through carelessness or intent have been made short. Dry measures can be found of all diameters and depths, with or without flaring tops, some greater and others less than the legal capacity. Scales are found out of balance, in some cases two or three ounces to the pound. Scales with incorrect computing charts, broken parts, worn pivots, light poises, worn beams, and a host of other imperfections are so common that from the reports of the work done by our inspectors during the last month fully 26 per cent of the scales tested were found incorrect.

Counter tacks in dry goods stores were incorrectly spaced, in some cases as much as one half inch on the yard; heads of large diameter prevail. Cloth tapes are in use in many stores, which through shrinking and stretching are either shorter or longer than the legal measure.

Measuring pumps for kerosene and gasoline with improper adjust-

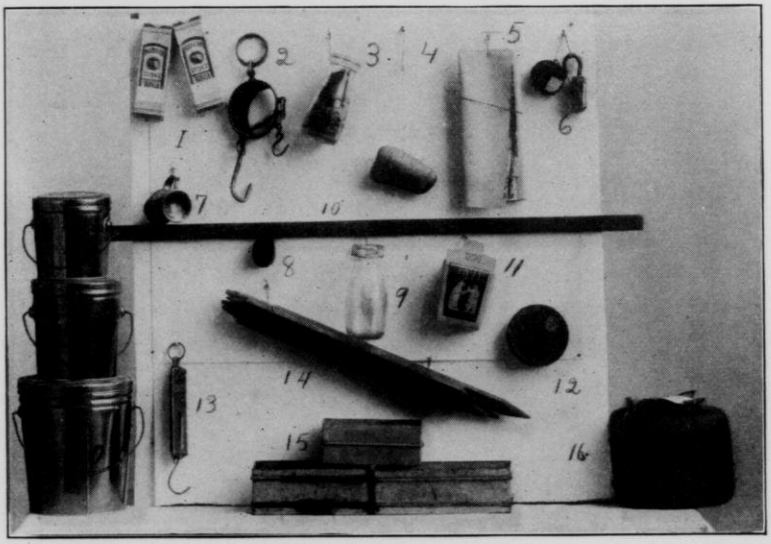

Fig. 9.—(1) The two cartons are exactly the same size, but one contains a ten-cent and the other a fifteen-cent size bottle of lemon extract. (2) The "rag peddler's joy". Four different weights can be obtained on this scale, no one of which is correct. (3) This milk bottle contains over 400 confiscated prescription weights. (4) A stone hung in the cylinder of an oil pump displaced nearly one half pint of oil. (5) The heavy tinfoil and manila wrapping on a two pound print of Limburger cheese that has been weighed in with the cheese. By this trade custom the consumer pays for tinfoil and manila paper at the retail price of the cheese. (6) Inaccurate home-made poise and weights taken from a farmer's scale. (7) Copper measure with the bottom hammered up, making the measure 7% short. (8) Cloth tape one inch short. (9) A milk bottle holding one third quart. Milk bottles of this capacity are forbidden by law to prevent their being sold as pints for which they could readily be mistaken. (10) A yard stick with one end sawed off. (11) Paper ice cream bucket 15% short. (12) A poor job of repair work by an incompetent scale repairer. (13) Spring balance with a sliding front that can be manipulated by a rag peddler to his advantage. (14) Wooden back pieces or spreaders weighing four ounces each and weighed with the meat. (15) Ice cream molds nearly 10% short. (16) This is a ball of binder twine 20% short of the guaranteed length. The lard pails to the left weigh but three, five and ten pounds gross weight. The pails weigh respectively seven, eleven and sixteen ounces.

ments, broken parts and leaky valves, are a fruitful source of producing short measure.

Trade custom is a cloak which is used to cover up a multitude of inequitable practices. Selling by the sack, the basket, the box, the package, the hamper, the load, in which there is no definite standard of quantity are methods of transacting business that are in vogue all over the state and which are encouraged by a certain class of manufacturers and distributors.

The above are but a few of the more common conditions found in all parts of the state, and which with a thorough inspection it is hoped will be a thing of the past.

Faulty Weighing and Measuring Devices

Since the dairy and food commissioner was made *ex officio* state superintendent of weights and measures, faulty scales, weights and measures and faulty use of correct scales, weights and measures have been found as hereinafter enumerated, calling for correction:

Linear Measures:

1. Yard sticks bent, warped and worn.
2. Advertising yard sticks long or short by as much as one-half inch.
3. Counter tack heads over one-eighth inch.
4. Cloth tapes, inaccurately divided, some stretched, some shrunken, as a whole or only in part. In spite of the fact that it would be economy for all users of tapes to use steel tapes or wire tapes, they still use cheap cloth tapes, often to their own detriment.

Liquid Measures:

1. Liquid measures bent and dented.
2. Liquid measures with bottom cupped upward, the curvature of the bottom having been reversed.
3. Liquid measures with a hole in the side or bottom.
4. Fibre ware or earthenware measures broken at the top or cracked.
5. Measures made short.
6. Use of liquid measures to measure dry commodities.
7. Nursing bottles and pressed glass graduates falsely graduated.

Measuring Pumps:

1. Oil pumps frequently used to fill a bottle or can without regard to measure.
2. Stops loose or improperly set.
3. Valves leaky.
4. Gasoline pumps, particularly when not frequently used giving short measure, due to dry or worn valves.
5. Pumps for heavy oils operated too rapidly.
6. Pumps used for a different kind of oil than that for which they were constructed.

Dry Measures:

1. Bottomless measures.
2. Wooden measures cut down so as to reduce the depth.
3. False bottom, tilting bottom, raised bottom or removable bottom, to decrease the depth.
4. The bottom reduced in diameter and the sides relapped.
5. Metal measures, bent, broken or dented.
6. Measures of inaccurate capacity.

Weights:

1. Weights, old, rusty or worn.
2. Weights that have been drilled or part sawed or chipped off to decrease their weight.
3. Lead-filled, zinc, or brass-cased weights that have come apart and the bottom or part of the filling lost.
4. Knob weights with knob broken off or replaced by another.
5. Hollow weights with loose filling, part of the filling having been removed.
6. Weights with lead plugs, the plugs removed or scraped.
7. Cheap cast weights which even when new have never been adjusted.

Equal Arm Scales or Balances:

1. Scales out of balance, heavy on the scoop side, the plea being that down weight is given.
2. Scales that balanced with no load but not when equal weights were placed on both pans.
3. Scales that balanced when equal weights were placed in center of each pan, but not when one of the weights was shifted forward or backward or to the right or left.
4. Scale insensitive due to worn or broken parts or poor construction.
5. Scale placed in an inclined position.
6. An outside obstruction, paper bag, box, etc., rubbing against one of the pans.
7. Metal articles, such as lead, iron rings, hooks, etc., or potatoes or other articles placed under the scoop or on the cross under the scoop.
8. Folded paper bags put under scoop side or heavy paper in the scoop.
9. The poise light, thus registering more than is really on the scoop.
10. Equal arm scales with separate scoop and a loose counterweight or ring, the omission of which causes serious error.

Unequal Arm Counter Balances:

1. Scales not in balance when poises were all on zero and pan empty.
2. Scales which balanced without scoop or pan, this being used however when commodity is weighed.
3. Scales having objects (wood, old iron, paper, etc.) attached to beam which were weighed with each parcel of commodity sold.
4. Counter poise hanger, counter poise weights, weights or sliding poise lighter or heavier than correct value.
5. Scales having beams graduated irregularly.
6. Scales having poise or beam worn so that when poise was placed back as far as possible it would not be on zero or beam.

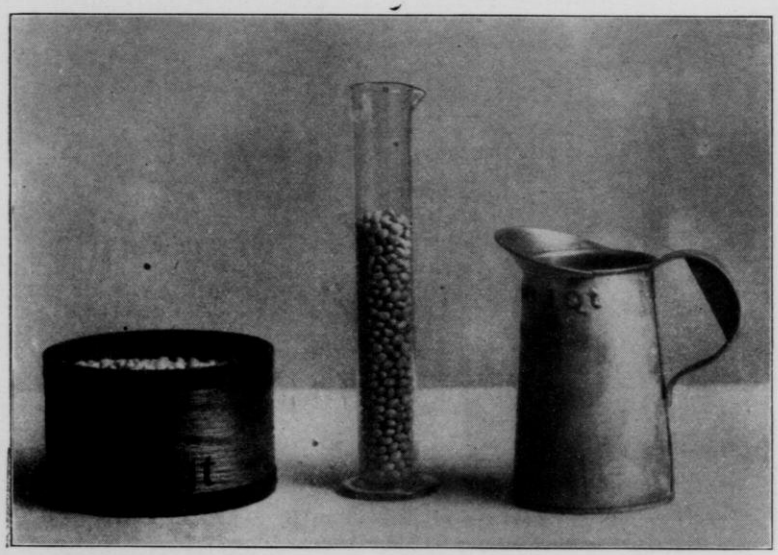

Fig. 10.—Dry and Liquid Measures. A dry quart measure is nearly 15% larger than a liquid quart measure. A liquid quart measure of beans will only fill the dry quart measure to the height indicated in the picture. The glass graduate in the center shows the difference in capacity amounting to 9.45 cubic inches between the liquid and the dry quart measures. It is illegal to sell beans, cranberries and other dry commodities by liquid measure.

7. Scales having easily accessible adjustable screws by which balance might be easily and quickly changed.
8. Did not weigh properly on all parts of pan.
9. Had separate scoop and counter weight, the omission of which latter caused serious error.
10. Great friction in bearings or movable parts.

Platform Scales:

1. Scale did not balance when platform was empty and poise on zero.
2. Scale weighed incorrectly for weights on platform.
3. Check rods too loose or too tight.
4. Counterpoise weights light, heavy or of wrong leverage.
5. Sliding poise wrong due to weight or wearing of the same at index.
6. Platform binding on the frame.
7. Scale did not weigh same on different parts of the platform.
8. Balance ball would not balance scale when empty.
9. Dirt on scale or in pit, viz: straw, mud, etc., on any of the movable parts of the scale inside or outside.
10. Bearings broken.
11. Scale too sluggish.
12. Bearings dull.
13. Bending of parts of scale or levers; giving of foundation when full load was placed on platform.
14. Beam worn, or unevenly notched or divided.
15. Scale insufficiently sensitive.
16. Scale with magnet placed near counterpoise of beam so as to draw down beam.

Spring Balances:

1. Scales on which the hand or index marker did not point to zero when hook or pan was empty.
2. Scales of the straight front type on which the graduated face was not riveted to frame and could be raised or lowered while weighing was being done.
3. Scales on which pointer interfered with face which caused pointer to stop before indicating full value or weight.
4. Scales of the straight front type on which top bolt or ring holding spring had been loosened and could be raised or lowered at will of operator.
5. Scales which carried extra hook attached to spring on which objects could be swung such as bills, etc.
6. Scales having two hooks of different weights which could be attached to spring or scales having two hooks which registered different weights on graduated face according as object was placed on one or the other. These used by junk dealers.
7. Balances having easily accessible adjusting screws by which position of pointer might be quickly and easily changed.
8. Hanging scales on which the bar to which the pen or hook was attached worked hard in its slot or caught at certain points.
9. Scales with no dampering device, oscillating so freely and so long that there was a tendency to read the pointer before it came to rest.
10. Objects attached to the hook, pan frame, beam or under the beam.

11. Scales with graduations so closely spaced that an accurate reading was impossible.
12. Scales of large capacity and consequently each division representing a considerable weight used to weigh small quantities such as a 100-pound or 50-pound spring scale used in the sale of commodities when generally not over one to five pounds are weighed in retailing meat, groceries, etc.
13. The spring weakened or drawn up too tight.
14. Scales ostensibly showing weight on the customer's side but not so doing because no index line was provided.
15. Scales where the dealers' and customers' sides did not correspond.

Computing Scales:

1. The computing part of the scale, namely, the divisions or figures falsely placed so that the correct value might not be indicated when a certain weight was placed on the scale, or inversely, when a certain sumber of cents worth of a commodity at a certain price per pound was to be weighed, the wrong quantity of the commodity was delivered although the money value indicated might be the required one.
2. Scales on which index mark or pointer was so far removed from the divisions or figures, that the reading obtained depended upon the position of the observer.
3. Division so closely placed that accurate reading was difficult.
4. The ounce and pound values on the customers' side not corresponding with the dealers' side or the index mark or line omitted from either side.

Governors' Messages, Legislation

It was owing to such conditions as are recounted in the foregoing that dairy and food and drug and weights and measures laws have been enacted and the dairy and food and weights and measures department established and maintained for the enforcement of the same. The public demand for this work has been voiced in the recommendations of governors for the last three decades.

The law creating the office of dairy and food commissioner was established by the legislature of 1889 under the administration of Governor Hoard and upon the recommendation of Governor Hoard "for the suppression of the fraudulent manufacture and sale of imitation butter and cheese as well as the sale of adulterated, impure or diluted milk, and the wide-spread and rapidly increasing adulteration of the food of the people."

