State of Connecticut

REPORT

OF

The Connecticut Agricultural Experiment Station

NEW HAVEN, CONN.

ON

FOOD PRODUCTS AND DRUGS, 1919,

PART II.—DIABETIC FOODS

BEING

Bulletin 220

Connecticut Agricultural Experiment Station

NEW HAVEN, CONN.

BULLETIN 220 FEBRUARY, 1920

BEING THE

Twenty-Fourth Report

ON

Food Products

AND

Twelfth Report on Drug Products.

PART II (Diabetic Foods).

By E. M. BAILEY.

CONNECTICUT AGRICULTURAL EXPERIMENT STATION.

OFFICERS AND STAFF.

BOARD OF CONTROL.

His Excellency, Marcus H. Holcomb, *ex-officio, President.*
James H. Webb, *Vice President* ..... Hamden
George A. Hopson, *Secretary* ..... Wallingford
E. H. Jenkins, *Director and Treasurer* ..... New Haven
Joseph W. Alsop ..... Avon
Charles R. Treat ..... Orange
Elijah Rogers ..... Southington
William H. Hall ..... South Willington

Administration.
E. H. JENKINS, PH.D., *Director and Treasurer.*
MISS V. E. COLE, *Librarian and Stenographer.*
MISS L. M. BRAUTLECHT, *Bookkeeper and Stenographer.*
WILLIAM VEITCH, *In charge of Buildings and Grounds.*

Chemistry.
Analytical Laboratory.
E. MONROE BAILEY, PH.D., *Chemist in charge.*
R. E. ANDREW, M.A., C. E. SHEPARD, H. D. EDMOND, B.S., OWEN NOLAN, *Assistant Chemists.*
FRANK SHELDON, *Laboratory Assistant.*
V. L. CHURCHILL, *Sampling Agent.*
MISS ALTA H. MOSS, *Clerk.*
Protein Research.
T. B. OSBORNE, PH.D., D.SC., *Chemist in charge.*

Botany.
G. P. CLINTON, SC.D., *Botanist.*
E. M. STODDARD, B.S., *Assistant Botanist.*
FLORENCE A. MCCORMICK, PH.D., *Scientific Assistant.*
G. E. GRAHAM, *General Assistant.*
MRS. W. W. KELSEY, *Stenographer.*

Entomology.
W. E. BRITTON, PH.D., *Entomologist; State Entomologist.*
B. H. WALDEN, B.AGR., I. W. DAVIS, B.SC., M. P. ZAPPE, B.S., PHILIP GARMAN, PH.D., *Assistant Entomologists.*
MISS GLADYS M. FINLEY, *Stenographer.*

WALTER O. FILLEY, *Forester, also State Forester and State Forest Fire Warden.*
A. E. MOSS, M.F., *Assistant State and Station Forester.*
H. W. HICOCK, M.F., *Assistant.*
PAULINE A. MERCHANT, *Stenographer.*

Plant Breeding.
DONALD F. JONES, S.D., *Plant Breeder.*
C. D. HUBBELL, *Assistant.*

TABLE OF CONTENTS

Part II (Diabetic Foods).

By E. M. Bailey.

INTRODUCTION.

Present knowledge of diabetes does not permit of an entirely satisfactory definition of the disease; it is generally defined in terms of its most conspicuous symptom, viz., the elimination of glucose in the urine. Joslin's[1] definition is so stated; he regards diabetes as an abnormal condition of metabolism in which the faculty of properly utilizing carbohydrates is partly or wholly lost, and in consequence of which glucose appears in excessive amounts in the urine. The excretion of sugar (called a condition of glycosuria) should not be regarded as synonymous with diabetes; it is a symptom, not the disease itself.

Another definition of diabetes has been formulated by Allen[2] based upon what he conceives to be the cause of the disease. He believes that, normally, sugar is combined with some substance, furnished by the pancreas, which makes it available to the body tissues. When not so combined, as in case of a deficiency of this pancreatic function, sugar is not utilized and glycosuria results. Diabetes, according to this conception, is a deficiency of internal secretion of the pancreas. This is the amboceptor hypothesis.

Tibbles[3] quotes Sir J. Rose Bradford who says "diabetes is not an entity, but a clinical label attached to a number of different conditions with varied origins, different morbid anatomy, and liable to follow different courses." This is known as the theory of multiple causes and permits of considerable latitude of application.

Rôle of carbohydrates. Whatever definition may be accepted, it is the metabolism of carbohydrates which, in diabetes, is most profoundly disturbed. With non-diabetic individuals the greater

---

[1] Joslin, E. P., The Treatment of Diabetes Mellitus, New York, 1917.
[2] Allen, F. M., Glycosuria and Diabetes, Boston, 1913.
[3] Tibbles, Wm., Food in Health and Disease, New York, 1914.

the intake of carbohydrates the greater the utilization[1]; but with diabetics the reverse is true, i. e. the excretion of sugar increases with increased ingestion of carbohydrate-bearing foods, and therefore the limitation and control of this type of foods becomes a part of every plan of diabetic treatment. It is no longer considered necessary or advisable to uniformly exclude carbohydrates from the patient's diet but rather to allow as much of such material as he will tolerate. The claims often made that one kind of carbohydrate is better tolerated than another are generally without foundation, or based upon inadequate proof. There is no convincing evidence, for example, that starch from one source is better assimilated than that from another; and the advantages of certain sugars over others from the standpoint of utilization are often predicated upon apparent rather than real tolerance.

Rôle of fat. In diabetes of the more severe types impaired metabolism is not confined to carbohydrates but extends to fats and proteins. Although it appears that fats are absorbed quite as well by diabetics as by normal individuals they are not equally well utilized in metabolism. Consequently the introduction of increased amounts of fat into the diet to compensate for the withdrawal of carbohydrate is attended with danger of acidosis, i. e., incomplete oxidation of fatty acids with elimination of intermediate products, viz., β-oxybutyric acid and aceto-acetic acid. Acetone may also be eliminated.

Authorities differ as to whether sugar can arise from fatty foods. von Noorden[2] and others maintain that the liver possesses the power to effect such a transformation but that it is a facultative function exercised only as necessity requires. According to Ringer[3] glucose may be formed from certain fatty acids but there is no evidence that fat itself produces glucose in diabetes. The increased glucose elimination after fat feeding in diabetic treatment is probably due to the stimulating action of fat on protein metabolism.[4]

Rôle of protein. In the process of digestion protein is broken down into simpler substances called amino acids which are then

[1] Allen's Paradoxical Law.
[2] von Noorden, Carl, New Aspects of Diabetes. New York, 1912.
[3] Jour. Exp. Med., 12, 1910.
[4] Janney, N. W., Archiv Intern. Med., 18, 1916.

utilized for the various body requirements. The nitrogenous part of these protein derivatives is ultimately eliminated chiefly as urea; the non-nitrogenous portion is either burned as fuel or converted into carbohydrate and, directly or indirectly, into fat. In diabetes this protein-derived carbohydrate may be excreted just as in case of carbohydrate ingested as such.

Although the formation of glucose from protein in metabolism has been recognized it does not appear to have been adequately appreciated in practical diabetic treatment. Its origin was formerly attributed to a supposed carbohydrate complex in the protein molecule, but carbohydrate, as such, is no longer regarded as a constituent of protein; the insignificant amount sometimes found is looked upon as an impurity.

The work of Lusk, Dakin, Janney[1] and others has shown that the amino acids which arise from protein in digestion are the glucose-yielding materials and the amount of glucose formed is in direct proportion to the amino acid content of the particular protein ingested. There is no distinction between animal and vegetable proteins as regards sugar-producing capacity. Glucose arises not only from the protein as ordinarily ingested in food but also from the feeding of pure isolated proteins and from the breaking down of body protein as well. These facts are shown by the experiments of Janney with completely diabetic (phlorizinized) dogs, a condition which he considers, particularly as regards glucose-formation from protein, essentially comparable with severe human diabetes.

Protein-glucose factors. The glucose factors of a number of pure proteins, both animal and vegetable, as derived by Janney are given as follows:

TABLE I.—GLUCOSE YIELDS OF INGESTED PROTEINS (JANNEY).