In his message to the legislature of 1895 Governor Upham stated:

"The high reputation which the Wisconsin cheese product earned, and for a long period maintained in the market, has been injured by the

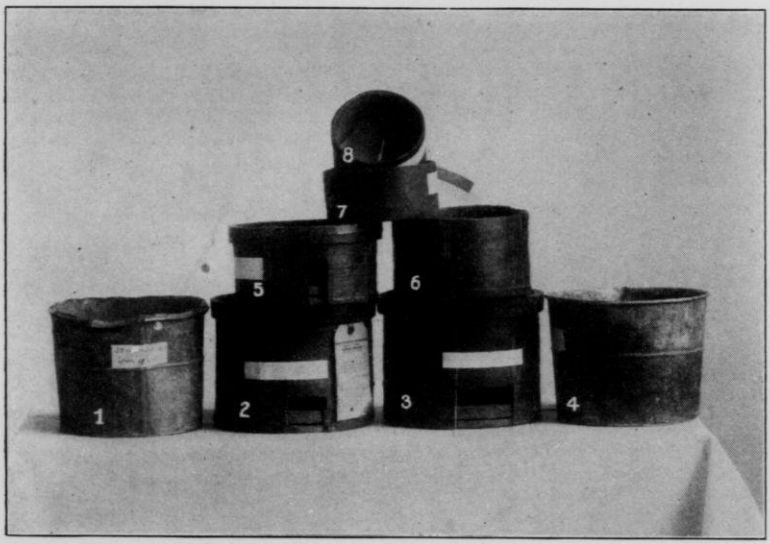

Fig. 11.—False Measures. (1) The top of this measure has been battered so as to shorten its capacity. (2, 3) Peck measures cut to show the false bottoms. (4) Graduated measure in which it is impossible to determine proper heap when half the capacity is measured. (5) One-half peck measure with double bottom. (6, 7) "Cut down" measures. (8) Four thicknesses of card board were placed in the bottom of this measure to lessen its capacity.

manufacture within the state and sale of what is called filled cheese, greatly inferior in quality, but not distinguishable from the better product by ordinary inspection. While not favoring paternalistic legislation, I deem it to be the duty of the legislature to protect by adequate measures this great industry against permanent injury by fraud, and to protect the people against imposition. I recommend, therefore, the enactment of some well-considered law which shall, under appropriate penalty, compel the manufacturers and vendors of such cheese to so brand, mark or color it that it shall no longer be sold for what it is not.

In this connection I commend to your attention the necessity for legislation which shall protect the buttermakers of the state from unfair competition with substances manufactured in the similitude of butter, and sold as butter, which are not made from milk or cream. * * *

Those who wish to buy butter and who suppose they are paying for butter, the product of the dairy, are entitled to what they buy and pay for. Those who wish to buy oleomargarine or other substitutes for butter are entitled to what they pay for; but the farmer and other dairymen ought not to be, in the manufacture and sale of the genuine article, brought into competition with any substitute not distinguishable from butter."

The first comprehensive food law in Wisconsin to define adulterated food was enacted in 1897 during the administration of Governor Scofield. In 1899 Governor Scofield in his message to the legislature after commending the work of the dairy and food department said:

"The protection of the people against adulterated and deleterious food is a duty which may well claim serious attention from the state."

In his message to the legislature of 1905 Governor LaFollette said:

"The work of the dairy and food commission concerns every citizen of the state. Its function is upon the one hand, to promote our great dairy interests, and upon the other, to protect the consuming public against adulterated dairy and other food products. * * *

Some changes are needed in the food laws for the purpose, in some cases, of removing ambiguity; in others, of making them more workable; in others, of removing doubt as to their constitutionality; and in still others, to give added powers to the commission to protect the public against food adulteration."

In 1907 Governor Davidson in his message to the legislature stated:

"Needed amendments to existing food and dairy laws should be made, necessary new laws enacted and the commission so strengthened that the important duties entrusted to it may be so discharged as to give the largest measure of protection to the public."

In 1909 in his message to the legislature, Governor Davidson said:

"The object of the dairy and food laws and their enforcement is protection of the public health, and security to the consuming public against fraud and deception in the manufacture and sale of dairy and food products. * * * That there has been effective enforcement of these laws and great progress made in driving adulterated and misbranded food products from the market is common knowledge. Improvement in the quality of dairy proucts is such that investigation by the United States officials for the year 1907 shows that patrons of Wisconsin creameries received a higher price per pound for butter fat than those of any other state investigated. * * *

Amendments to the dairy and food laws required to correct technical defects which experience has shown to be necessary should receive due consideration."

In 1911 the message of Governor McGovern to the legislature contained the following:

"Investigations recently conducted in a number of the larger cities of the state show that nearly half the scales used in weighing ordinary merchandise were wrong ,in practically every instance giving short weight, while of the measures tested over one-fifth were condemned for like reason. The trouble with the present law is that responsibility for its enforcement is divided among a great many public officials and its administration is so hampered by defective provisions that little or nothing can be accomplished under it. For example, it contains the provision that, in order to justify conviction, the state must show that the person prosecuted *intended* to commit a fraud. Of course, this cannot be satisfactorily shown in one case in a hundred of underweighing or short measuring. An effective weights and measures law is needed, which, when impartially enforced will save the people many millions of dollars each year now lost in short weights and measures. Such frauds are especially to be condemned as the injury thereby perpetrated naturally falls most heavily on poor people who buy frequently in small quantities, precisely the class of persons who can least afford to be swindled in this way."

BUTTER, CHEESE, AND CONDENSED MILK—VALUE OF PRODUCTS, FOR LEADING STATES: 1909 AND 1899.

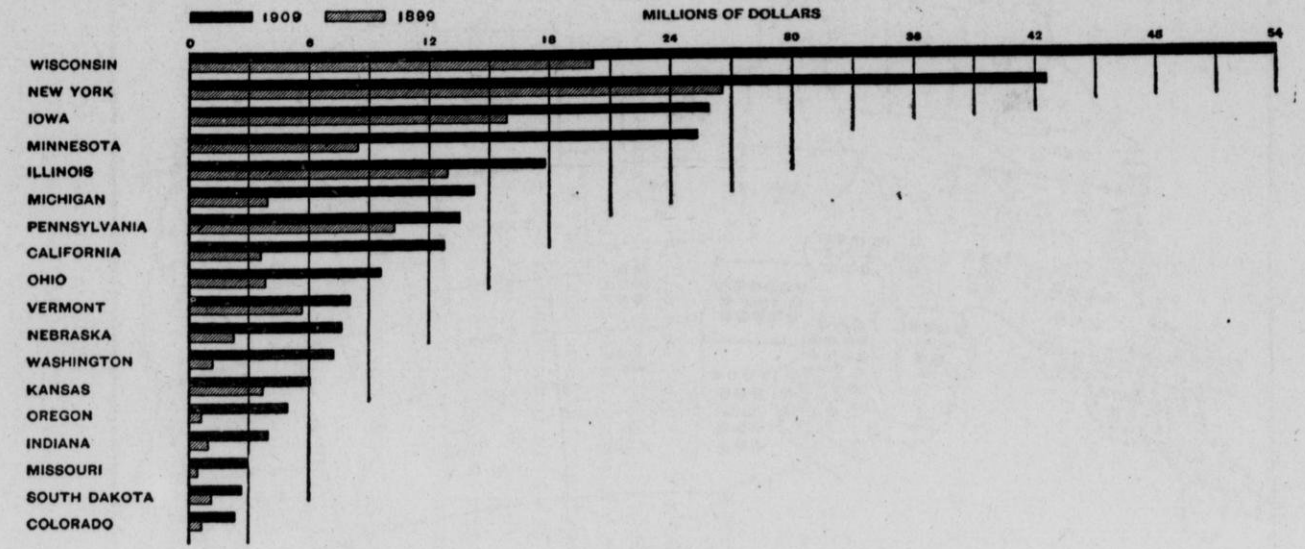

Fig. 12.

BUTTER, CHEESE, AND CONDENSED MILK—VALUE OF PRODUCTS, BY STATES: 1909.

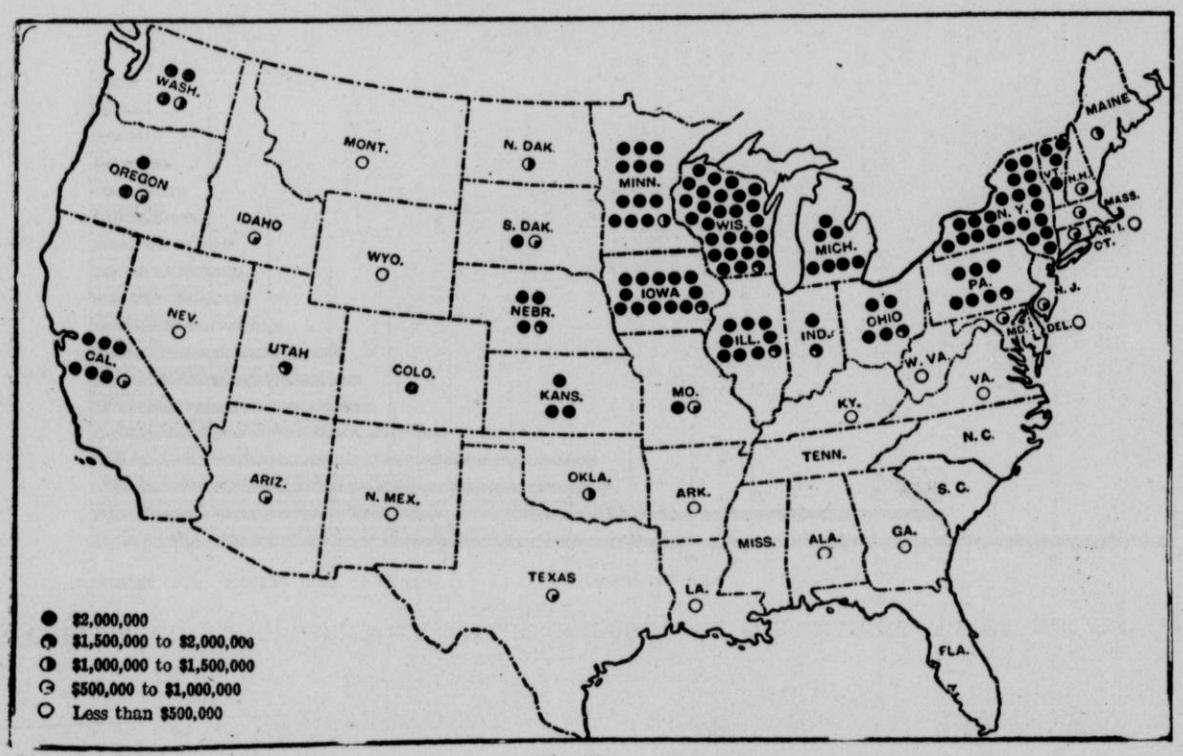

Fig. 13.

ESTIMATED VALUE OF WISCONSIN DAIRY PRODUCTS FOR THE YEAR 1913.

	Pounds	Value
Creamery butter	110,751,073	$31,010,300
Farm-made butter	22,935,469	5,733,867
Factory-made cheese	189,524,029	28,428,600
Farm-made cheese	667,720	101,659
Condensed milk	39,854,029	6,845,706
Milk other than that furnished cheese factories, creameries and condenseries		9,807,000
Estimated market cream including that used for ice cream manufacture		3,500,000
Estimated value of milk and cream shipped to Chicago, St. Paul, Minneapolis, Dubuque, and other points outside of Wisconsin		2,854,500
Skim-milk		9,058,107
Whey		2,738,761
Total		**$100,078,500**

The foregoing figures were obtained as follows: For the number of pounds of creamery butter, the number of pounds reported in the Thirteenth U. S. Census, based upon the year 1909, was increased by one half the average annual percentage of increase of the years 1905 to 1909 inclusive, and the value of this butter was estimated at the average price of Wisconsin butter sold during the years 1910, 1911, 1912 and 1913, as reported in the Yearbook of the Department of Agriculture, Washington, D. C., and as elsewhere published in this report.

For the number of pounds of farm-made butter, the number reported in the Thirteenth U. S. Census for the year 1909 was decreased by the average annual percentage of decrease for the years 1905 to 1909 inclusive. The value of this butter was estimated at 25 cents per pound.

For the number of pounds of factory-made cheese, the number of pounds reported in the Thirteenth U. S. Census based upon the year 1909 was increased by the average annual percentage of increase for the years 1905 to 1909 inclusive and the value of this cheese was estimated at 15 cents a pound.

For the number of pounds of farm-made cheese, the number reported in the Thirteenth U. S. Census for the year 1909 was decreased by the average annual percentage of decrease for the

years 1905 to 1909 inclusive. The value of this cheese was estimated at 15 cents a pound.

The figures for the amount and value of condensed milk were obtained by increasing the amount and value of the same as reported in the biennial report of the dairy and food commissioner for 1911–12 in the ratio which the number of condenseries now in operation bears to the number of condenseries in operation at the time the figures given in that report were obtained from the condenseries.

The amount of milk produced on the farms and not sold to creameries, cheese factories and condenseries was estimated as the amount used for family consumption by the total population of the state. In estimating this amount, the data given by Major Alvord, former chief of the dairy division of the bureau of animal industry, U. S. Department of Agriculture, derived from the census of 1909, have been used. Major Alvord found that the average annual consumption of milk per capita was 290.1 pounds.

The estimate of the value of market cream, including that used for ice cream manufacture, is based upon the observation of members of the dairy and food department and the amount of cream sold in 1909 as reported in the Thirteenth U. S. Census.

The value of milk and cream shipped to Chicago, St. Paul, Minneapolis, Dubuque, and other points outside of Wisconsin was estimated from data obtained by representatives of the department in their field work.

In the estimate made of the value of skim-milk, the Gurler method, recommended by Professor W. A. Henry, as the most reliable, was used and is as follows: The value of skim-milk when fed with corn is one half as much per 100 pounds as shelled corn is per bushel and the value of whey is one half of skim-milk. The lowest Chicago cash price per bushel for No. 2 corn as reported in the Yearbook of the United States Department of Agriculture for 1913 was 64 cents. In determining the amount of skim-milk, it is estimated that one pound of butter represents 20 pounds of skim-milk. In determining the amount of whey it is estimated that one pound of cheese represents nine pounds of whey.

AVERAGE PRICE RECEIVED FOR BUTTER BY FARMERS ON THE FIRST OF EACH MONTH.