	Casein.	Ovalbumin.	Serum albumin.	Gelatin.	Fibrin.	Edestin (Hemp protein).	Gliadin (Wheat protein).	Zein (Corn protein).
Glucose yield in per cent.	48	54	55	65	53	65	80	53

[1] Janney, N. W., Archiv. Intern. Med., 18, 1916.

Glucose yields of protein foods. The following data, taken from the same source, show the glucose yields of a variety of common protein foods.

TABLE II.—GLUCOSE FORMATION FROM PROTEIN FOOD; COMPARATIVE TABLE, (JANNEY).

	Water content per cent.	Glucose yield, per cent.	Amount equivalent to 100 gm. bread.	Calories per 100 gm.
			gm.	
Beef, raw	74.8	9.5	642	150
Beef, broiled	54†	17.5	348	208
Beef, dried or smoked	54.3	21	290	185
Beef, canned or corned	51.8	18.2	335	270
Beef, roasted	48.2	19.5	313	241
Chicken meat, raw	74.5	12	508	197
Chicken meat, roasted	59.9	19.2	317	245
Rabbit, raw	74.7	11	555	...
Rabbit, broiled	61.4†	16.8	363	...
Halibut steak, raw	75.4	12	508	124
Halibut steak, fried	54.2†	22.3	255	173
Eggs, raw	73.7	10.3	592	153
Eggs, boiled	73.2	10.51	580	166
Eggs, fried	70.4†	11.6	526	160
Ovalbumin*	....	54	113	...
Gelatin*	....	65	94	366
Casein*	....	48	127	...
Corn protein, zein*	....	53	115	...
Wheat protein, gliadin*	....	80	76	...
Flour*	....	92.5	...	...
Bread	34‡	61	...	277

* Calculation based on water-free material.
† Writers' analysis.
‡ Analyses from Conn. Agric. Exp. Station Report, Sec. 1, Diabetic Foods, 1913.

Whether the factors given above may or may not be accepted as absolute by reason of the particular conditions under which the experiments were conducted, nevertheless it is evident that taking protein into account as a potential source of glucose places a very different aspect upon certain types of foods as regards their adaptability or usefulness in the diabetic dietary. For example, it is common practice to evaluate diabetic foods on the basis of a comparison between their carbohydrate content and that of a typical and staple carbohydrate food, viz., wheat bread, after the plan proposed by von Noorden. While, as generally stated, such comparisons are technically correct they are misleading in that they do not recognize the protein of the food as a possible contributing source of carbohydrate.

Bread equivalents. As an illustration of the application of the foregoing data in computing bread equivalents we make use of the same products as cited by Janney. His table has been modified by stating the protein on the basis of the factor 5.70 for wheat products which changes the carbohydrate content correspondingly; by the addition of a bread equivalent column as calculated after the plan of von Noorden which has been the usage in this laboratory; and also by applying the glucose factor .48 in estimating the glucose yield of the casein preparations Sanatogen and Plasmon which, by oversight, was not done in the original tabulation.

The factor derived by Janney for computing the glucose yield of the protein of wheat is .705. To obtain the bread equivalent by his method add to the carbohydrate content of the food the per cent. of glucose formed from the protein therein using the appropriate factor, i. e., .705 for wheat and .48 for casein. The standard of comparison is the glucose yield of bread in metabolism calculated to be 61. von Noorden equivalents are based on the average carbohydrate content of wheat bread, viz., 53 per cent.

TABLE III.—GLUCOSE FORMATION FROM DIABETIC FOODS.

	Protein.	Carbohydrate.	Glucose yield in metabolism.	Amount equivalent to 100 grams of bread.	
				Janney.	von Noorden.
	%	%	%		
Glidine	83.3	9.1	68	90	582
Sanatogen	80.1	4.2	43	142	1,262
Plasmon	78.7	0.0	38	160	....
Diabetic biscuit	23.1	61.2	77	79	87
40% Gluten biscuit	32.7	57.1	80	76	93
80% Gluten biscuit	75.1	11.7	65	94	453

Recognizing, as the author of these experiments does, that in actual practice many factors obtain which are absent or cannot be simulated in experiment, such, for example, as rate and extent of assimilation, influence of other food in the diet, texture of the food and the proportion of indigestible matter, and variations in carbohydrate tolerance, and that therefore protein-glucose factors

must be regarded as relative rather than absolute, yet the reduction of carbohydrate in any food or diet to a negligible minimum appears to be unwarranted effort when accompanied by correspondingly high protein. Thus we see from the above table that Glidine with 9 per cent. of carbohydrate and 83 per cent. of protein may in certain severe diabetic conditions yield but little less glucose in metabolism than diabetic biscuit with over six times as much carbohydrate and three-tenths as much protein.

If, then, carbohydrate foods aggravate the diabetic's most conspicuous symptom, i. e., glycosuria; and if from one-half to two-thirds of his protein intake may be converted into sugar in the course of metabolism; and if, directly or indirectly, fats contribute to his sugar elimination from the body, what may he eat? Since Janney has formulated the same question, we quote his answer:

"This question has indeed been logically answered by Allen, whose well-known treatment has emphasized the good results to be obtained from a complete fast. The rationale of the Allen treatment becomes more evident when one is mindful of the fact that not carbohydrates alone, but all the three great classes of foodstuffs may give rise to increased glucose formation. Thus it becomes apparent that only by total exclusion of all food, a complete rest can be given to the sugar-utilizing function of the organism.

"The diabetic, however, cannot refrain indefinitely from food. How, then, feed him? In view of the series of experiments here reported it is likely that a diet containing moderate amounts of protein and fat and low amounts of carbohydrate is after all the most judicious one to be employed. It seems that only by very discriminately balancing the various advantages and disadvantages of each kind of foodstuff can the proper quantity for a given case be best determined."

WHAT CONSTITUTES A "DIABETIC" FOOD.

The question of what a diabetic food is, or should be, becomes increasingly difficult to answer. There is no universal diabetic food. It becomes more and more apparent that diabetic diets must be arranged strictly according to individual tolerance. The efforts of manufacturers of foods particularly adapted to the

treatment of diabetes appear in many cases to be centered upon the production of an absolutely carbohydrate-free product. No doubt they have been catering to a popular belief, and a belief fostered in many instances by members of the medical and other professions. Probably Allen suggests the reason for this when he emphasizes the fact that the symptom, viz., glycosuria, and the disease, viz., diabetes, have been frequently confused; and again when he quotes Abderhalden, who says: "Up to the present time the most prominent symptom, that of glycosuria, has dominated the entire investigation of problems concerning diabetes, and it is very probable that this is the reason why the disease, as a whole, is so little understood."

Federal definition.[1] The Federal regulation regarding *"diabetic food"* is as follows:

"Although most foods may be suitable under certain conditions for the use of persons suffering from diabetes, the term 'diabetic' as applied to food indicates a considerable lessening of the carbohydrates found in ordinary products of the same class, and this belief is fostered by many manufacturers on their labels and in their advertising literature.

"A 'Diabetic' food contains not more than one-half as much glycogenic carbohydrates as the normal food of the same class. Any statement on the label which gives the impression that any single food in unlimited quantity is suitable for the diabetic patient is false and misleading."

The Federal definitions also describe the substance and quality of gluten products as follows:

"Ground gluten is the clean, sound product made from wheat flour by the almost complete removal of starch and contains not more than ten per cent. (10%) of moisture, and, calculated on the water-free basis, not less than fourteen and two-tenths per cent. (14.2%) of nitrogen, not more than fifteen per cent. (15%) of nitrogen-free extract (using the factor 5.7), and not more than five and five-tenths per cent. (5.5%) of starch (as determined by the diastase method).

"Gluten flour is the clean, sound product made from wheat flour by the removal of a large part of the starch and contains not more than ten per cent. (10%) of moisture, and, calculated on the water-free basis not less than seven and one-tenth per cent. (7.1%) of nitrogen, not more than fifty-six per cent. (56%) of nitrogen-free extract (using the protein factor 5.7), and not more than forty-four per cent. (44%) of starch (as determined by the diastase method).