From the Yearbook of the U. S. Department of Agriculture for 1910.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Illinois	28	27	26	25	24	23	22	23	24	25	26	27
Michigan	29	28	26	26	26	24	23	23	26	27	28	28
Wisconsin	**32**	**31**	**29**	**29**	**29**	**27**	**27**	**27**	**28**	**29**	**29**	**30**
Minnesota	31	29	28	27	27	26	25	26	27	28	28	29
Iowa	30	29	28	27	26	24	24	25	26	26	27	27
United States	28.7	27.9	26.3	25.8	25.5	24.1	23.3	23.8	25.2	26.2	27.1	27.8

From the Yearbook of the U. S. Department of Agriculture for 1911.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Illinois	27	22	21	22	21	19	20	22	23	23	25	27
Michigan	28	24	22	22	20	19	19	20	22	23	25	28
Wisconsin	**30**	**27**	**24**	**24**	**22**	**21**	**22**	**23**	**25**	**25**	**28**	**31**
Minnesota	29	24	22	23	21	20	20	22	24	24	27	30
Iowa	27	22	21	21	20	19	19	22	23	24	25	28
United States	27.8	24.1	22.7	22.6	21.4	20.3	20.4	21.7	23.1	23.8	25.2	27.4

From the Yearbook of the U. S. Department of Agriculture for 1912.

	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Illinois	27	28	26	25	25	24	24	23	24	26	26	28
Michigan	30	31	28	27	27	25	23	23	24	25	27	29
Wisconsin	**33**	**34**	**28**	**28**	**29**	**26**	**25**	**25**	**26**	**27**	**28**	**31**
Minnesota	31	32	29	27	27	27	24	24	25	26	28	30
Iowa	29	30	27	26	26	25	24	24	24	25	27	29
United States	28.1	29.0	27.2	26.1	26.0	24.8	23.4	23.7	24.2	25.6	26.9	28.8

From the Yearbook of the U. S. Department of Agriculture for 1913.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Illinois	28	27	27	27	26	25	25	25	26	27	27	29
Michigan	30	29	28	29	28	26	24	25	25	28	28	30
Wisconsin	**32**	**32**	**32**	**31**	**30**	**27**	**27**	**26**	**27**	**30**	**30**	**31**
Minnesota	31	30	30	30	29	28	25	25	26	28	29	31
Iowa	29	28	28	29	28	26	25	25	26	27	28	29
United States	28.4	27.6	27.5	27.6	27.0	25.5	24.7	24.9	25.9	27.5	28.2	29.2

MISBRANDING OF FOODS IN PACKAGE FORM, LAW AND TOLERANCES.

Following is a copy of section 460laa of the statutes of Wisconsin, effective September 3, 1914, which relates to the misbranding of articles of food; also of that portion of section 4600 which defines food.

The dairy and food commissioner is authorized to enforce all the provisions of this section.

"Foods; false branding of weight, measure, count or contents; prosecution. SECTION 4601*aa*. Any person, who by himself, or by his servant or agent, or as the servant or agent of another, shall manufacture or solicit or take orders for delivery, or sell, exchange, deliver or have in possession with intent to sell, exchange or expose, or offer for sale or exchange any article of food within the meaning of section 4600 of the statutes which is misbranded within the meaning of this section shall be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than twenty-five dollars nor more than one hundred dollars, or by imprisonment in the county jail not less than ten days nor more than sixty days.

The term "misbranded," as used herein, shall apply:

(1) To articles of food, or articles which enter into the composition of food, which, or the package or label of which shall bear any statement, design or device regarding such article or the ingredients or substances contained therein which shall be false or misleading in any particular;

(2) To articles of food in package form which do not bear plainly and conspicuously marked on the outside thereof the name and address of the manufacturer, packer or dealer;

(3) To articles of food in package form if the actual quantity of the contents be not plainly and conspicuously marked on the outside of the package in terms of weight, measure or numerical count; reasonable variations, however, shall be permitted from the stated weight, measure or numerical count, and the dairy and food commissioner shall establish tolerances for the same by rules and regulations; and

(4) To articles of food in package form if the contents of the package as originally put up shall have been removed in whole or in part and other contents shall have been placed in such package.

The term "label," as used in this section and in section 4601, or in any other section of the statutes, relating to the adulteration or misbranding of food, unless otherwise specifically described and provided therein, shall apply to any printed, pictorial, or other matter upon or attached to any package of a food product or any container thereof.

The term "package," as applied to articles of food shall mean a closed receptacle of any kind in which an article of food is kept in stock and which with its contents is sold to the public.

The dairy and food commissioner, by himself, or by his assistants, chemists, inspectors and agents, is hereby authorized to enforce the provisions of this section and for this purpose all the powers conferred upon the said commissioner, his assistants, chemists, inspectors and agents, by sections 1410a, 1410b, 1410d, or by other provision of the statutes are hereby conferred upon said dairy and food commissioner, his

assistants, chemists, inspectors and agents, so far as the same may be applicable.

The provisions of subdivisions (3) and (4) of this section shall not apply to foods in package form when dispensed for consumption on the premises, or when the numerical count of the enclosed units is less than six, or when the net weight of the contents of the package is less than three ounces avoirdupois; or in case of liquids when the contents of the package are less than one fluid ounce; or to fruits and vegetables when such fruits and vegetables are sold by the standard barrel, standard crate, standard box or basket or other standard receptacle as provided in section 1668 of the statutes."

"Section 4600. * * * The term "food," as used herein shall include all articles used for food or drink or condiment by man, whether simple, mixed or compound, and all articles used or intended for use as ingredients in the composition thereof or in the preparation thereof."

The labeling of milk bottles is regulated by a specific law, viz: section 1666a of the statutes. Hence, the foregoing law does not apply to that subject.

It is provided in subsection (3) of section 460laa that reasonable variations shall be permitted from the standard weight, measure or numerical count, and the dairy and food commissioner shall establish tolerances by rules and regulations. The following tolerances or allowable variations from the quantity of the contents marked on the package are hereby established in conformity with the terms of subsection (3) of section 460laa of the statutes, and conform with the national regulations of the same subject:

Tolerances.

(1) Discrepancies due exclusively to errors in weighing, measuring, or counting which occur in packing conducted in compliance with good commercial practice.

(2) Discrepancies due exclusively to differences in the capacity of bottles and similar containers resulting solely from unavoidable difficulties in manufacturing such bottles or containers so as to be of uniform capacity: Provided, That no greater tolerance shall be allowed in case of bottles or similar containers which, because of their design, can not be made of approximate uniform capacity than is allowed in case of bottles or similar containers which can be manufactured so as to be of approximate uniform capacity.

(3) Discrepancies in weight or measure, due exclusively to differences in atmospheric conditions in various places, and which unavoidably result from the ordinary and customary ex-

posure of the packages to evaporation or to the absorption of water.

(4) If the quantity of the contents is stated in terms of minimum weight, minimum measure or minimum count, for example, "minimum weight 16 oz.," "minimum volume 1 gallon," or "not less than 4 oz.," the statement must approximate the actual quantity *and there shall be no tolerance below the stated minimum.*

Discrepancies under classes (1) and (2) of this paragraph shall be as often above as below the marked quantity. The reasonableness of discrepancies under class (3) will be determined on the facts in each case.

Exemptions.

The law exempts from the operation of this statute foods in package form when dispensed for consumption on the premises, or when the numerical count of the enclosed units is less than six, or when the net weight of the contents of the package is less than three ounces avoirdupois; or in case of liquids when the contents of the package is less than one fluid ounce; or to fruit and vegetables when sold by the standard barrel, standard crate, standard box or basket or other standard receptacle as provided in section 1668 of the Wisconsin statutes.

WEIGHTS AND MEASURES.

Pursuant to the recommendation of Governor McGovern to the legislature of 1911, that legislature made radical changes in the weights and measures law of Wisconsin.

It made the dairy and food commissioner *ex officio* state superintendent of weights and measures and placed upon him as state superintendent of weights and measures numerous duties and responsibilities. Among these he was required to have the custody of the state standards adopted by section 1658 of the statutes and to correct the standards of the several cities as often as once in five years. He was required to have general supervision of the weights and measures and weighing and measuring devices of the state and in use in the state and, upon the request of any citizens to test or calibrate weights, measures, weighing or measuring devices, and the apparatus used as standards in the

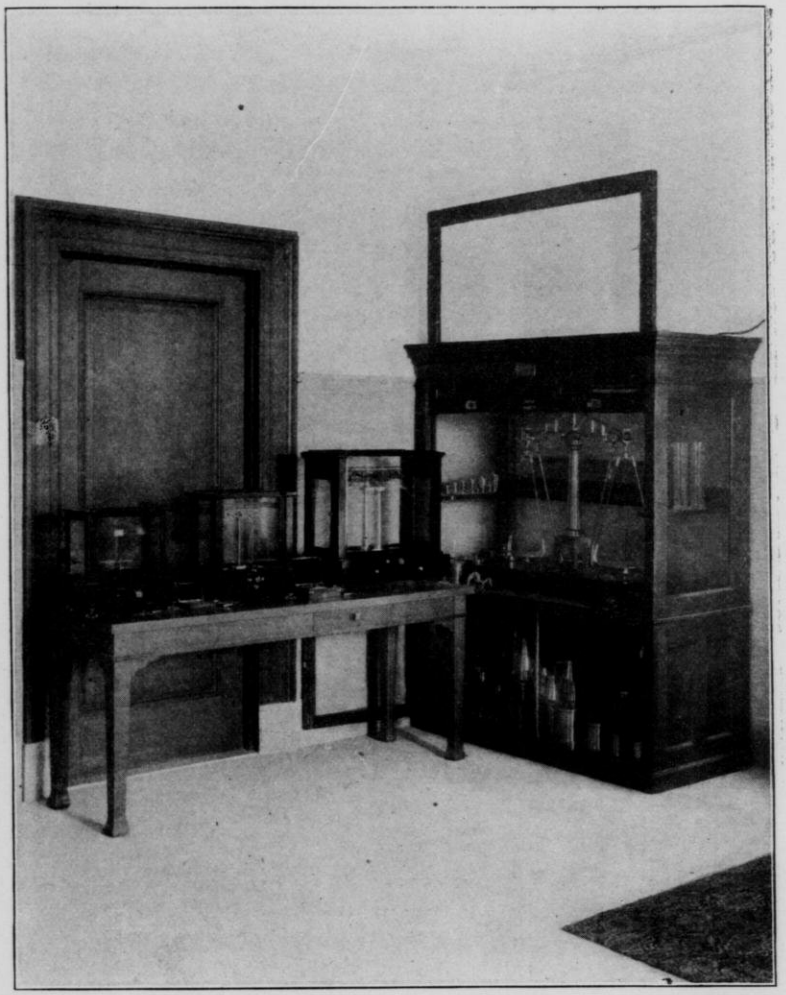

Fig. 14.—Corner in office of weights and measures, balances and state standards.

state. He was required by himself or by his inspectors at least once annually to test all scales, weights, and measures used in checking the receipt or disbursement of supplies in every institution under the jurisdiction of the state board of control. He was required himself or by his inspectors at least once in two years to visit the various cities of the state to inspect the work of the local sealers and in the performance of such duties he or his inspectors by his direction might inspect the weights, measures, balances or any weighing or measuring appliance of any person, firm, or corporation with the same powers as the local sealer of weights and measures. He was required to issue from time to time regulations for the guidance of all sealers which regulations govern the procedure to be followed by those officers in the discharge of their duties and in those regulations he was to prescribe the amount of tolerance to be allowed.

The weights and measures law of 1911 required that the cities of more than 5,000 population should have a city sealer of weights and measures to be appointed by the mayor, and the duties of such sealers were specified.

Besides these city sealers of weights and measures for doing the actual inspecting, testing, sealing or condemning of weights and measures in their respective cities, and otherwise enforcing the weights and measures law, the legislature of 1911 provided for sealers of weights and measures in the state at large; that is, for the territory outside of these cities, the chief inspector of weights and measures appointed under subsection 1 of section 1659 and such assistant dairy and food commissioners and such cheese factory, dairy and food inspectors, and such creamery, dairy and food inspectors, as might from time to time be so designated by the state superintendent of weights and measures, should act *ex officio* as sealers of weights and measures with like authority, powers and duties as prescribed for city sealers in subsections 2 to 4, inclusive, of section 1661. It became the duty of the dairy and food commissioner, *ex officio* state superintendent of weights and measures, in addition to those duties hereinbefore indicated and including the entire supervision of weights and measures throughout the state, to provide for the actual inspection, testing, and sealing or condemning of all weighing and measuring appliances in all territory within the state except the cities of 5,000 or more inhabitants.

A better comprehension is gained of the vast amount of work thus laid upon the dairy and food department by the legislature of 1911, when it is stated that the population of the state, exclusive of that in cities of more than 5,000 inhabitants, in which territory the state department is required to do all the work of inspecting, testing, sealing, etc., in addition to the general supervision of the cities indicated, is one and two thirds times the population of the cities of 5,000 or more inhabitants. That is to say, by the weights and measures law of 1911, not taking into consideration the added burdens due to the greater distances to be traveled by the state sealers of weights and measures than by the city sealers, and basing the amount of work on the ratio of population, the legislature of Wisconsin laid upon the dairy and food department one and two thirds times the amount of work which is provided should be done by the sealers of weights and measures in thirty-six cities, each of which cities was required to have at least one sealer.

At the time the weights and measures work was put upon the dairy and food department Wisconsin had a total of 3,048 cheese factories, creameries and condenseries. Illinois had 306; Iowa, 503; Michigan, 531; Minnesota, 927. This shows that the dairy inspection in Wisconsin at that time covered 781 more cheese factories, creameries and condenseries than were covered by the dairy and food departments of all these four bordering states,—Illinois, Iowa, Michigan and Minnesota. That there were 150,000 dairies in the state that sold dairy products of some kind is a conservative estimate.

When it is recalled that the law requires the dairy and food commissioner personally or by his assistants or inspectors to inspect any milk, butter, cheese, lard, syrup, coffee, tea or other article of food, drink, condiment, or drug which he may suspect or have reason to believe impure, unhealthful, misbranded, adulterated, counterfeit, or in anyway unlawful, offered for sale where produced or in any of the thousands of groceries general stores, meat markets, drug stores, and places where beverages of various kinds are sold, it becomes apparent that the task required of the dairy and food department was herculean.