"Gluten flour, self-raising, is a gluten flour containing not more than ten per cent (10%) of moisture, and leavening agents with or without salt."

[1] U. S. Dept. Agr., Food Inspection Decision 160.

Other desirable requirements. In addition to this, Street and Mendel[1] have formulated requirements which may well apply.

1. "The label should bear a correct statement of the percentages of protein, fat and carbohydrates present.
2. "The amounts of the different carbohydrates present should be declared on the label, i. e., starch, sucrose, levulose, lactose, etc.
3. "The process of manufacture should be so standardized that uniformity of composition, within reasonable limits, will be maintained from year to year."

These recommendations, particularly the first and third, are important. It is quite general for manufacturers to emphasize low carbohydrate or high protein, but it is essential for the physician to know both these constituents and the fat content as well. The desirability of uniformity needs no argument.

INSPECTIONS OF COMMERCIAL DIABETIC PRODUCTS.

Previous inspections. Since 1906 this laboratory has been interested in the subject of diabetic foods. At intervals since that time we have examined products of this class for the purpose of keeping in touch with progress and improvement in the manufacture of such foods. Our efforts have met with appreciative response both from the medical profession and from manufacturers as well. Both realize the importance of reliable information regarding the composition of various foods for the intelligent preparation of a diabetic diet.

Purpose and scope of present inspection. The present revision or resurvey of the field was made in response to frequent inquiries as to the present composition of various brands of these specialized foods; also to examine such new preparations as might be available.

The time chosen was perhaps unfortunate by reason of the fact that, on account of war conditions, some manufacturers had curtailed or suspended production, and that few imported brands were available. However, we believe that the majority of foods of this type used in this country to-day are represented in our new analyses.

In addition to the analyses of strictly commercial foods. we have examined other preparations which are of particular interest

[1] Conn. Agr. Exp. Sta. Report, Part 1, Sec. 1, 1913.

in diabetic treatment. Such include washed bran, thrice-cooked vegetables, diabetic broths and various substitutes for milk.

Besides our own new analyses, the valuable compilation contained in our Report for 1913 has been revised and enlarged to include our latest results as well as results obtained in other laboratories.

SOURCES OF MATERIALS EXAMINED.

Samples were obtained largely by our direct request addressed to manufacturers. We are indebted to them for their coöperation. We are also indebted to Prof. Lafayette B. Mendel, Referee on Diabetic Foods for the American Medical Association, who enlisted the aid of that Association, and with whom it has been our privilege to consult; to Dr. E. P. Joslin of Boston, who early volunteered to enlist the interest of his professional friends in our project, and who personally submitted samples; to Dr. N. W. Janney, Director of the Memorial Laboratory and Clinic, Santa Barbara, Calif., both for suggestions and for samples of soy bean milk and almond milk with formulas for preparing the same; to Dr. F. M. Allen, U. S. A. General Hospital No. 9, Lakewood, N. J., Dr. T. B. Osborne of this Station, and Mr. J. P. Street, formerly chief of this Laboratory, for suggestions and criticisms; and to Miss Geraghty, formerly Dietitian of the New Haven Hospital, and to her assistant, Miss Hoffman, for experimental work with recipes designed for diabetic dietaries.

METHODS OF ANALYSIS.

The methods used have been those authorized by the Association of Official Agricultural Chemists. The determination of fat has been modified in case of baked goods. It has been shown that the usual continuous extraction may not remove fat satisfactorily from baked products, e. g., bread. We have therefore used the following method in such cases:

Method for determination of fat in baked products[1]:—Treat 5 gms. of material in a loosely stoppered 200 cc. Erlenmeyer flask with a mixture of 10 cc. alcohol (95%), 2 cc. concentrated ammonia and 3 cc. of water, heating 2 minutes at the boiling point. Cool, add three successive portions of 25 cc. of ethyl ether, mixing thoroughly, and tamping the material

[1] Conn. Agr. Exp. Sta., Bull. 200, p. 133, 1917.

each time with a glass rod flattened at the end, pouring off the extracts into a 200 cc. beaker. The combined ether extracts are evaporated to dryness on the steam bath. The crude fat is extracted by washing out with several portions of anhydrous ether, or preferably petroleum ether, the extract collected in a tared flask, evaporated and dried for periods of 30 minutes at 100° C. until constant weight is obtained.

INTERPRETATION OF ANALYSES.

Protein. The proper basis for comparison of the nitrogenous material in diabetic or other foods is the nitrogen content. But proximate analyses require a statement of protein content and this is ordinarily obtained from the nitrogen figure by use of the conventional factor 6.25, which is based on the assumption that protein contains 16 per cent. of nitrogen.

The Federal definition and standard for "gluten" products is based upon the observation that wheat proteins contain about 17.5 per cent. of nitrogen which requires a factor of 5.70 to express the protein in wheat products.

This being the case, we have used the factor 5.70 to calculate the protein in such materials as are known, or declared, to be gluten products. In all other cases the conventional factor 6.25 has been used. It is recognized that 6.38 is a more correct factor for milk proteins, but a variation of 0.13 in the factor is almost within the limit of analytical error and certainly within the limits of variation in factory control of these products from time to time, so that no attempt has been made to apply this more accurate factor to casein preparations.

Nitrogen-free extract. The interpretation of this term has been made clear in previous reports but it may be briefly restated. In proximate analyses nitrogen-free extract is an expression used to cover the difference between 100 per cent. and the sum of the percentage amounts of moisture, ash, protein, fiber and ether extract (crude fat). In general it so closely approximates the total carbohydrates, i. e., starch, sugars, etc., that the term is used synonymously with carbohydrate. Obviously, the percentage of this constituent group varies according to the protein factor used. In other words, it will be higher if 5.70 is used to calculate protein than if 6.25 is employed.

In addition to starch, nitrogen-free extract includes carbohydrates which we may call available, accepting the term "available" to mean those materials which directly reduce Fehling's solution or do so after treatment with acid and therefore presumably yield glucose in metabolism, and carbohydrates which are non-available or less available in human metabolism. The first class includes soluble starch, dextrins, maltose, glucose, sucrose, invert sugar, raffinose, lactose and some other less common sugars. The second group includes substances, collectively termed hemicelluloses, which occur as vegetable cell-wall constituents, and soluble vegetable gums and mucilages sometimes called saccharo-colloids. Although these compounds yield sugars of the hexose and pentose types, it is doubtful if they play any considerable part in metabolism other than that of the ruminant animals.

The interpretation of nitrogen-free extract, represented by a figure obtained by difference, as synonymous with carbohydrate, does injustice to certain diabetic food products, notably casein preparations, which are free or practically free from carbohydrates.

In our tables of analyses starch is indicated as a part of the nitrogen-free extract; the remainder represents the difference from 100 per cent. as stated.

NEW ANALYSES OF COMMERCIAL DIABETIC PRODUCTS.

Our 1919 inspection of diabetic preparations may be classified as follows:

Commercial products		85
Commercial and experimental products:		
Washed bran	3	
Experimental recipes with bran	2	
Thrice-cooked and other vegetables	4	
Diabetic broths	9	
Artificial or modified milks	4	22
Total		107

The efficient coöperation of Messrs. R. E. Andrew, C. E. Shepard, H. D. Edmond and M. A. D'Esopo, to whom all analytical work is due, is gladly acknowledged. Acknowledgment is also made to Miss Alta H. Moss for her assistance in the work of compilation.

The analyses of eighty-five commercial products are given in Table IV.

TABLE IV.—ANALYSES OF

Station No.	Manufacturer and Brand.
	Herman Barker, Somerville, Mass.
13096	Gluten Food "A"
13097	Gluten Food "B"
13098	Gluten Food "C"
	The Cereo Co., Tappan, N. Y.
13099	Soy Bean Gruel Flour
	The Farwell & Rhines Co., Watertown, N. Y.
13066	Genuine Gluten Flour 40%
	Golden Rod Milling Co., Portland, Ore.
13059	Acme Special Flour
	Health Food Co., New York.
13076	Almond Meal
13083	Alpha
13244	Alpha No. 1 Best Diabetic Wafer. Casein
13245	Alpha No. 2 Best Diabetic Wafer
13091	Bran Biskue. Gluten Bran
13077	Diabetic Casein Flour (self-raising)
13073	Gluten Cracker-Dust
13082	Glutona Bread Sticks
13220	Glutosac Bread
12604	Glutosac Bread
13088	Glutosac Butter Wafers
13079	Glutosac Gluten Flour
13092	Gluten Nuggets
13085	Glutosac Rusk
13089	Glutosac Wafers Plain
13090	Glutosac Zwieback
13072	Manana Gluten Breakfast Food
13081	Pronireu. A Gluten Griddle Cake Flour
13221	Protosac Bread No. 1
13222	Protosac Bread No. 2
13074	Proto Puffs No. 1
13219	Protosac Rusk
13075	Protosoy (Cereal)
13084	Protosoy Diabetic Wafer
13078	Protosoy Soy Flour
13080	Pure Washed Gluten Flour
13086	Salvia Almond Sticks
13403	Snow Flake Diabetic Casein Flour
	Huntley and Palmer, London.
13326	Akoll Biscuits

DIABETIC FOODS.

Station No.	Weight declared.	Weight found.	Water.	Ash.	Nitrogen.	Protein. N x 6.25.	Protein. N x 5.70.	Fiber.	N-free extract. Starch.	N-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
	gms.	gms.	%	%	%	%	%	%	%	%	%	
13096	368	363	9.86	0.29	13.50	.....	76.95	0.06	2.56	9.84	0.44	361
13097	368	354	9.72	0.33	12.98	.....	73.99	0.08	5.23	10.14	0.51	362
13098	368	343	10.00	0.42	12.79	.....	72.90	0.09	6.39	9.80	0.40	360
13099	396	387	6.12	3.98	7.38	46.13	.....	2.38	0.90	21.86	18.63	443
13066	1361	1388	10.65	0.75	7.10	.....	40.47	0.23	37.01	9.42	1.47	361
13059	4540	....	11.73	1.02	2.42	15.13	.....	0.33	61.48	8.56	1.75	356
13076	....	222	7.90	6.01	8.04	50.25	.....	2.40	none	18.00	15.44	412
13083	93	142	9.48	5.76	10.97	68.56	.....	0.35	1.01	6.40	8.44	380
13244	93	125	6.81	6.23	7.74	48.38	.....	0.17	none	4.89	33.52	515
13245	93	140	12.88	5.09	11.28	70.50	.....	0.13	1.13	6.25	4.02	348
13091	426	442	9.19	3.38	4.85	.....	27.65	1.51	33.84	13.90	10.53	396
13077	227	267	11.93	9.16	11.56	72.25	.....	0.14	none	5.73	0.79	319
13073	383	391	8.58	2.42	7.81	.....	44.52	0.71	23.18	11.83	8.76	398
13082	341	367	8.21	2.29	5.86	.....	33.40	0.29	30.60	14.10	11.11	412
13220	....	252	28.28	1.72	4.86	.....	27.70	1.49	26.78	10.33	3.70	293
12604	....	....	23.10	1.95	5.22	.....	29.75	0.84	29.53	12.26	2.57	309
13088	256	256	10.30	1.89	5.46	.....	31.12	0.36	40.42	7.92	7.99	390
13079	907	940	10.53	0.75	7.28	.....	41.50	0.29	36.20	9.05	1.68	362
13092	341	357	8.59	2.35	5.06	.....	28.84	0.33	32.18	15.38	12.33	417
13085	114	96	9.91	2.20	6.08	.....	34.65	0.83	34.26	12.53	5.62	376
13089	142	210	10.47	2.55	7.20	.....	41.04	1.19	25.12	12.09	7.54	342
13090	184	175	9.18	2.04	5.06	.....	28.84	0.83	33.34	15.24	10.53	405
13072	....	213	8.49	2.47	7.86	.....	44.80	1.09	21.99	12.47	8.69	396
13081	907	908	10.81	4.26	6.64	.....	37.85	0.20	36.56	9.14	1.18	345
13221	....	209	28.85	2.42	6.31	.....	35.97	0.84	20.53	7.39	4.00	292
13222	....	234	28.49	1.83	4.73	.....	26.96	0.30	30.47	8.43	3.52	302
13074	114	87	9.32	2.73	12.12	.....	69.08	0.20	3.26	10.74	4.67	371
13219	85	101	11.00	2.22	5.74	.....	32.71	1.95	39.26	7.84	5.02	364
13075	454	461	7.65	5.39	6.42	40.13	.....	3.78	trace	24.88	18.17	424
13084	140	155	7.35	4.03	7.44	46.50	.....	1.80	10.58	14.23	15.51	421
13078	481	485	6.32	4.43	6.30	39.38	.....	4.33	1.86	25.10	18.58	433
13080	680	716	8.31	0.71	13.14	.....	74.90	0.30	3.77	10.04	1.97	373
13086	426	423	7.11	3.28	5.14	32.13	.....	0.85	21.40	9.10	26.13	486
13403	223	215	10.41	6.07	12.67	79.19	.....	....	none	3.18	1.15	340
13326	227	278	7.00	3.28	8.98	56.13	.....	0.47	1.80	5.80	25.52	485

TABLE IV.—ANALYSES OF

Station No.	Manufacturer and Brand.
	The Kellogg Food Co., Battle Creek, Mich.
13069	40% Gluten Biscuit
13067	Gluten Flour 40%
13070	Thoroughly Cooked 40% Gluten Meal
13068	Pure Gluten Biscuit
13071	Pure Gluten Meal
	Lister Bros., Inc., New York.
13094	Diabetic Flour. Self-rising
	Loeb's Diabetic Food Bakery, New York.
13054	Aereated Gluten Bread
12426	Aereated Gluten Bread
13038	Almond Chocolate Bars
13044	Diabetic Almond Macaroons
13045	Diabetic Breadsticks
13046	Diabetic Breadsticks. Almond
13042	Diabetic Butter Cookies
13039	Diabetic Chocolate
13047	Diabetic Lady Fingers
13041	Diabetic Sponge Cookies
13050	Caseine Bread
12425	Caseine Bread
13380	Caseine Breakfast Cereal
13051	Caseine Muffins
13052	Genuine Gluten Bread
13379	Gluten Breakfast Cereal
13040	Gluten Cracker Meal
13043	Gluten Noodles
13048	Gluten Zwieback
13049	Gluten Almond Zwieback
13053	Pure Gluten Flour
	Mayflower Mills, Fort Wayne, Ind.
13062	Gluten Flour
	Norton-Truax, Chicago, Ill.
13325	Diaprotein
	Pieser-Livingston Co., Chicago, Ill.
13055	Genuine Gluten Flour
	Potter & Wrightington, Boston, Mass.
13093	Diet-Ease Gluten Flour
14397	Diet-Ease Gluten Flour

DIABETIC FOODS—(*Continued*).