By the terms of the statute, the creamery or cheese factory, dairy and food inspectors were required to be expert creamery buttermakers or cheesemakers, skilled in the technical work of

cheese factories or creameries, competent judges of creamery or cheese factory products, and versed in modern scientific and practical dairy husbandry. A description of the work of these inspectors, having been given in the biennial report for 1911–12, is not repeated here. A somewhat cumbersome equipment is required for dairy, creamery, and cheese factory inspection.

For the work of the dairy and food commission at the time the weights and measures work was added the law had provided 23 persons, including the dairy and food commissioner. For the additional work, due to the new weights and measures law, this number was increased by only seven by the legislature of 1911.

The new weights and measures law making the dairy and food commissioner *ex officio* state superintendent of weights and measures became effective July 7, 1911. Outside of a few of the larger cities of the state, no one was familiar with weights and measures work. Practically nothing had been done in the state in the testing and sealing of weights and measures except in two or three cities.

The problem was akin to blazing a path through the unexplored forest or piloting a ship over an uncharted sea. The law itself possessed many ambiguities and complexities. We had to learn what was to be done, how to do it, and what appliances were required and how to use them. The field work was to be done by dairy and food inspectors already in the dairy and food department and by new ones to be selected, all without previous knowledge or experience in this line of work. Not the least among the difficulties was the adjusting of the weights and measures department to the dairy and food department without either temporarily or permanently lessening the efficiency of the latter. Under such conditions it is obvious that the plans at first adopted must be of a tentative character, to be changed as experience should disclose the need.

The law made it a duty of sealers of weights and measures to inspect, test, try, and ascertain if they are correct all weights, scales, beams, measures of every kind, instruments or mechanical devices for measurement, and tools, appliances or accessories connected with any or all such instruments or measurements employed in determining the size, quantity, extent, area, or measurement of commodities, things, produce, articles for distribution or consumption offered or submitted for sale, hire or award; and made it a misdemeanor to use any weighing or measuring

device in the buying or selling of any commodity or thing which had not been sealed by a sealer of weights and measures within one year.

State sealers must be conversant with the great variety of scales and weights, of measures and measuring devices, used in factory, mill, and store, and they must be field trained by the chief inspector of weights and measures or by inspectors who have been trained by him before being thus assigned to the responsibility and technical duties prescribed by law. Many patents have been taken out by manufacturers within the past twenty years on types of scales among which may be enumerated a great variety of computing scales used by grocers and at meat markets, of automatic scales used in weighing flour, grain and coal, of dial attachments to platform scales for rapid weighing in condenseries and in freight and express offices. These scales are a complicated series of levers, springs, spindles, racks and pinions, pendulums, dash-pots, bearings and pivots, a defect in any one of which or in any part of which will cause an error in weighing. To be able to locate errors the sealer must be familiar with scale construction. The sealer must also have a knowledge of the durability, tensile strength and hardness of materials used in scale construction. Are the bearings made of cast iron, tempered steel, or chilled iron? Are the levers of sufficient weight or properly trussed to withstand the maximum load placed on the scale? The sealer must be trained in these matters before being assigned to assume the responsibile duties of this office.

Measuring devices are now replacing the quart and gallon measure for kerosene and gasoline, syrups and lubricating oils. Properly to inspect and ascertain defects in such pumps and measuring tanks requires technical knowledge and training. The testing of the delicate balances and weights in jewelry stores, creameries, and drug stores requires men skilled in the use of scales that record milligrams and grains in the place of pounds and tons. The testing of glass graduates in drug stores and of Babcock milk and cream test bottles used in creameries and cheese factories requires skill in the use of minims and cubic centimeters in place of the gill and the gallon. The sealer of weights and measures, to perform his duties efficiently must be familiar with both metric and English units of weights and measures; with the mathematical principles in ratio, with the laws of physics underlying levers and springs; have some knowl-

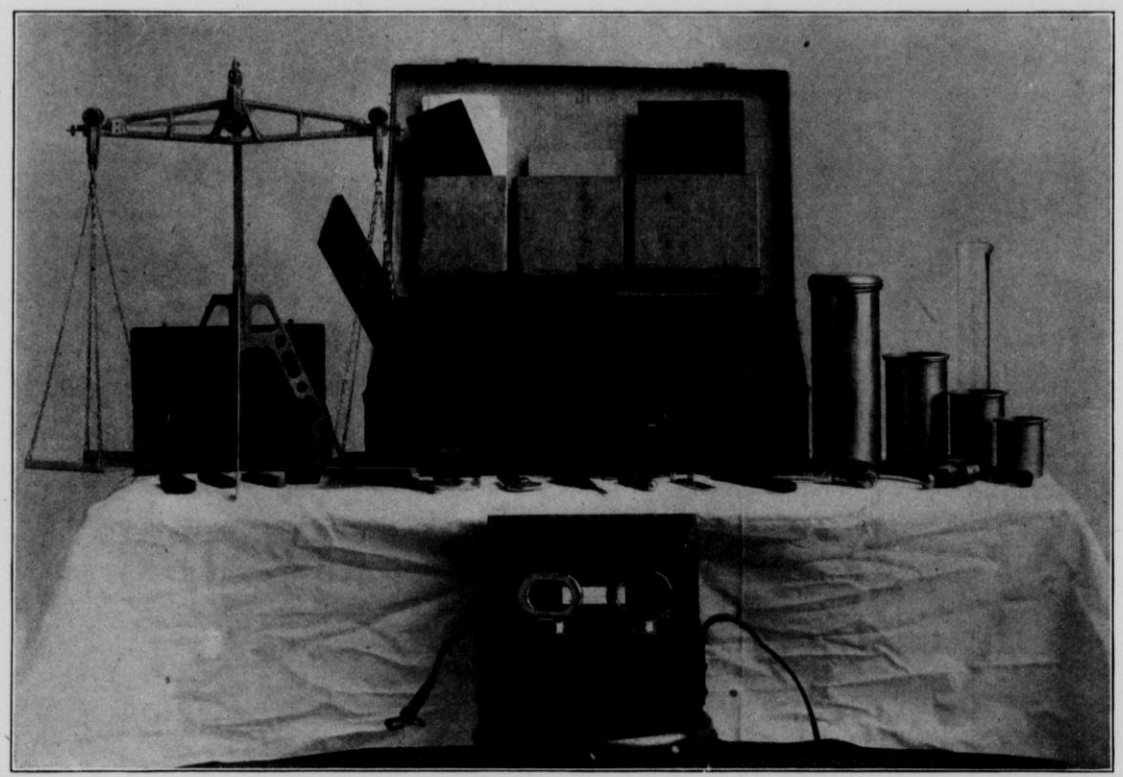

Fig. 15.—Sealer's portable outfit for light inspection, weight 60 lbs.

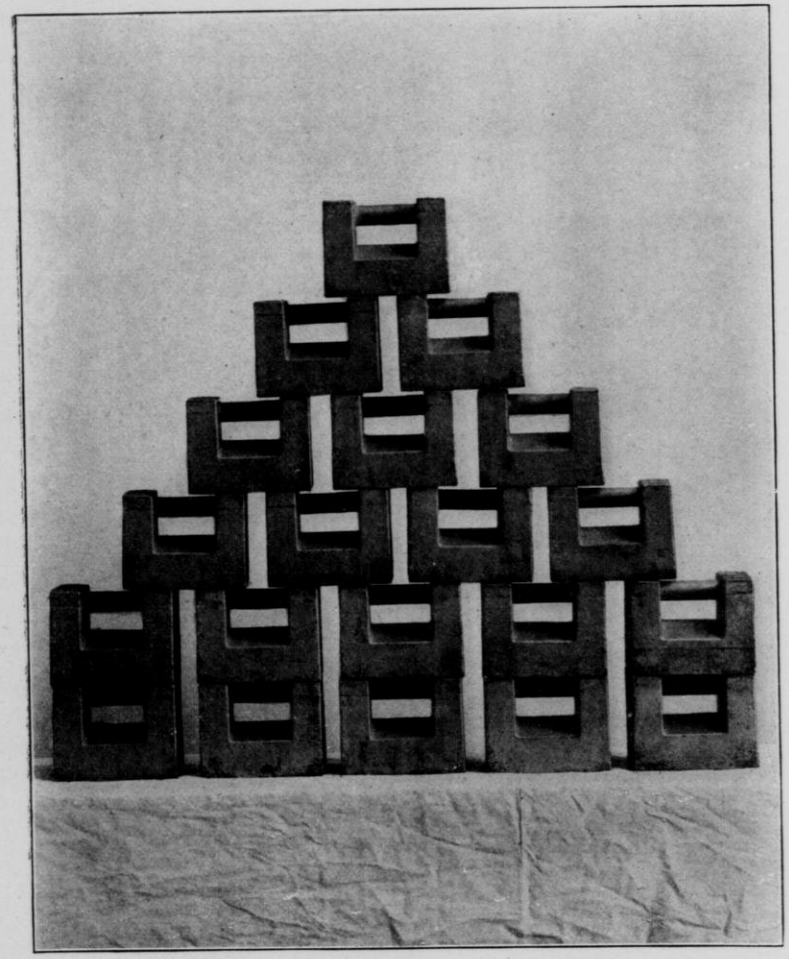

Fig. 16.—Twenty 50-lb. weights for testing wagon and platform scales, a necessary part of each sealer's portable outfit.

edge of mechanics and a knowledge of the requirements of weights and measures laws.

For what is known as light inspection work, the inspector must have a portable outfit, weighing about 60 pounds, and for the so-called heavy weight inspection, that is, for testing wagon scales or other large platform scales, he must have an outfit of at least 1000 pounds, consisting of twenty 50-pound weights. Pictures of these outfits appear elsewhere in this report.

Weights and measures evils exist in not less than five forms:

1. Faulty scales, weights and measures to determine quantity.
2. Faulty use of correct scales, weights and measures.
3. Commodities put up in packages with no indication of the quantity of the contents.
4. Packages falsely marked as to contents.
5. Short measure of commodities not in package form.

Merely to make first inspections and tests and to seal the appliances found correct and condemn outright or condemn for repairs the various kinds of weighing or measuring devices used in trade, and not return again for reinspection would fall far short of meeting the requirements of the weights and measures law or being a corrective of the weights and measures evils. Follow-up or reinspection work is required to see whether the use of condemned apparatus has been discontinued; to see whether apparatus condemned for needed repairs has been properly adjusted, and in case it has been so adjusted, to seal the same; to see whether correct apparatus is correctly used; to see whether commodities are being sold in quantity less than presented; and to see if there are any violations of the law and to cause violators of the law to be prosecuted.

First and foremost, in whatever work was undertaken accuracy and efficiency were fundamentally important. In view of the vast field to which the jurisdiction of the department had been extended and the complexities involved, some division of labor was required. It was deemed wiser and safer at the outset to instruct and train a few sealers to efficiency in a portion of the work gradually broadening the scope and increasing their number as added training and experience fitted them to assume new and greater responsibilities, than to push into the field a full force of inexperienced inspectors.

The first of January, 1914, found each inspector who was acting *ex officio* in the capacity of sealer of weights and measures,

doing all kinds of weights and measures work from the testing of prescription balances of the apothecary to the testing of wagon scales and other large scales in the territory assigned him.

The plan in view has been to have state sealers of weights and measures inspect and report on the sanitary conditions of the establishments whose sanitary conditions come within the jurisdiction of this department and which are visited by them, the follow-up sanitary work to be done chiefly by the food inspectors and the assistants; and have the inspecting and testing of weights and measures in use in creameries, cheese factories, condenseries, etc., done by the creamery and cheese factory inspectors. Owing to uncertainties as to the jurisdiction of this department in sanitary inspection in consequence of legislation in 1913 and to the fact that time is required for training creamery and cheese factory inspectors to do weights and measures work and to procure equipment for the same, the putting of this plan into operation has been somewhat delayed, but is now in operation.

The weights and measures law of 1911 sought to carry into effect the principle set forth in the terms of section 9 of the constitution of the state of Wisconsin, viz:

"Every person is entitled to a certain remedy in the laws, for all injuries or wrongs which he may receive in his person, property, or character; he ought to obtain justice freely, and without being obliged to purchase it, completely and without denial, promptly and without delay, conformably to the laws."

It had been shown by an investigation carried out by the United States bureau of standards, Washington D. C., in the years 1909–10 in thirty-three states, that the percentages of erroneous scales varied from 35 up to 60 and the opinion was expressed that 80% of those that were incorrect were against the consumer.

The bill as originally introduced in the legislature provided for the appointment by the governor of a state superintendent of weights and measures, separate from and independent of any other office, who should merely have supervision of weights and measures throughout the state; it further provided for county sealers of weights and measures who should do the enormous work of actual testing and sealing or condemning of the various weighing and measuring appliances in their respective counties. After numerous and long-continued hearings in the committees this bill failed to be recommended for passage. Instead, the pres-

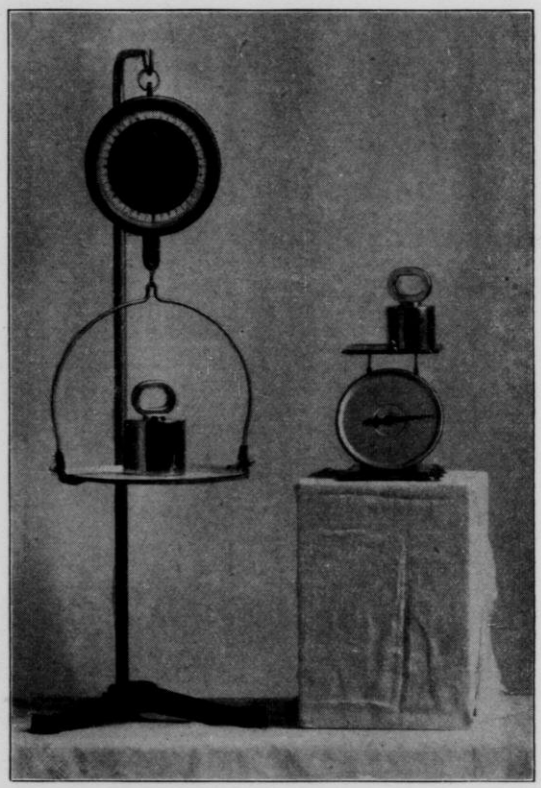

Fig. 17.—Family Spring Scales. The scale to the left weighs accurately. The five pound weight placed on the scale to the right moves the pointer to the 5½ pound mark. This is not due so much to the spring as to friction or rubbing caused by shifting the weight to one side of the pan. This does not happen when the pan is suspended. The scale on the left can be hung from a swinging bracket fastened to the kitchen wall. The pan can be folded over so that when not in use the scale can be pushed back against the wall. This type of scale is moderate in price and can be used to advantage by the housewife in reweighing purchases.

ent law was reported. The argument which seemed to prevail, as I am informed, was that this work would be done more efficiently by the state department and that by this means the respective counties would be saved the expense of maintaining county sealers of weights and measures. The expense thus saved to the counties was to be put upon the state.

That there has been great reform wrought in weights and measures and in weighing and measuring throughout the state, although the law contains defects, is a matter of common knowledge.

The sealers inform me that in a great majority of cases their work is approved and commended by dealers who realize that the work of the sealers is promotive of fair dealing. Comparatively few of the dealers show disapproval. That disapproval must be prompted by personal rather than public interest, is apparent.

Total Number of Tests Made

The total number of tests of weighing and measuring appliances of all kinds made with a force of 7 men the first year and 9 men the second year by the state department of weights and measures, and by 42 city sealers and deputy city sealers, July 1, 1912 to July 1, 1914, was 460,949.

Of this number 92,140, or very nearly 20%, were found incorrect and were either condemned outright, condemned for repairs or adjusted.

Three hundred eighty-nine thousand, eight hundred and seventy-six were sealed, this figure including those adjusted which were thereupon sealed.

Of the total number inspected 167,585 inspections were made by the state department. Of this number 40,192, or very nearly 24% were found incorrect and were either condemned outright, condemned for repairs or adjusted, and 139,545 were sealed, those adjusted having been thereupon sealed.

In compliance with law, the scales, weights, and measures used in checking the receipt or disbursement of supplies in every institution under the jurisdiction of the state board of control have been tested. The following tabulation shows the number and condition of the scales in those institutions:

Inspections in State Institutions. 1914.

	Sealed.	Adjusted.*	Condemned for repairs.	Condemned.	Total.
State Hospital for the Insane...	77	10	4	19	100
Northern Hospital for the Insane	27	.....	.....	.....	27
School for the Deaf	15	1	6	.....	21
School for the Blind.....	26	3	.....	.....	26
Industrial School for Boys.....	38	8	2	1	41
State Prison	76	.....	1	2	79
State School for Dependent Children.....	33	10	.....	.....	33
Wisconsin Home for Feeble-Minded	76	7	.....	2	78
Wisconsin State Reformatory ...	9	.....	2	8	19
Wisconsin State Tuberculosis Sanitarium.....	49	9	1	2	52
Total	426	48	16	34	476

*The appliances adjusted have been sealed and in figuring totals are included in sealed column.

Summary of tests made by city sealers from Dec. 1, 1912, to June 30, 1914:

City.	Sealed.	Adjusted.*	Condemned for repairs.	Condemned.	Total.
Antigo.....	1,619	159	106	518	2,243
Appleton.....	22,700	187	810	2,611	26,121
Ashland....	2,084	318	675	681	3,440
Baraboo*.....	914	.....	.....	10	924
Beloit.....	3,025	45	61	184	3,270
Chippewa Falls.....	1,068	36	7	204	1,279
Eau Claire	2,525	98	215	261	3,001
Fond du Lac.....	3,175	55	38	158	3,371
Grand Rapids.....	1,530	251	59	253	1,842
Green Bay	8,523	1,057	515	938	9,976
Janesville.....	3,015	279	35	93	3,143
Kenosha	2,647	123	80	126	2,853
La Crosse.	3,124	23	58	385	3,567
Marinette*.....	808	14	7	48	863
Madison.....	9,252	208	94	629	9,975
Marshfield...	1,088	62	42	52	1,182
Menomonie.....	820	41	.....	12	832
Menasha.....	751	73	124	41	916
Merrill.....	1,394	71	.....	65	1,459
Milwaukee*.....	95,975	1,410	3,490	3,370	102,835
Neenah.....	1,000	23	25	93	1,118
Oshkosh.....	6,403	560	233	8,557	15,193
Portage.....	1,332	5	4	43	1,379
Racine.....	6,511	354	96	1,080	7,687
Rhinelander	966	25	26	47	1,039
Sheboygan	2,433	251	685	332	3,450
South Milwaukee*.....	457	17	35	92	584
Stevens Point.....	6,012	147	92	2,448	8,552
Superior.....	6,484	453	168	567	7,219
Watertown.....	3,639	232	280	269	4,188
Waukesha	893	5	17	59	969
Wausau	5,146	.....	40	311	5,497
West Allis.....	708	28	44	95	847
Totals.....	208,021	6,610	8,161	24,632	240,814

Adjusted * The appliances adjusted have been sealed and in figuring totals are included in sealed column.

Baraboo.* From Dec. 1, 1912 to Dec. 1, 1913.

Marinette.* From Dec. 1, 1913 to June 30, 1914.

Milwaukee.* Omitting tests in December 1913.

South Milwaukee*. From Sept. 1, 1913 to June 30, 1914.

EXTRACTS FROM DAIRY AND FOOD INSPECTORS' REPORTS.

The following are extracts from inspectors' reports mentioning some of the conditions as found in their field work:

"When making inspections at cheese factories and creameries I have been at the factory early and have where practicable made inspection of the milk and cream cans, and where milk is delivered have used the sediment test as a means of showing the patrons the condition of their milk as to cleanliness, and I will say that the average farmer when he can see the amount of sediment from one pint of milk drawn from unclean cows in unclean surroundings is willing and ready to make needed improvements as to ways of milking and also for having cleaner and more sanitary conditions at time of milking.

During the last two years I have received many requests from factory managers and factory operators to make inspections of milk and cans at their factories as they were not able to make a good product from the milk delivered. In some instances I have been at the factory all day and helped make the cheese and get the maker on the right system of handling the milk.

In making inspection of dairy barns I find there is a general desire among the farmers to have good modern barns or to improve the old ones with cement floors and gutters and plenty of light. More especially is this true in the newer dairy sections of the northern part of the state."

"I have made it a point to be at the creamery or cheese factory in the morning to see the cans as the farmers deliver their milk and cream. In the case of milk I have made sediment tests, showing the farmers the amount of foreign substance in one pint of milk, and explaining the necessity of cleaner milking and handling of milk. I have also inspected the cans as to rust, open seams, and uncleanliness. If cream were being delivered I would inspect the cans and point out the necessity for delivering better cream.

In one instance where I visited a dairy farm, I arrived early in the morning and found the owner and hired man at the barn cleaning out the barn which had one of the old wood floors and when we walked on them the ooze would come up above the planks. The milk was standing in the middle of the barn behind two rows of cows, twenty in number. The cows were all covered with filth. After I had made a thorough inspection of the barn I followed the man to the house where he did the separating. I filled two bottles with milk and in doing so had to use my lead pencil to get the manure and filth through the necks of the bottles.

Old wood creameries are fast being replaced by modern brick or concrete which are much more sanitary. Dairy farmers are building new barns with ample light, ventilation, and concrete floors."

"The conditions of creameries in my territory during the last biennial period have improved very much. Several old buildings have been replaced with modern buildings and equipment which are a credit to the industry. Many of the old buildings have been remodeled and re-

paired by the addition of concrete floors, modern intakes and test rooms which are much more sanitary and greatly facilitate the every-day work. Nearly all creameries are now using modern ripeners instead of open vats for handling cream and drainage systems have been improved until at the present time there are but few creameries in my territory that are not provided with effective drainage systems. The cans and utensils used by dairymen in handling their products are usually in good condition. The practice of using dirty, rusty, open-seamed cans has been almost entirely eliminated.

In a previous report to the department I have spoken of the great loss sustained by dairymen in producing cream that contains a low percentage of butter fat. I have investigated this matter quite thoroughly and have the following facts to present, taking the statistics from many creameries scattered over my territory and without selecting special cases but using all reports wherever obtained. In creameries where patrons deliver their own cream nothing has been charged for hauling.

Creamery No. 1 for the year 1913:

Creamery received 1,024,036 pounds of cream containing 218,684 pounds of butter fat. Had this cream tested 30% fat there would have been 729,000 pounds of cream which would have left 295,000 pounds more skim-milk on the farm. At 30c per hundred this skim-milk was worth $885. The farmers paid 30c a hundred for hauling the cream to the factory, which of course was another loss of $885. The extra cost of handling this 'excess baggage' at the creamery in fuel, labor, wear on machinery, and other incidentals, I have estimated at $200. As this 295,000 pounds of milk became buttermilk at the creamery and estimating that the loss of fat in buttermilk is only $^{2}/_{10}$%, we have a loss of 590 pounds of fat in the buttermilk which at 30c a pound is a loss of $177. Then assuming that the quality of this fat in the heavy cream would have been improved to the extent of ½c per pound, we have a saving of $1,090. The aggregate of the foregoing items is $3,237 which the patrons of this creamery could have saved by skimming the cream to test 30% fat instead of about 22% fat."

After thus describing the conditions of eleven other creameries this inspector summed up as follows:

"The total loss to these twelve creameries is $55,557.50. The average loss per creamery is $4,629.78. My investigation leads me to the conclusion that at least 60 per cent of the creameries in the state of Wisconsin are receiving thin cream, and using the above figures for an estimate we have 600 creameries losing approximately $4,500 each because of low test cream, or a total loss to the creameries and their patrons of over two and one half million dollars each year. I am convinced that the question of low test cream is of sufficient importance to merit the attention of persons who are working for the advancement of the dairy industry."

"There has been a marked improvement in my territory by the installation of sanitary piping for the handling of milk and whey where skimmed, due in great measure to the follow-up letters of the second assistant commissioner. These letters have been wonderfully helpful in remedying sanitary conditions of dairies. For example, on one cream route where inspections were made I found four places that were plainly violations of law. A letter from the department followed each inspection and upon second inspection I found two new separator houses built and the other two separators removed to clean places and kept in sanitary condition.

Thousands of test bottles complying with the law have taken the place of the old bottles, and new cream balances have taken the place of the old ones that in some instances required as much as seven drops of cream to move the pointer one space."

"The conditions surrounding cheese factories are in a general way improving rapidly. Just a few days ago I inspected a factory in ——— county and you would be surprised to see how fine and clean the factory was being kept, not a trace of dirt could be found in the factory. The operator of this factory I consider has chosen the right occupation, but I cannot say this of all of the places I visit for I find some which are just the opposite. I know that the general conditions of the cheese factories as I find them in my travels are about 25 per cent better than they were two years ago.

Creameries in my territories are not very plentiful, but with the exception of a few they are kept in the finest condition. Almost all of them are cooperative and most of them are receiving cream not over two or three days old.

Dairy barns in parts of some of my counties are of the best, but in most places the farmers are very slow in making improvements. In a great many cases to look at the barn from the outside one would imagine that everything was in good shape, but after making inspection of the inside one's opinion would change entirely. The cows are seen standing in filth and partly covered with the same, tied to a high manger with a rope or chain. And then the farmers will say that they bed them well with straw and they won't keep clean. They blame the poor cows when those cows probably have not seen a particle of straw bedding during the entire winter.

The sediment test is opening the eyes of some of these careless dairymen. When they see the amount of dirt filtered from a pint of milk they have delivered, when compared with the sediment test of a clean sample they really come to life and a few of them will go back home with the intention of making some improvement."

"From September 26, 1912, to June 30, 1914, I inspected 613 cheese factories, approximately 4,000 milk cans, made 1,388 sediment tests, 294 dairy inspections, 19 creamery inspections, inspected 6 condenseries, the milk supplies of 25 villages and cities, tested 292 samples of milk, took 17 herd samples, made 230 sanitary inspections of groceries, meat markets, etc., brought 73 prosecutions which resulted in 72 convictions, addressed 4 dairy conventions and 2 institutes, and judged cheese and butter at 4 county fairs."

"Two butchers and four farmers were convicted of selling unwholesome meat, meat of animals diseased at time of slaughter, and one butcher for selling poultry which died otherwise than by slaughter."

"During the two and one-half months I have been engaged in food inspection work I have made 432 food, drug, and oil inspections, 266 sanitary inspections, purchased and submitted to the state chemist 375 samples of foods, drugs, oils, etc., finished inspection in 81 cities or villages and have brought 12 prosecutions which resulted in 11 convictions."

"During the 14 months, ending June 30, 1914, I made 263 cheese factory inspections, 24 creamery inspections, 44 city milk inspections, inspected 5,000 milk cans, made 1,100 sediment tests, tested 278 samples of milk and cream, took 52 herd samples, made 88 dairy inspections, 50 inspctions of meat markets and groceries, brought 53 prosecutions resulting in 53 convictions."

EXTRACTS FROM REPORTS OF STATE SEALERS OF WEIGHTS AND MEASURES.

"In these days of high prices a small inaccuracy in a scale or measure results in a serious loss on the one hand or an illegitimate gain on the other. Dealers and purchasers alike are beginning to realize this and are expressing a desire to have their scales or measures tested oftener than it has been possible for the sealers to do in the past.

As the law requires that all weights and measures and weighing and measuring apparatus used in buying or selling commodities must be sealed, it is necessary that the sealer visit all grocery, dry goods, confectionary, jewelry and drug stores, millinery establishments, meat markets, saloons, garages, hardware and implement stores, warehouses, elevators, and mills, depots, stock yards, slaughter houses, creameries, cheese factories, etc. It can readily be seen that nearly all business establishments depend upon their scales and measures or weighing and measuring devices to determine the weight, extent or quantity of practically everything they buy or sell."