Station No.	Weight declared.	Weight found.	Water.	Ash.	Nitrogen.	Protein.		Fiber.	N-free extract.		Fat.	Calories.
						N x 6.25.	N x 5.70.		Starch.	Other nitrogen-free extract, by difference.		
	gms.	gms.	%	%	%	%	%	%	%	%	%	
13069	71	85	9.55	1.24	7.18	.....	40.92	0.23	35.55	10.89	1.62	364
13067	....	....	10.10	0.63	8.28	.....	47.20	0.26	30.66	10.17	0.98	261
13070	454	457	8.50	1.38	7.54	.....	42.98	0.31	33.38	12.00	1.45	380
13068	85	153	8.33	2.04	13.75	.....	78.38	0.35	2.87	6.53	1.50	365
13071	454	480	7.73	0.92	13.88	.....	79.12	0.19	2.56	8.74	0.74	368
13094	57	62	11.53	9.44	10.93	68.31	.....	0.05	none	9.72	0.95	321
13054	28	31	9.17	1.78	8.04	.....	47.83	0.18	26.78	3.18	11.08	411
12426	....	....	7.85	1.80	7.46	.....	42.52	0.22	27.71	8.76	11.14	416
13038	....	74	4.76	3.43	2.38	14.88	.....	2.81	5.34	15.55	53.23	622
13044	....	88	5.90	4.39	4.86	30.38	.....	1.93	0.59	10.48	46.33	713
13045	....	47	9.14	2.67	6.69	41.81	.....	0.20	35.44	6.93	3.81	331
13046	....	70	7.93	2.00	6.30	39.38	.....	0.70	31.22	7.08	11.69	416
13042	....	123	8.85	3.06	5.84	36.50	.....	0.13	31.05	8.38	12.03	412
13039	....	76	4.72	3.45	2.35	14.69	.....	2.62	7.26	15.52	51.74	716
13047	....	19	8.33	4.41	7.64	47.75	.....	0.05	1.91	3.50	34.05	519
13041	....	19	8.66	4.45	7.95	49.69	.....	0.11	1.91	1.41	33.77	516
13050	....	144	40.42	4.47	6.53	40.84	.....	0.08	none	3.35	10.84	274
12425	....	....	39.73	4.35	6.57	41.05	.....	0.09	trace	3.71	11.07	323
13380	....	....	4.52	4.61	5.86	36.63	.....	....	0.70	11.02[1]	42.52	576
13051	....	100	30.82	4.89	7.32	45.74	.....	0.15	none	7.03	11.37	313
13052	227	218	32.01	1.80	4.98	.....	28.39	0.28	28.56	6.86	2.10	273
13379	160	170	4.38	2.73	5.12	.....	29.18	1.04	25.51	17.78	19.38	464
13040	....	104	8.40	1.59	6.44	.....	36.71	0.28	30.66	11.48	10.88	417
13043	85	85	10.23	1.63	6.54	.....	37.28	0.15	36.84	10.28	3.59	370
13048	....	55	9.61	1.91	6.78	.....	38.65	0.14	36.06	10.64	2.99	368
13049	....	59	8.91	1.94	6.60	41.25	.....	0.58	32.57	6.97	7.78	392
13053	454	429	10.48	0.89	6.80	.....	38.76	0.15	38.22	10.30	1.20	360
13062	....	....	10.35	0.85	8.42	.....	47.99	0.30	28.63	10.23	1.65	365
13325	265	281	11.72	6.35	12.44	77.75	.....	....	none	2.72	1.46	335
13055	....	....	10.16	0.81	7.26	.....	41.38	0.20	36.31	9.79	1.35	362
13093	....	....	12.50	0.98	4.64	.....	26.45	0.73	46.89	10.29	2.16	354
14397	....	....	8.76	0.96	6.94	.....	39.56	0.42	36.20	11.78	2.32	371

[1] Includes fiber.

TABLE IV.—ANALYSES OF

Station No.	Manufacturer and Brand.
	The Pure Gluten Food Co., Columbus, Ohio.
13215	Hoyt's Gluten Breakfast Food 40% Protein
13212	Hoyt's Gluten Flour over 40% Protein
13214	Hoyt's Gluten Granules over 40% Protein
13213	Hoyt's Gluten Self-raising (Flour) over 40% Protein
13605	Hoyt's Gluten Special Flour 80% Protein
	Schulenburg Oil Mill, Schulenburg, Texas.
13058	Baumgarten Process Allison Flour
	Still Rock Spa, Waukesha, Wis.
13352	Curdolac Flour
	Soy Bean Food Products Co., San Francisco, Calif.
13696	Soy Bean Flour A
13697	Soy Bean Flour B
	Waukesha Health Products Co., Waukesha, Wis.
13064	Hepco Dodgers
13065	Hepco Flour
13063	Hepco Grits
	Wilson Bros., Rochester, N. Y.
13056	Genteel Brand Flour
13057	Gluten Flour
	Miscellaneous.
14291	Dia-Biskit. Genevieve Jackson, Los Angeles, Calif.
13381	Svea Wafers. Prepared for S. S. Pierce Co., Boston, Mass.
13060	Peanut Butter. Acme Brand, J. W. Beardsley's Sons, Newark, N. J.
13061	Peanut Butter. Beechnut Brand, Beechnut Packing Co., Canajoharie, N. Y.

DIABETIC FOODS—(*Concluded*).

Station No.	Weight declared.	Weight found.	Water.	Ash.	Nitrogen.	Protein.		Fiber.	N-free extract.		Fat.	Calories.
						N x 6.25.	N x 5.70.		Starch.	Other nitrogen-free extract, by difference.		
	gms.	gms.	%	%	%	%	%	%	%	%	%	
13215	454	463	9.23	0.93	8.07	.....	46.00	0.51	31.39	10.15	1.79	366
13212	454	479	10.68	0.82	7.34	.....	41.84	0.27	33.19	12.07	1.13	359
13214	454	466	9.75	0.97	7.68	.....	43.78	0.68	32.15	10.08	2.59	327
13213	454	462	10.18	3.85	7.28	.....	41.50	0.50	33.38	9.72	0.87	346
13605	454	464	6.82	1.10	13.54	.....	77.18	0.27	2.81	10.63	1.19	373
13058	5443	....	8.08	5.67	8.00	50.00	.....	3.47	1.13	21.61	10.04	381
13352	....	....	10.25	3.99	9.06	56.63	.....	3.79	5.09	17.89	2.36	335
13696	....	....	7.65	4.71	6.69	41.81	.....	1.98	0.34	24.07	19.44	440
13697	....	....	7.91	5.08	7.04	44.00	.....	2.07	0.76	25.98	14.20	411
13064	....	....	8.73	5.68	6.79	42.44	.....	3.85	1.01	21.56	16.73	411
13065	....	....	8.09	4.31	7.04	44.00	.....	2.15	0.90	21.41	19.14	438
13063	....	....	8.88	5.51	6.44	40.25	.....	4.19	0.87	23.91	16.39	408
13056	....	....	11.60	0.98	4.70	29.38	.....	0.26	49.16	6.23	2.39	361
13057	....	....	10.52	0.74	8.04	.....	45.83	0.36	28.63	11.91	2.01	364
14291	....	....	6.08	6.13	2.82	17.63	.....	11.99	6.13[2]	47.21	4.83	328
13381	50	....	10.58	2.85	1.04	6.50	.....	0.13	53.72	25.53	0.69	349
13060	....	....	1.82	3.07	5.00	31.25	.....	1.77	5.29	8.53	48.27	615
13061	....	....	1.99	3.32	4.86	30.38	.....	1.81	5.04	7.55	49.91	621

[2] Includes reducing substances derived from agar-agar.

COMMENTS ON INSPECTION AND ANALYSES.

Since the adaptability of any particular food to the diet of a diabetic patient is primarily a question of individual tolerance we do not propose to criticize the various products herein reported essentially from that standpoint except insofar as certain standards and regulations which have been formulated by Federal or other authorities may apply. We concur in the belief that a manufacturer offering a product as a diabetic food should declare its composition, within reasonable limits, for the guidance of practitioners and others interested. With reliable information as to the three essential food groups, viz., protein, fat, and carbohydrate, the physician can save himself much blind experiment in his efforts to establish a patient's tolerance.

Herman Barker's Gluten Food A is declared to contain "not over 4 per cent. carbohydrates and approximately 87 per cent. of protein"; Gluten Food B "not over 7 per cent. carbohydrates and approximately 85 per cent. of protein"; Gluten Food C "not over 12 per cent. carbohydrates and approximately 83 per cent. protein."

Our analyses show the constituents named in about the same proportion as declared in the several cases but the actual amounts stated appear to have been based upon the protein factor 6.25.

Farwell and Rhines' Gluten Flour 40 per cent. conforms to its label and to the Federal standard for gluten flour.

Golden Rod Milling Co. Acme Special Flour. We have no evidence that this product is sold specifically as a diabetic food. No analysis accompanied the sample analyzed but a tag attached thereto stated that analyses of the company's products are on file with the Dairy and Food Commissioner (of Oregon) and will be furnished by him or the Company upon application. We understand that the product has been used as a diabetic food, but it is evident that with 15 per cent. of protein and 70 per cent. of carbohydrate it could not be tolerated by any diabetic who could not also tolerate ordinary flour.