"I have to report that the general conditions have improved and are improving. A number of sources of losses have been stopped by replacing incorrect with correct weighing and measuring devices used in many instances without the knowledge of the user thereof. There are a few cases where it has been plainly shown that scales or weighing or measuring devices have been deliberately tampered with. For example, —liquid measures with tops sawed off or hammered up bottom or made short when new purposely, which made them from six to eight per cent short; gasoline or kerosene pumps or measures, through leaky valves or having been tampered with made to measure nine or ten per cent short; dirty or caked linseed oil measures 12% short; scales used exclusively for weighing coal, 40 pounds fast on a ton; stock scales used for buying stock up to 25 and 40 pounds slow or light on 1,000 pounds, in several instances poise filled with extra lead or other material and in one particular case there was a shortage of 20 pounds on a 200 pound beam, always in the buyer's favor; scale used in cheese factory 2 pounds fast on 100 pounds and in this case the loss figured 45 pounds a month to the proprietor; weights light from constant use or loss of adjusting lead or heavy by extra fillings. In one case a certain buyer's loss figured up to over 1,000 pounds as the result of a single weight found light upon testing.

In regard to try-outs, 15% of the number of articles reweighed were found under weight. I found cereals in package from 7.5% short; seeds of various kinds, 9% short;; seeds and other dry commodities sold by liquid measures as high as 18% short; onions, 20% short; green apples, 18% short; potatoes in large sacks, 5% short, and at retail 16% short, and in one particular instance 38% short; milk delivered to creameries in cans that were 21.4% short and cream in cans that were

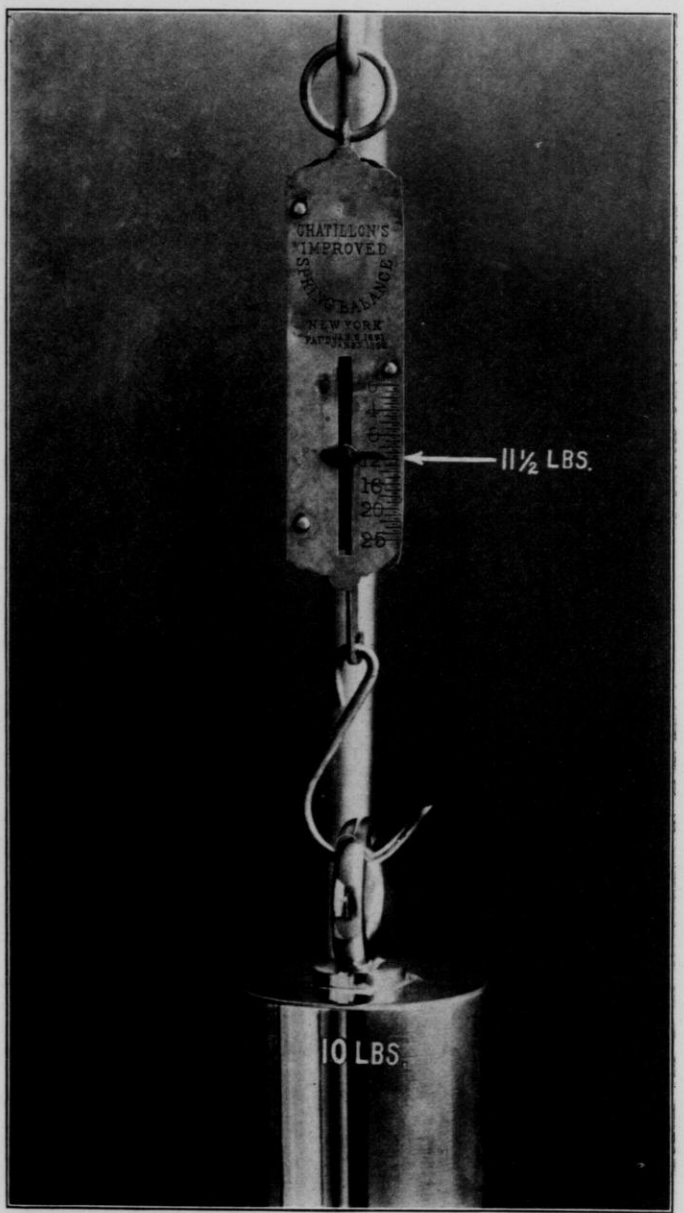

Fig. 18.—Spring Balance. This spring balance was used by a fish peddler and beat the customer out of 1½ pounds on every ten pounds. Scales of this type when weighing correctly are only intended for the weighing of cheap commodities such as rags and iron.

8.33% short. In a number of cases I have traced the shortages to carelessness of the men in charge, but this is not always true as I have found instances where the parties concerned intended to give short weight or measures as was plainly shown."

"Following are a few illustrations of actual conditions which have come to my notice during my period of service:

A certain stockyard scale which was located in as good a farming community as there is in the state and which was used very extensively in buying and selling stock, showed only 485 pounds for 700 pounds and nothing less than 200 pounds would change the position of the beam.

At a meat market a platform scale had been condemned for repairs on account of being 3 pounds out of the way and working very sluggishly, due to dull bearings and a cracked center link. The proprietor undoubtedly, figuring on getting the scale repaired as cheaply as possible and not realizing that it required an expert to do this work, sharpened the bearings and replaced the cracked center link himself instead of forwarding the scale to a regular scale repair shop as he had been advised to do. The result was that when the scale was reinspected the error was 9½ pounls instead of 3 pounds. The proprietor lost confidence in getting the scale repaired, set it aside and purchased a new one.

A certain cheese factory had been having trouble with the firm that bought its cheese, the firm deducting for large shortages on weight right along. The manager finally became provoked, wrote to the weights and measures department and requested them to test their scales, thinking that possibly they might be at fault. I went out there and found the scale to be very good, accurate in every respect with the exception of being a trifle sluggish due to dirty bearings. After cleaning up the bearings the scale worked well. Next, the weights were examined and practically the whole trouble was revealed by the testing of two weights one of which was giving a shortage of 10 ounces on every 5 pounds while the other was giving 12 ounces over weight on every 10 pounds. Both weights were adjusted in ten minutes time and the cause of trouble was settled.

While inspecting the scales at another cheese factory where all the scales proved to be in perfect condition, the cheesemaker stated that he had experienced considerable trouble on account of a claim made by one of his patrons that his scale was wrong. The patron had been weighing his milk at home and always found a considerable shortage at the factory. The agitation had become so intense that a number of other patrons who did not happen to have any scales of their own had questioned the honesty of the cheesemaker. I decided to test that patron's scale and found the leverage of the scale was wrong, causing an error of almost 2 pounds on every hundred pounds and of course in his favor. Besides this the scale had no check rods thereby causing it to bind occasionally. It had soft, dull and rough cast iron bearings instead of hard, sharp and smooth steel bearings causing the scale to work sluggishly, depending on how and where the weight was placed on the platform. Upon seeing the scale tested and realizing the error, the patron was anxious to have it condemned and stated he would surely have to apologize to the cheesemaker for his unjust criticism of him.

In another instance the proprietor of a large grocery store whose scales I had just finished testing, stated that a certain customer of his had complained at numerous times charging him with cheating at least 10% on weight which he knew to be a fact for the reason that he had reweighed his goods at home. Asking him if he was absolutely certain that his scale was correct, the customer replied that he was. The grocer

said, 'I do not know what kind of a scale this party has, but if my scale is right then his scale must be wrong and I will ask you to test his scale.' I did so. It was a 24 pound capacity hanging spring scale of the type that peddlers used to use, a ring on top and a hook at the bottom. I hung my 5 pound standard weight on it and it showed exactly 4¼ pounds. The 10% shortage was accounted for and the scale was of course condemned whereupon the grocer and customer settled all former short weight disputes."

"In one of the extreme cases an incorrect wagon scale was giving 1,600 pounds of coal for a ton. This was the only wagon scale in the village. About 450 tons of coal were sold over this scale per year, making a shortage of 90 tons per year.

In another case an incorrect counter scale was weighing 3 ounces short on every sale. Figuring 100 sales per day and 300 days per year that the scale was used and averaging the sales at 16c a pound, there was a shortage to the purchasers of $900 per year. But often scales are found to weigh against the merchant as well as in his favor. Merchants are now buying better grades of scales than they did before they were inspected and are also giving their scales better care."

"During the biennial period ending June 30, 1914, I inspected 857 counter scales of which 14% were wrong, 817 computing scales of which 38% were wrong, 422 spring scales of which 40% were wrong, 41 suspension scales of which 26% were wrong, 18 hopper scales of which 33% were wrong, 228 wagon scales of which 57% were wrong, 777 portable platform scales of which 40% were wrong, 51 cream test scales of which 64% were wrong, 10 moisture tests scales of which 30% were wrong, 11 jewelers' and prescription balances of which 27% were wrong, 7 slot machines of which 14% were wrong, 172 dry measures of which 80% were wrong, 3,610 liquid measures of which 10% were wrong, 3,418 counter linear measures of which 38% were wrong, 498 automatic measuring pumps of which 54% were wrong, 7,344 weights of which 17% were wrong, 276 jewelers' and prescription weights of which 18% were wrong, and 47 glass graduates of which 38% were wrong."

"During the biennial period ending June 30, 1914, I inspected 7008 scales, weights, automatic pumps, liquid measures, linear measures, and dry measures of various kinds in different cities, of which number I sealed 5678, and made 20588 office tests, including Babcock milk and cream test bottles, cream scales, pipettes, city standards, state standards and miscellaneous articles sent to the office to be inspected, making a total of 27,596 inspections."

"During the four months ending June 30, 1914, I inspected and tested 5,774 weighing and measuring appliances of various kinds, finding 27% to 35% of the same incorrect."

"During the biennial period ending June 30, 1914, I have made weights and measures inspections at 1,577 establishments, tested 13,391 weights and measures appliances, and made 175 try-outs. Since May 13, 1914, I have inspected 50 cheese factories, 4 creameries, and made 223 inspections of patrons' cans."

REPORT OF INVESTIGATION AS TO ORGANIZATION AND EFFICIENCY.

Made by G. L. SPRAGUE, An Expert Employed by the State Board of Public Affairs.

In the summer of 1912, Mr. G. L. Sprague was employed as an expert by the state board of public affairs in collaboration with the state civil service commission, to make an investigation of the organization and efficiency of various departments in the capitol.

Following are extracts from Mr. Sprague's report to the state board of public affairs, relating to his investigation of the organization and efficiency of the dairy and food and weights and measures department. This publication is deemed fitting as showing the conclusions of an unbiased expert after investigation. This report contains a fuller and more detailed statement of the organization and activities of the dairy and food and weights and measures department than has ever been made, and contains important information which the public is entitled to receive.

1. ADMINISTRATION.

Commissioner. The Dairy and Food Commissioner, aided in every way possible the investigation of which this is a report. There is no question as to the efficiency of the head of this department, neither is there any question as to the great value of the work the Dairy and Food Commissioner has done, and is doing for the state. The Dairy and Food Commissioner has built up a well-selected and well-trained organization, enthusiastic in the work and entirely competent to deal with the various problems of cheese factory, creamery, food, drink, sanitary, and weights and measures inspection.

Office Staff. The office force consists of a secretary who has had wide stenographic and clerical experience. The work of the secretary consists in classifying, indexing and filing all records, pamphlets and documents of the commission; the preparation of suitable forms for various reports required to be submitted by the chemists, dairy and food inspectors and sealers of weights and measures; the compilation, editing, indexing and proofreading of these reports and other material for the biennial reports of the Dairy and Food Commissioner and the annual report of the superintendent of weights and meausres. An examination of the files and indexing and also of the biennial report and the form in which it is prepared and the cross index in the back of the book indicates the high grade work which the secretary does for the Commissioner. The secretary also

is a competent stenographer and whenever needed does stenographic work for the Commissioner and his assistants.

Stenographers. In addition to the secretary there are two stenographers, one of whom holds the exempt position of stenographer and confidential clerk; the other of whom, does stenographic work for the chief inspector of weights and measures. The stenographer and confidential clerk has charge of the filing of all correspondence of the Dairy and Food Commissioner; prepares details for the reports of the Commissioner; assists in the compilation of statistics; does general clerical work in the department as well as stenographic work. The stenographer for the chief inspector of weights and measures files all correspondence relating to weights and measures and keeps whatever records are required of condemned weights, scales and measures; also keeps an account of all freight and express packages received and shipped out of the office; prepares certificates required in the work of weights and measures inspection; does stenographic work and renders other clerical assistance as required.

Comment on Work of Office Staff. The secretary does the most important work of the office staff and is by training able to do higher class of work possibly than the stenographers. There is no difference in the responsibility of the exempt stenographer and the classified stenographer, although there is a difference in their salary. The stenographer of the chief inspector of weights and measures must possess a certain amount of initiative and be able to conduct a portion of the correspondence of the office without dictation. An examination of the files and indices of the secretary and both stenographer shows that the work is neatly done and accurately and that the system is simple and adequate for the needs of the department.

Assistant Commissioners. Properly speaking the first and second assistant commissioners and the chief inspector of weights and measures should be considered as a part of the administrative division of the Dairy and Food Commissioner's organization but it has been deemed better to describe their work in connection with the division of the organization over which they have supervision under the direction of the commissioner.

2. THE CHEMICAL LABORATORY.

Consulting Director. The chemical laboratory is located in the chemistry building of the university of Wisconsin. The quarters are ample and the equipment adequate. The professor of analytical chemistry of the university of Wisconsin is the consulting director of the chemical laboratory of the Dairy and Food Commission. Professor Fischer has been identified with the work of the Dairy and Food Commission for a number of years. During that time according to the testimony of the Dairy and Food Commissioner, the consulting director has rendered most important service in the analysis and testing of food products, which work has furnished the basis for the excellent dairy and food legislation of the state of Wisconsin. The arrangement is a very fortunate one because by reason of the location of the dairy and food chemical laboratory in the same building where the professor of analytical chemistry holds lectures, the consulting director is able to keep in immediate touch with the work of the chemical laboratory.