The Health Food Co. emphasizes the fact that their purpose is "to supply a diet ranging from an absolutely starchless to a full-tolerance diet," letting the physician decide upon that food or group of foods which is best adapted to the needs of his patient. Our analyses indicate that this perfectly rational plan is followed. In our opinion a statement of the limits of protein, fat, and carbohydrate on the label of each product would be a decided advantage.

The Kellogg Food Co. The chemical composition within reasonable limits is given on the labels of the several products examined which our analyses in the main substantiate. We commend this practice. However, some of their statements with regard to the advantages of high protein in general, and wheat protein in particular, are extravagant in the light of recent investigations referred to elsewhere in this bulletin.

Lister Bros. Inc. The composition of Lister's Diabetic flour, self-raising, is adequately stated on the label. Their analysis shows 9.72 per cent. of nitrogen-free extract which is ordinarily interpreted as carbohydrate in the usual proximate analysis. As this interpretation might appear to conflict with their claim that the product is free from starch and sugar, at the manufacturers' request we have tested the flour for water-soluble carbohydrates and find only negligible amounts of copper-reducing substances present. This particular group of constituents, other than starch, is obtained by difference as already explained and it obviously includes the accumulated variations of other determinations, which, in this case and that of other similar preparations, are enhanced by losses of leavening constituents in the process of ashing.

Loeb's Diabetic Food Bakery products are without declaration of composition except that Sponge Cookies and Lady Fingers are declared to be "without flour or sugar." We find only 1.9 per cent. of starch in each of these cases and only 1.4 and 3.5 per cent. respectively of other nitrogen-free extract. Gluten Flour satisfies the Federal definition and standard for this product.

Mayflower Mills and *Pieser-Livingston Co.'s* Gluten Flours both exceed the Federal standard. The latter has a complete analysis printed on the sack which our analysis confirms when converted to the same (water-free) basis.

Norton-Truax Diaprotein, which is a casein flour, is declared to be free from starch and sugar and to contain 83 per cent. of protein. We find no starch and only 2.72 per cent. of other nitrogen-free extract, which would be lower still by the use of the protein factor 6.38, and which in any case probably contains not more than traces of copper-reducing materials. Eighty-

three per cent of protein requires about 13 per cent. of casein nitrogen. We find 12.44 per cent. of nitrogen in the material as analyzed. This discrepancy is due to a difference in moisture content; the declaration is based upon a moisture figure of 6.72 whereas we find 11.72 per cent. of moisture in the sample examined.

Potter and Wrightington. The first sample of Diet Ease Gluten Flour submitted was below standard. Apparently the manufacturers were misled by the reports of their analyst which showed the crude gluten content instead of protein based on the nitrogen content. A sample examined subsequently conformed to the Federal standard.

The Pure Gluten Food Co. Only declarations of protein, which our analyses confirm, are made on the labels of these products. Special flour 80 per cent. contains over 80 per cent. protein calculated on the water-free basis.

Schulenburg Oil Mill. Allison Flour (Cottonseed Flour) is a high-grade cottonseed product. It is practically free from starch and contains about the same amount of other carbohydrates as soy bean flour. It has been shown by Rather[1] that about 78 per cent. of the protein of cottonseed meal or flour is utilized in the metabolism of man; and that these proteins are utilized equally as well as the proteins of legumes, nine tenths as well as those of cereals and eight-tenths as well as those of meat. As to the carbohydrates, while we know that 75 per cent. of the nitrogen-free extract is digestible by ruminant animals we do not know to what extent they are utilized in human digestion. One of the sugars present is raffinose, for the preparation of which cottonseed meal is commonly used. The low starch content and relatively low content of other carbohydrates has suggested this product as an adjunct to the diabetic diet. Knowledge of its protein-glucose yield in metabolism would be valuable in judging its suitability for this purpose.

Still Rock Spa. Curdolac Flour we understand has not yet been placed upon the open market, its use having been confined to the treatment of diabetic patients in the hospital where it originated, or of those who have been under treatment there.

Soy Bean Food Products Co., Waukesha Health Food Co., and

[1] Jour. Am. Chem. Soc. 36, p. 584, 1914.

Cereo Co. Analyses of their soy bean preparations are typical of products of their respective types. Available carbohydrates are relatively low; but the glucose yield of the proteins of the soy bean has not been determined.

Wilson Bros. We have no information that Genteel Brand Flour is recommended as a diabetic food; it requires practically as great carbohydrate tolerance as ordinary flour. Gluten Flour, however, satisfies the Federal standard for this product.

Miscellaneous Preparations. Dia-Biskit is made from washed bran and agar-agar and so labeled. The starch content is low and the carbohydrates of agar-agar are not appreciably available in human metabolism.[1] Svea Wafers, on the other hand, are very high in available carbohydrates.

No general examination of peanut butter has been attempted but the two samples submitted have been analyzed.

In general our inspection reveals an evident purpose on the part of manufacturers to maintain standards and market their products for what they are. The practice of controlling their output by chemical analysis is increasing. Inquiry generally reveals a knowledge, on their part, of the essential composition of their products; but this might, however, be better or more fully stated on the labels in many cases. Since there is no universal diabetic food, particular claims of merit for any product which might lead the patient to believe that he could safely introduce that article into his dietary should be discouraged. The production of a foodstuff of standard or declared composition, marketed under a label which adequately states what that composition is, should be the prime duty of the manufacturer, leaving the responsibility of recommending and prescribing that food to the attending physician.

SPECIAL PREPARATIONS OF INTEREST IN CONNECTION WITH DIABETIC DIETARIES.

The rigid dietary restrictions in cases of severe diabetes result in menus which are conspicuously monotonous. Since our mental attitude toward that which we eat, whether in health or disease, is now recognized as a factor in metabolism, food for the diabetic patient should be prepared with more than ordinary care as to

[1] Wardall. Jour. Am. Med. Assoc. 69, pp. 1859-62, 1917.

attractiveness and palatability. The need of greater variety in the diet is emphasized by Dr. Allen,[1] who is particularly interested in the introduction of uncommon fruits and vegetables wherever the climatic conditions permit of their culture, in the hope of finding something of interest and usefulness from this standpoint. The diet should also be adequate, not only from the quantitative point of view as represented by the calorie intake, but also from the qualitative side as represented by the important accessory diet factors or vitamines. Unfortunately the exclusion of certain types of foods by reason of their unsuitable carbohydrate content automatically excludes desirable sources of vitamines; and the modification of other types, as in the case of the thrice-cooking process, necessarily removes those essential diet principles which are soluble in water. The minimum calorie intake, which usually obtains in diabetic treatment, and the restricted range of choice in diet further reduce the possibility of adequate vitamine supply. In this connection the nutrition studies of Osborne and Mendel offer a practical suggestion. They have repeatedly demonstrated the practicability of administering vitamine concentrates to remedy natural or induced disturbances in metabolism, and the use of such preparations to supplement foods naturally low in, or artificially deprived of vitamines, and to insure a sufficient amount of these important diet factors in the low-calorie and restricted diet of the diabetic, is worthy of consideration in practical diabetic treatment.

Beyond these general suggestions we do not propose to go into the subject of diabetic menus and recipes which has been adequately treated by Joslin and others. But we have been interested in a number of preparations which clinical experience has shown to be of interest and value in the diabetic dietary. These include washed bran, thrice-cooked vegetables, diabetic broths and artificial or modified milks.

Washed Bran.

Bran is used in the diet of diabetic patients to an increasing extent. It is valuable both as an aid to digestion by reason of the bulk it adds to ingested foods and as a diluent for concentrated foods on account of its relatively low protein and limited

[1] Private communication.

availability of its carbohydrate. The glucose yield of bran in metabolism has not been established but the work of Swartz[1] and others with complex carbohydrates comparable to those of bran would suggest that its carbohydrates are not utilized to any considerable extent in human digestion.

Numerous so-called "health" brans are on the market. They are primarily for use to relieve constipation and are not generally marketed specifically as diabetic foods. However, the impression has been gained by many diabetic patients that such preparations are safe. This impression is unfortunate for, as Dr. Joslin has noted, many such brans contain more starch than the ordinary commercial bran commonly used as a fodder grain. This is illustrated in the analyses of bran given in the accompanying table.

In order to render bran suitable for use in the diabetic diet the simple process of washing it free from starch by a stream of water is recommended as a household method of treatment. The bran is placed in a cheese cloth bag and tied under the faucet, allowing a stream of water to run through it until the water comes through clear. Frequent kneading of the mass is necessary for effective washing.

This is, of course, a wasteful process and commercially the problem is approached in a different manner, the starch being first converted into soluble carbohydrate and then removed by suitable means.

For the purpose of finding the composition of bran washed by the household method outlined above and to give an idea of the comparative composition of the washed and unwashed material as well as information as to the losses involved, the following experiments were tried.

Three samples of bran were used. One, **13600,** was common bran sold as a commercial cattle feed. The others, **13601** and **13111,** were "health" brans intended for clinical use but not recommended particularly for diabetic patients.

One hundred grams of each were washed in running water until the washings were clear and gave negative or faint tests for starch by means of iodine solution. The samples were then spread out on trays, dried rapidly in a current of warm air, and

[1] Swartz, Mary D., Nutrition Investigations of the Carbohydrates of Lichens, Algae and Related Substances. Yale University Press, 1911.

the weight of the extracted and dried bran observed. The losses were found to be from 39 to 45 per cent.

Analyses of the original unwashed bran and the washed product are given in Table V. The analyses are also given on the water-free basis; and values representing the losses sustained have also been calculated.

TABLE V.—ANALYSES OF BRAN, UNWASHED AND WASHED.

Sample No.	Description of material.	Water.	Ash.	Protein, N. x 6.25.	Fiber.	Starch.	Total sugar.	Other nitrogen-free extract.	Fat, ether extract.
		%	%	%	%	%	%	%	%
13600	Common bran, original unwashed, *air dry*	9.02	6.24	15.63	10.49	9.00	7.16	37.52	4.94
	washed, *air dry*	4.25	4.34	14.00	15.94	2.08	0.52	54.56	4.31
	original unwashed, *water free*	....	6.86	17.18	11.53	9.89	7.87	41.24	5.43
	washed, *water free*	....	4.53	14.62	16.64	2.17	0.54	57.00	4.50
	original constituents remaining	....	2.89	9.32	10.61		1.73	36.33	2.87
	original constituents, washed away	....	3.97	7.86	0.92		16.03	4.91	2.56
13601	Health bran, B. original unwashed, *air dry*	9.84	5.29	19.38	7.57	20.81	6.52	27.25	3.34
	washed, *air dry*	4.57	5.17	21.69	13.82	6.58	0.54	43.93	3.70
	original unwashed, *water free*	....	5.87	21.49	8.40	23.08	7.23	30.23	3.70
	washed, *water free*	....	5.42	22.73	14.48	6.90	0.57	46.02	3.88
	original constituents remaining	....	3.15	13.23	8.43		4.35	26.78	2.26
	original constituents washed away	....	2.72	8.26	+0.03		25.96	3.45	1.44
13111	Health bran, C. original unwashed, *air dry*	7.92	5.60	19.00	7.54	22.25	5.88	27.77	4.04
	washed, *air dry*	3.61	7.09	22.69	11.30	8.41	0.56	41.54	4.80
	original unwashed, *water free*	....	6.08	20.63	8.19	24.16	6.38	30.17	4.39
	washed, *water free*	....	7.36	23.54	11.72	8.73	0.58	43.09	4.98
	original constituents remaining	....	4.70	15.03	7.48		5.94	27.51	3.18
	original constituents washed away	....	1.38	5.60	0.71		24.60	2.66	1.21

The analyses show that the common bran contained only about 16 per cent. of carbohydrates of the readily available types (starch and sugar), as compared with nearly 30 per cent. in the health brans.

The true comparison in composition of the unwashed and washed products is shown by their respective analyses calculated to the water-free basis. There is a conspicuous reduction in available carbohydrate but other constituents may or may not be reduced. Thus, for example, protein is higher in the unwashed material; yet considerable amounts of protein have been lost in material mechanically removed.

The actual losses sustained are estimated by calculating the analysis of the water-free washed material to the basis of the water-free unwashed material. Samples **13600, 13601** and **13111** lost 36.25, 41.80 and 36.16 per cent. respectively on washing; the respective factors are therefore 63.75, 58.20 and 63.84 on the water-free basis.

The effect of the washing in these trials was to remove from 70 to 83 per cent. of the available carbohydrate; the health brans still contained, however, between 5 and 10 per cent. of this material. Large and variable proportions of other constituents were also removed. For example, there was a loss of ash ranging from 23 to 58 per cent. and of protein ranging from 27 to 46 per cent.

The use of washed bran as a diluent for high protein flours is illustrated by the following recipes and analyses of the products made thereby.[1]

Gluten-Bran Bread:

120 cc. water
1 yeast cake
10 grams 40 per cent. gluten flour
15 grams washed bran (Sample No. 13600)
Salt
10 grams oleomargarine

Weight of loaf after baking 185 grams.

Gluten-Bran Muffins:

40 cc. water
8 grams baking powder

[1] Recipes and baked products submitted by Miss Hoffman of the Dietetic Department of the New Haven Hospital.

40 grams 80 per cent. gluten flour
20 grams washed bran (Sample No. 13600)
Salt
15 cc. cooking oil
50 grams egg

Weight of muffins (6) after baking 115 grams.

TABLE VI. ANALYSES OF GLUTEN-BRAN BREAD AND MUFFINS.

	Bread.		Muffins.	
	In air dry.	In original.	In air dry.	In original.
	%	%	%	%
Water	2.90	39.64	2.94	24.04
Ash	2.38	1.48	6.84	5.35
Nitrogen	6.49	4.03	7.20	5.63
Protein (N. x 5.7)	36.99	22.97	41.04	32.09
Fiber	2.22	1.38	3.47	2.72
Nitrogen-free Extract:				
Starch	29.93	18.60	6.50	5.09
Other N.-free Ext.	18.11	11.29	19.20	15.05
Fat	7.47	4.64	20.01	15.66

THRICE-COOKED VEGETABLES.

In many of the common vegetables the carbohydrate content is so low that they are tolerated without modification by diabetics. Vegetables which are eaten only after cooking and which are removed from the water in which they are cooked, lose considerable amounts of carbohydrate. This suggested to Allen[1] the more complete removal of carbohydrate material by repeated extraction with water which constitutes the so-called thrice-cooking process. Vegetables so treated are boiled with water, usually three times, and the water is drained off and discarded after each boiling. The number of treatments of this kind may be extended for substances particularly rich in sugar materials or in cases where such materials are slowly removed.

Wardall[2] has suggested and tried a modification of this process by which vegetables are extracted at 60° C. for periods of ten to fifteen minutes, repeating the extractions until carbohydrates are practically all removed as determined by actual reduction tests with Fehling's solution. She finds that the color, texture, and

[1] Boston Med. and Surg. Jour., p. 241, 1915.
[2] Jour. Am. Med. Assoc., 69, 1859-1862, 1917.

palatability of vegetables are less impaired by this process than by repeated treatments with boiling water, although the method is probably not adapted to the preparation of all vegetables, particularly cabbage.

Comparative analyses of cooked and uncooked vegetables are not readily available. Joslin[1] has compiled results which give comparisons from the standpoint of carbohydrate content.

TABLE VII.—CARBOHYDRATE CONTENT OF FRESH AND COOKED VEGETABLES, (JOSLIN).

	Fresh.	Cooked.
	%	%
Asparagus	3.3	2.2
Spinach	3.2	2.6
Beans, string	7.4	1.6
Beets	9.7	7.4
Carrots	9.2	6.8
Cabbage	5.6	3.8*
Greens, beet	...	3.2
Onions	9.9	4.9
Beets, boiled	...	10.0
Parsnips	...	13.2
Peas	16.9	14.6
Potatoes	18.4	20.9
Potato chips	...	46.7
Sweet potatoes	27.4	42.1

* Loss of 33 per cent.