Chemist and Assistant Chemist. A chemist is in immediate touch with the chemical laboratory of the dairy and food commissioner who receives and makes all analyses of dairy and food, drink, condi-

ment or drug products. The chemist has been with the commission for several years and has had the advantage of association in the work with the present consulting director. He is performing very satisfactory service for the state. There are three assistant chemist positions in the laboratory, one of which is now vacant. One assistant chemist makes analyses of dairy, food, drink, condiment, or drug products under the direction of the chemist. The other assistant chemist makes analysis of linseed oil, turpentine, white lead and oxide of zinc and when not so engaged renders assistance in making analysis of other products under the direction of the chemist. The chemical laboratory force is composed of very capable chemists.

Change in Classification. A slight change in the classification of this staff is needed. Instead of the present classification of chemist and assistant chemist it should be as follows:

Consulting director.
Chief chemist.
Chemist.

Work of Chemists. The method of work followed in obtaining and making analysis of food products, of reporting to the commissioner, keeping a record of analyses and preparing for prosecutions where justified by the facts discovered in making the chemical analysis, is as follows:

1. The sample to be tested is forwarded to the laboratory by the dairy and food inspector. The sample comes properly sealed and is delivered in person or by express to the chemist. It is labeled in the laboratory and a card made out according to the nature of the sample. The card records are:

1. For food products forwarded by inspector.
2. Milk forwarded by inspector.
3. Cream forwarded by inspector.
4. Cream—sample submitted by other than inspector.
5. Milk—submitted by other than inspector.
6. Food products submitted by other than inspectors.

The chemist reports to the dairy and food commissioner the receipt of dairy and food products for analysis and the secretary of the dairy and food commissioner has a follow-up system, checking up on the chemist. The chemist keeps note books, that are properly indexed for reference in court use. From observations made in this investigation it has been found that the chemical laboratory force is under competent supervision and direction and is rendering efficient service.

3. CHEESE FACTORY INSPECTION.

First Assistant Commissioner. Cheese factory inspection is under the supervision of the first assistant commissioner who is an expert in cheese factory management and the manufacture of cheese. He is well informed also on creamery management and butter making. His work, however, is more especially along the lines of cheese production and he possesses a wide reputation in the state as a judge of cheese products. The first assistant commissioner has made maps showing the location of cheese factories, creameries, skimming stations and condenseries in the state of Wisconsin in the year of 1910. These maps show that there were in that year in the state—

Cheese factories	1928
Creameries	1005
Skimming stations	88
Condenseries	19

It is the duty of the first assistant commissioner to have charge of and direct the cheese factory, dairy and food inspectors in their work and to assist the dairy and food commissioner in the enforcing of the dairy laws of the state.

Cheese Factory Inspectors. There is a force of 6 cheese factory, dairy and food inspectors to look after the inspection of 1928 cheese factories. The work of making these inspections takes considerable time and it can be understood at a glance that six men will be kept very busy covering the inspection of nearly 2,000 cheese factories and in addition inspecting the sources of supply of the milk used at cheese factories. Information concerning the methods followed by cheese factory inspectors, as well as creamery inspectors, in performing the work of inspection was obtained at first hand in conference with these men in the office of the dairy and food commissioner during the process of this investigation.

Duties. In the first place cheese factory, dairy and food inspectors appear to be well selected, an earnest, clean appearing, intelligent body of men. This is true also of the creamery inspectors. The work of inspection requires them to be at the cheese factory early in the morning when the milk is first received so that they may make their milk tests from the various lots of milk brought in by the patrons of the cheese factory. This may require them to drive five or ten miles to get to their place of inspection. The work of inspection of a cheese factory is about as follows:

The inspector takes a sample of each lot of milk and usually applies the following tests: first the *sediment test* which shows the cleanliness or lack of cleanliness in the milk; second, the *Babcock test* which shows the percentage of milk fat. The Wisconsin curd test is not used in every cheese factory inspection. It is used mostly in the Swiss cheese factory districts. This test takes from ten to twelve hours. The value of these tests is very great. The sediment test gives a very clear demonstration to the patrons of the condition of their milk as far as cleanliness is concerned. The milk is run through a milk disc of cotton batting in a strainer which collects every particle of foreign substance. This is placed upon a small piece of white paper with the name of the patron who supplied the milk, of which this is a sample. Then the Babcock test is applied to show the quality of milk as far as percentage of fat is concerned.

Meetings of Patrons. Then quite often the inspector requests the patrons of the cheese factories to meet him in the late afternoon or in the evening when he shows them the samples and gives them useful information concerning the proper methods to be followed in keeping the milk clean and in taking care of the cows and producing a better milk supply. When the Wisconsin curd test is made, curd is actually made in a bottle which is a sample of each patron's milk. This Wisconsin curd test shows in a very graphic way the condition of the milk. Good milk will produce a cheese that is firm and well knit together; milk that is slightly tainted will have small pin holes produced by the gas arising out of the fermentations of the tainted milk from which it is made; curd made from foul milk is very porous and indicates at a glance the foul condition of the milk from which it has been made.

Sanitary Inspection. The cheese factory inspector also makes a sanitary inspection of the cheese factories and of the patrons' barns. Posters have been prepared in connection with cheese factory and creamery inspection of an educational value. These posters show

the clean barn, a well kept cow and a poorly kept cow, the proper kind of closed-top pail for milking and the open kind; a sample of dirt filtered from one pint of milk collected in a closed-top pail and from milk collected in an open pail.

Educational Work. Such work as this of the cheese factory inspector has been of great value to the state. The cheese factory inspectors state that they endeavor in every way possible to pursuade patrons who are inclined to be lax in the care of their cows and dairy barns, that it is profitable to take good care of the cows; that it will mean a larger and better milk supply. These cheese factory inspectors visit the patrons' barns and give them suggestions as to how they can plan the dairy barn arrangement and eliminate bad conditions. The cheese factory inspectors make a report to the dairy and food commissioner of every cheese factory inspection. This report contains information concerning every phase of the work of the factory. The cheese factory inspector also makes a report to the dairy and food commissioner of all milk tests made at the cheese factory.

4. CREAMERY INSPECTION.

Second Assistant Commissioner. The second assistant commissioner is an expert buttermaker as well as competent authority in cheese manufacture and has immediate supervision over the creamery inspection of the state. According to the maps already referred to and the statistics of the department, there are 1,005 creameries, 88 skimming stations, and 19 condenseries in the state, making in all 1,112 factories inspected by creamery inspectors. A force of four creamery, dairy and food inspectors takes care of this work. It is interesting to note that in creamery inspection the Babcock test has been applied to determine the percentage of butter fat. Much the same work is involved in creamery inspection as in cheese factory inspection.

Creamery Inspection. There are the following tests: Babcock test, sediment test and inspection of the creamery and premises. The creamery, dairy and food inspectors follow the same method of education of patrons as to the best way to obtain good milk supply as the cheese factory inspectors do.

City Milk Inspection. Cheese factory and creamery inspectors also make city milk and cream inspections and send reports to the inspector first, of the cream route inspection and of the city milk and cream inspection. These milk inspection reports show the percentage of milk fat, specific gravity, flavor, texture, and the name and address of the proprietor of the dairy. The cream route inspector's report shows the patron's name, condition of the cream, where kept, location of separator and the condition of the utensils.

When cheese factory and dairy and food inspectors find milk delivered in dirty, rusty, open-seamed cans, or otherwise unsanitary or unlawful for use in handling milk or cream or dairy products to be used as food for man, the inspector places a tag on such cans citing the law applying to the case and stating the findings of the inspector and signed by the inspector. This tag is a notice to the patron of what will follow if he does not change conditions for the better.

5. FOOD, DRINK AND SANITARY INSPECTION.

Duties. There are two food inspectors. One is called the chief food inspector and the other is called a dairy and food inspector. These two inspectors divide the state between them, the chief food inspector taking the northern part and the dairy and food inspector the southern part of the state. These inspectors visit all places where foods are exposed for sale. They make purchases of samples which may be suspected of adulteration or of being otherwise illegal and they properly wrap, mark and seal same and personally deliver to the chemist or ship to the chemist by express. They make inspections of the sanitary conditions where foods are sold, offered or exposed for sale; they swear complaints in courts against parties who have sold various samples which have been found to be adulterated or otherwise unlawful by the chemist upon analysis of the same; they procure samples of linseed oils, turpentine, white lead, zinc, which they suspect of being adulterated.

Efficiency. Both food inspectors have had a number of years of practical experience as grocers and are able to run over the contents of a grocery store very rapidly and detect articles on the shelves that may be adulterated or otherwise illegal. The biennial report of the dairy and food commissioner for the period ending June 30, 1910, indicates the good work that these food inspectors are doing and when it is considered how many places have to be inspected, the number of grocery stores and other places where food products are exposed for sale, the number of restaurants and kitchens that they have to inspect for sanitary conditions, it can be seen readily that these inspectors have work enough to keep them very busy. Their reports indicate that they cover a great deal of ground and the prosecutions of vendors of adulterated and otherwise illegal foods indicate that they are on the job protecting the people from the consumption of adulterated foods and from being swindled by the purchase of the same.

6. SEALING AND INSPECTION—WEIGHTS AND MEASURES.

Recently Organized. This is a new department. The law relating to weights and measures became effective July 7, 1911, and since that time the department has been organized and very satisfactory progress made in the work of inspection. The law makes the dairy and food commissioner *ex officio* state superintendent of weights and measures and gives him authority to appoint a chief inspector of weights and measures who shall have charge under the dairy and food commissioner of the sealing and inspecting of weights and measures and the weighing and measuring devices of the state and in use in the state.

Chief Inspector. The chief inspector of weights and measures has made a compilation of the law relating to weights and measures; specifications for city and state working standard weights and measures and apparatus for the sealers of the state of Wisconsin under authority of section 1659 of the statutes, and a book of instructions to officials of the state of Wisconsin relative to the inspection, testing and sealing of weights, scales, measures and apparatus used in trade. These instructions cover every phase of the duties of inspectors of this division. In providing inspectors to carry out the

Fig. 19.—Prescription Graduates and Weights. There are over 700 apothecary and metric weights in the pile in the center of the picture, many of which were from 3% to 10% light. Some of the glass graduates are 15% too large, made this way by careless manufacturers. These weights and graduates were used by druggists in prescription work.

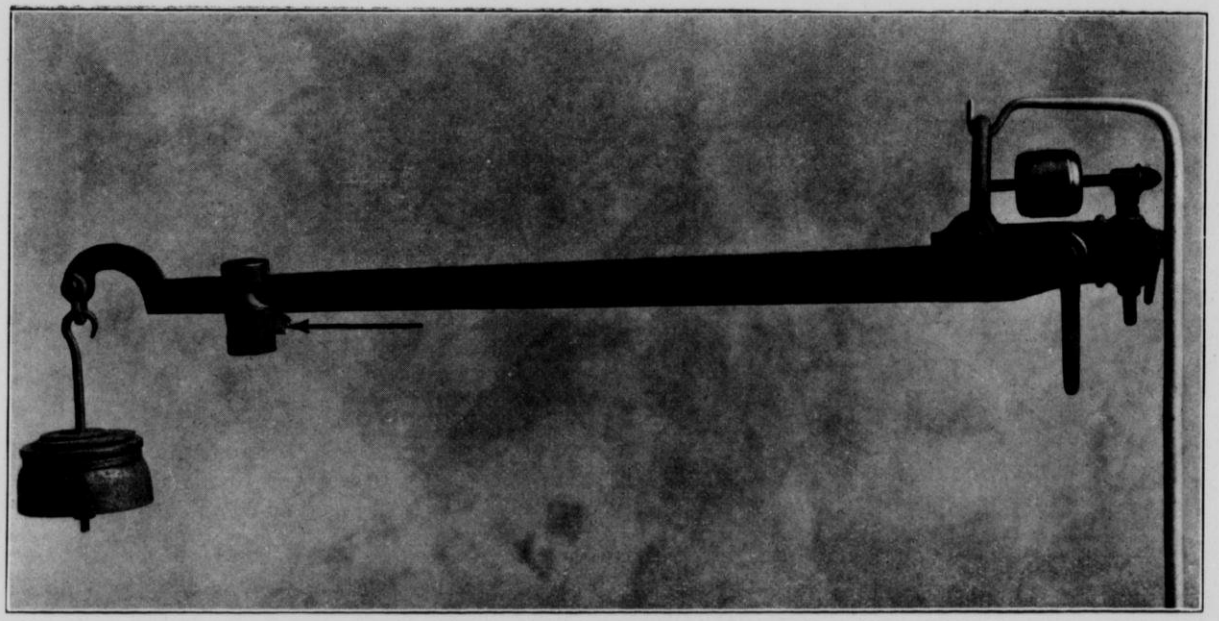

Fig. 20.—Stock Scale Beam. The arrow points to a piece of lead that was dropped into the sliding poise. This made the beam weigh 25 pounds heavy on 1,000 pounds. Over 200 carloads of stock were annually weighed over this scale, beating the farmers out of hundreds of dollars.

provisions of the weights and measures law, dairy and food inspectors were made *ex officio* sealers and inspectors of weights and measures.

Work of this Department. This department has made very rapid progress in the work of sealing and inspection of weights and measures with the force employed.

Scope of the Work. So far the sealers of weights and measures have covered about one-third of the state but it is impossible for six men to cover the whole state with light inspection work alone in one year. It will take at least twenty men to cover the state in a year. * * * To understand why this is true, an explanation is necessary. The outfit of a weights and measures inspector consists for light work of two cases, weighing in all 55 pounds. An inspection takes more or less time according to the size of the business and the number of weights, scales and measures used. The number of places to inspect is so great and the follow-up work is so essential to proper inspection, that five men can cover only a small portion in one year. The heavy work outfit consists of ten cases weighing 100 pounds each for testing of heavy scales.

The Problem of Heavy Inspection Work. The weight of this equipment constitutes a problem that has not yet been solved by the weights and measures department. How to take 1000 pounds of baggage around the state and have it taken around the locality to inspect scales is the question that is troubling the department. It will cost the state a great deal to ship by express or pay excess baggage on 1000 pounds. It will also cost considerable for cartage.

Reports. The sealers of weights and measures have various reports which they make to the commissioner while on their trips.

Try-out Reports. There is first a try-out slip report that is made out in duplicate, one copy sent to the commissioner and the other retained by the inspector, which records the articles purchased, the amount and the price and the actual weight and measure received. It is the custom for the inspector to go into stores, make purchases of certain amounts, then request the storekeeper to reweigh them and note the difference between the first and second weight, if there is any. These try-out slips are reports of these transactions.

Coal Report. Next there is the coal report slip. It is the practice of the weights and measures inspector to stop coal wagons on trips, ask for the bill from the driver, note the weight of the load as charged upon the bill, go to the scales, have it weighed again, and then go with the driver to the place of delivery, return with him and weigh the wagon and what was on it, reweigh, and in this manner check up as far as possible upon the dealer, to discover whether he is giving proper weight.

Follow-up System. The weights and measures department has worked out an excellent follow-up system in inspections. This system is very simply and complete. It works well and is deserving of commendation. When the sealer of weights and measures condemns any faulty apparatus for repairs, he gives to the dealer a card which the dealer may fill out and forward to the commissioner or to the chief inspector of weights and measures when the apparatus so condemned for repairs has been properly repaired. Upon receipt of this the superintendent of weights and measures acknowledges the notification and the chief inspector orders a new inspection to see if the apparatus has been properly repaired and is up to standard.

Testing of Standards. The work of this department consists not only of inspection of weights and measures of dealers in various products and supplies but also in testing the standards of city sealers of weights and measures. For the purpose of testing the standards the department has secured a very fine equipment, most of them United States standards which have been presented to the department by the federal government.

Confiscation. So far the department has confiscated a large number of weights and measures of all kinds and destroyed a large amount. The collection now in the possession of the chief inspector of weights and measures shows to what extent there is need for this work in this state.

City Sealers' Annual Reports. All city sealers of weights and measures make an annual report to the state superintendent of weights and measures. These reports are received and filed by the chief inspector of weights and measures and the information therein is classified and tabulated and embodied in the biennial report of this department.

PROSECUTIONS.

When an inspector of dairy and food finds cause for prosecution for violation of the dairy and food laws of the state he sends to the dairy and food commissioner a notice stating that he has filed complaint stating the date thereof. When the date for trial has been set the inspector sends another notification to the commissioner giving this information. When the case has been tried, the inspector makes out a report in duplicate, keeping one copy himself and forwarding the other to the dairy and food commissioner for permanent record. This report shows the name of the defendant and by whom tried and the verdict, together with the penalties imposed. It also shows in brief the date the case was entered, the date set for trial and the date judgment was rendered and also the inspector's number.

VALUE OF THIS WORK.

The dairy, food, and weights and measures inspection has proven in the past and is proving at the present time of permanent value to the whole population of the state. It is possible to point to results in the way of savings to producers and to consumers that amount to millions of dollars every year. Upon reliable authority it is estimated that the increased value of cheese due to dairy and food inspection of cheese factories and milk is about one cent a pound and that the same holds true for creamery products. The state produces about a million and a half pounds of cheese and one million pounds of butter annually. This means the saving of two million and a half dollars to the producers of cheese and butter in this state every year. Not only has this department by its cheese factory and creamery inspection been of this value to cheese and butter producers of the state, but milk inspection both in cities and elsewhere has resulted in a saving of thousands of dollars to individual consumers of milk as well as a better supply of milk for their money. The inspection of linseed oils and other similar products which, before the days of this inspection, were adulterated at wholesale rates means a saving of $100,000 or more to consumers. It is estimated that because of the rigid enforcement by the dairy and food commissioner of the laws regulating the manu-

facture and sale of oleomargarine at least a quarter of a million dollars has been saved to the people of the state. As to the saving to the people on food stuffs, the amount can only be estimated. There is reason to believe from the vast amount of adulterated food stuffs that have been sold at prices way beyond their true value, as well as deleterious to the health of the people, that the saving has been several million dollars since the dairy and food inspection laws have been passed and enforced. It is very gratifying to find a department which can point to the evidence of such results as these. This report can only suggest by some of these statements, facts discovered in the investigation. Further facts and details which serve as a basis for the statements used herein are contained in a report of the commissioner to the secretary of the board of public affairs under date of December 20, 1911.

Classification. The present classification of the dairy and food commission inspectors is a rather complicated one. It is as follows:

Cheese factory, dairy and food inspectors
Creamery, dairy and food inspectors
Dairy and food inspectors
Cheese factory agents
Creamery agents

Then the weights and measures laws make these various inspectors *ex officio* sealers of weights and measures. The laws under which this department operates and which specify the force that the commissioner is authorized to employ are needlessly confusing and complicated. In the first place, in order to discover how many and what kind of employes the dairy and food commissioner is authorized to secure, it is necessary to go through several different statutes in different places and dig them out. The classification is needlessly complicated.

Recommendations. The following recommendations are made and apply to the whole department both as to classification and the laws:

1. That the chemical laboratory staff be classified as follows:
   Consulting director
   Chief chemist
   Chemist

2. That dairy and food inspectors be called dairy and food agents or deputies and that the commissioner have authority to distribute his force along the various lines of cheese factory, creamery, food, drink and sanitary and weights and measures inspection, according to the needs of the work.

3. That the dairy and food laws and weights and measures laws be consolidated, simplified and worked over into a unified whole.

NOTES ON FIGURES 22, 23, 24, 25, AND 26

The mails have been flooded with letters of the character of Fig. 22 quoting prices on "boiled" and "raw" "linseed oil." As a result of letters of such character, dealers have purchased what was represented to be linseed oil, boiled or raw. See Fig. 23 showing a bill rendered to Mr. Gilbertson of Morrisonville, Wis., for "boiled linseed oil." Fig. 24 (A) shows ten grams of the *said* "boiled linseed oil." Fig. 24 (B) shows the amount of *mineral* oil obtained by the chemist from ten grams, amounting to 38%.

Fig. 25 shows a bill rendered S. S. Squires of Kilbourn, Wis., for raw linseed oil and for boiled linseed oil. Fig 24 (C) shows ten grams of the *said* "boiled linseed oil." Fig. 24 (D) shows the amount of *mineral* oil obtained by the chemist from ten grams, amounting to 40.4%.

See Fig. 26. *Notice* that the letter bears no *written* signature. Notice the letter does not once claim the article was linseed oil. *Notice* that the *records* in the case were destroyed.

Great damage may result to buildings painted with such oil.

CENTRAL LINSEED OIL COMPANY

OLD PROCESS LINSEED OIL
RAW AND BOILED LINSEED OIL
OIL MEAL AND OIL CAKE

WESTERN OFFICE
OMAHA, NEB.

OMAHA, NEB., June 19, 1912.

DEAR SIR:

Since our last quotations Linseed Oil has been steadily raising, with a prospect of a five cent advance for the coming week.

The stock in this country is practically exhausted, and the imported seed is all that we have to depend upon. The raise in Linseed Oil has been made necessary, for the reason that practically all of the domestic seed has been secured, and it has been found necessary to import seed, which is costing considerable money. It will be necessary, on account of the prevailing conditions, for people to invest several weeks in advance, sometimes several months, if they have not already invested, and you can form an idea of what the price of Linseed Oil will be, from the present conditions of the market.

If you wish to pay a price of 90¢ for Linseed Oil, just wait for another 30 days, and you will find prices soaring near the 90¢ figure. The Trust is quoting a price of 83¢ and 84¢ per gallon at the present time in the East. We are quoting you the following prices, FOR IMMEDIATE DELIVERY ONLY, DELIVERED AT YOUR RAILROAD STATION:

BOILED LINSEED OIL.....69¢ per Gal.
RAW LINSEED OIL.....68¢ " "

These prices are in barrel lots, and in smaller quantities we will make the usual charge for containers. Terms, 30 days, or 2 per cent off for cash.

All of our goods are guaranteed to give satisfaction, or they are returnable at our expense.

If you wish to purchase Oil at the above mentioned prices, it will be necessary for you to place your order immediately, otherwise, we will charge you the market price.

Trusting that we may receive your order by return mail, we remain

Yours respectfully,

CENTRAL LINSEED OIL COMPANY.

Since writing this letter Oil has raised 5 cents Cal. We have only 180 Bbls. that we will sell at the above price.

Fig. 22.

CENTRAL LINSEED OIL CO.

Old Process Linseed Oil, Raw and Boiled,
Oil Cake and Meal

CLEVELAND, OHIO 7/18/12

ORDER NO. R11448 E
VIA
SHIPPED FROM OMAHA

SALESMAN G COOK
YOUR ORDER NO.

TERMS:

SOLD TO G B GILBERTSON
DESTINATION MORRISONVILLE
ROUTE 35

STATE OF WISC COUNTY OF P. O.

F. O. B. 30 DAYS, OR 2 % IN 10 DAYS
DUE DELV
8/18/12

IMPORTANT—See Terms and Conditions on reverse side, which are part of this Invoice

	DESCRIPTION	PRICE	AMOUNT	TOTAL
1	BRL BOILED LINSEED OIL 50 GALS	@ 76	38 00	
5	GALS TURPOL	@ 50	2 50	
	EX CHARGE FOR CONT		0 50	41 00

Fig. 23.

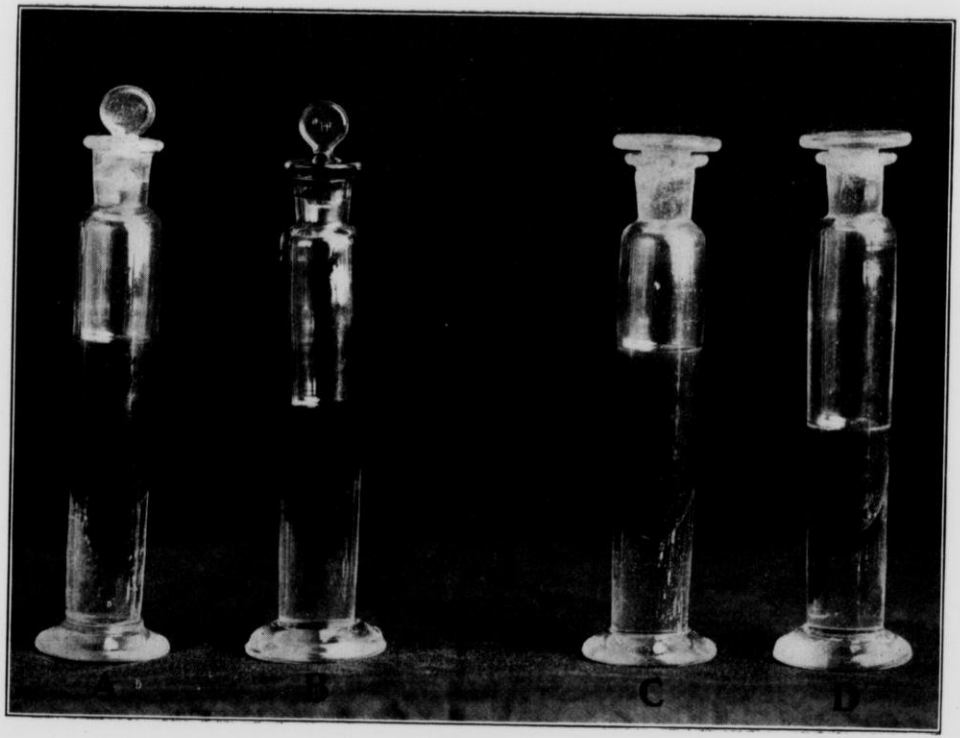

Fig. 24.

CENTRAL LINSEED OIL CO.

ORDER NO. R 16637 E — Old Process Linseed Oil, Raw and Boiled, Oil Cake and Meal — SALESMAN MAIL

VIA — YOUR ORDER NO.

SHIPPED FROM OMAHA — CLEVELAND, OHIO 11/18/12

TERMS:

SOLD TO S S SQUIRES — P.O. DELTON — 30 DAYS, OR 5 IN 10 DAYS

DESTINATION KILBOURN — STATE OF WISC — COUNTY OF — F. O. B. DELV

ROUTE — DUE 12/18/12

IMPORTANT—See Terms and Conditions on reverse side, which are part of this Invoice

	DESCRIPTION	PRICE	AMOUNT	TOTAL
1	BRL RAW LINSEED OIL 51 GALS	45	22 95	
	IN GORDON BRL		2 50	
2	BRL BOILED LINSEED OIL 53 51 104 GALS	46	47 84	
	IN GORDON BRL		2 50	75 79
				4 77
				71 62

Fig. 25.

Central Linseed Oil Co.

Old Process Linseed Oil.

Raw and Boiled Oil Cake and Meal.

Offices: Rose Building.

Cleveland, O. July 16, 1914.

Mr. S. S. Squires,
Delton, Wis.,

...LINSEED OIL CO.

Fig. 26.

Central Linseed Oil Co.

Old Process Linseed Oil.

Raw and Boiled Oil Cake and Meal.

Offices: Rose Building.

Cleveland, O. July 16, 1914.

Mr. S. S. Squires,
Delton, Wis.,

Dear Sir--

We are in receipt of your favor of the 10th inst., and contents noted. We also note letter referred to us from Jas. H. Hill, District Attorney, Baraboo, Wis., which we return to you, herewith.

We note that we made shipment to you from our Omaha warehouse on November 18th, 1912. This is so long ago that our records in connection with this shipment have been destroyed, but we know of no possible reason why there should be any difficulty in connection with this shipment. We have no doubt that you have disposed of a considerable quantity of oil and have found that it has given entire satisfaction to your customers, and we cannot understand what grounds there should be for any action on the part of the State Authorities.

We would suggest that you get in communication with the attorney, advise him of all the circumstances, and see if the action cannot be stopped.

Yours truly,

CENTRAL LINSEED OIL CO.

Fig. 26.