It is quite evident that repeated extractions with water will remove from foods nutrient materials other than sugar, particularly ash constituents and water-soluble vitamines. The loss of these accessory diet factors is the more regrettable for the reason that in the restricted diet of the diabetic it cannot be readily compensated; but the practicability of administering vitamine concentrates to correct artificial or natural dietary deficiencies has already been referred to and would appear to be a logical remedy in this instance.

The distribution of losses in the several proximate groups of nutrients has been determined by analyses of several vegetables

[1] Treatment of Diabetes Mellitus, p. 212.

both in the fresh state and after extraction by the two methods already mentioned and now given in further detail.

Extraction at low temperature was carried out as recommended by Wardall.[1]

Place eight hundred grams of thinly sliced material in double cheesecloth and immerse in 1600 cc. of water at 60° C. for 15 minutes. Drain off the water and add a fresh portion of water at the same temperature and allow to stand 15 minutes. Repeat the decantations and additions of fresh water until the water extract gives tests with Fehling's solution which are negative or inconsiderable, both before and after hydrolysis with acid. Dry rapidly in current of warm air.

The number of extractions required to reach a practically negative test is quite variable in different cases. With rhubarb the test was insignificant after three extractions, while with asparagus eleven extractions were necessary.

The thrice-cooking process was carried out as described by Joslin.[2]

Allow 800 grams of the finely sliced material contained in double cheesecloth to soak in cold water for 30 minutes. Drain off the water. Add 1600 cc. of cold water, bring to boiling and boil for 3 to 5 minutes. Discard the water. Repeat the operation of boiling and adding water twice more, finally rinsing with cold water and drying rapidly in current of warm air.

For the purpose of comparison, in each case a portion of untreated material was air dried under the same conditions that prevailed in case of the extracted material. The analysis of this air-dry material was converted to the basis of the original, untreated substance and a similar loss due to water assumed for the same vegetable under the different methods of extraction. The analyses of the untreated and the extracted materials show the same respective water content and therefore other variations may be attributed to the effects of extraction.

The analyses of asparagus, rhubarb and chinese cabbage are given in Table VIII. Analyses of the edible portion and of the seeds and placenta of sweet green peppers, untreated, are included.

[1] Jour. Am. Med. Assoc., 69, 1859-1862, 1917.
[2] Treatment of Diabetes Mellitus, pp. 533-4.

TABLE VIII.—ANALYSES OF VEGETABLES, UNCOOKED, THRICE-COOKED AND EXTRACTED.

Description of material.	Water.	Ash.	Protein, N x 6.25.	Fiber.	Total sugar.	Other nitrogen-free extract.	Fat, ether extract.	Nitrogen.
	%	%	%	%	%	%	%	%
Asparagus, untreated	92.64	0.60	2.34	0.90	1.37	1.95	0.20	0.37
Extracted, Wardall method..	92.64	0.19	2.32	1.73	0.13	2.69	0.30	0.37
Thrice-cooked, Joslin method	92.64	0.23	2.36	1.68	0.18	2.56	0.35	0.38
Rhubarb, untreated	94.88	0.74	0.76	0.75	0.17	2.59	0.11	0.12
Extracted, Wardall method..	94.88	0.21	0.60	1.60	0.08	2.53	0.10	0.10
Thrice-cooked, Joslin method	94.88	0.24	0.69	2.06	0.05	1.98	0.10	0.11
Chinese cabbage, untreated	95.33	0.56	1.20	0.50	1.41	0.94	0.06	0.19
Extracted, Wardall method..	95.33	0.24	1.07	1.16	0.05	2.03	0.12	0.17
Thrice-cooked, Joslin method	95.33	0.25	1.17	1.16	0.11	1.85	0.13	0.19
Green peppers, sweet, untreated, edible portion[1]	93.81	0.36	0.83	0.82	1.85	2.23	0.10	0.13
Seeds and placenta.....	86.25	0.73	3.00	2.90	1.67	2.73	2.72	0.48

[1] Edible portion 87.2%, seeds and placenta 12.8%.

The actual losses of original solid matter in the several cases by the two methods of treatment was determined to be as follows:

	Wardall method. %	Joslin method. %
Asparagus	51.5	50.8
Rhubarb	57.0	66.0
Chinese cabbage	56.7	56.7

The analyses show a very complete removal of the more readily available portion of the nitrogen-free extract, i. e., reducing sugars; and a decrease also, though less conspicuous, in what is usually reckoned as carbohydrate, in this case sugar and other nitrogen-free extract. Protein is not substantially changed but there is a notable loss of mineral matter.

BROTHS.

Joslin[1] refers to the extensive use of broths upon fasting days in the treatment of diabetes. Their composition becomes of

[1] Treatment of Diabetes Mellitus, page 271.

interest and importance on account of their utilization for this purpose. Analyses made for Dr. Joslin by Mr. A. H. Smith in Professor Mendel's laboratory, have already indicated the substance and quality of these preparations.

Nine samples of various broths prepared at the New England Deaconess Hospital and sent to us at Dr. Joslin's request have been examined and the results appear in Table IX.

TABLE IX.—ANALYSES OF BROTHS USED IN DIABETIC TREATMENT.

Station No.	Kind of Broth.	Total solids.	Fat, ether extract.	Total nitrogen.	Total reducing sugars.	Total ash.	Salt (NaCl).
		%	%	%	%	%	%
13342	Mutton bone	2.10	0.04	0.23	none	0.28	0.05
13343	Veal bone	1.42	0.04	0.23	none	0.36	0.03
13344	Beef bone	1.32	0.04	0.20	none	0.30	0.05
13345	Beef bone	0.92	0.03	0.15	none	0.32	0.03
13346	Mutton bone	0.90	0.04	0.16	none	0.18	0.03
13347	Veal bone	1.85	0.02	0.28	none	0.30	0.05
13348	Chicken	0.69	0.04	0.10	none	0.19	0.03
13349	Clams chopped	1.60	0.03	0.24	none	0.48	0.06
13391	Clams unchopped	1.93	0.04	0.20	none	0.30	0.07

It is apparent that the gross amount of nutrient material in these preparations is small, the total solids ranging generally from 1 to 2 per cent. Fat is present in traces only. They are free from available carbohydrates as indicated by negative reduction tests with Fehling's solution. Appreciable amounts of mineral constituents are present but salt is satisfactorily low. According to Joslin, salt should not exceed 0.5 per cent. Nitrogenous matter is low. Smith determined the distribution of nitrogen and found that the proportion of total nitrogen which was in the form of protein varied considerably. Summarizing his results, Joslin states that nearly three-fourths of the total nitrogen may generally be considered to be in protein and amino combination, the remainder being due to extractives.

Joslin recommends the use of thin, clear, meat broths, agreeably seasoned, lightly salted and free from fat and sediment. Our analyses appear to be chemically descriptive of such broths.

ARTIFICIAL AND MODIFIED MILKS.

Cows' milk ordinarily contains from 4.2 to 4.8 per cent. of sugar. Skimmed milk and buttermilk are not essentially different from whole milk as regards sugar content but in cream, sugar will seldom exceed 3 per cent. Unrestricted use of these products is not allowable in cases of low carbohydrate tolerance and particularly when taken in conjunction with other food. For this reason various substitutes for milk have been suggested.

Williamson[1] recommends a preparation made from cream, egg white, salt and a trace of saccharin. Joslin has used commercial sugar-free milks with success. Janney has introduced soy bean milk as a milk substitute in the treatment of diabetes in children and finds it distinctly valuable. He also writes that almond milk is being used in his clinic with marked success in certain intestinal cases.

Methods for preparing these milk substitutes, other than sugar-free milk, are as follows:

Williamson's formula (as prepared in this laboratory). To one pint of water add four tablespoonfuls of 20 per cent. cream, mix thoroughly and allow to stand for twelve hours. Remove the cream layer and add to it the beaten white of one egg. Mix well and dilute with water to the consistency of milk. (A little salt and a trace of saccharin may be added if desired.)

Janney's formula, soy bean milk. To one quart of water add five ounces of soy beans and allow to stand twelve hours. Grind through a coarse grinder, strain through four thicknesses of gauze and heat to 100° C.

Janney's formula, almond milk. Shell and blanch the almonds and put them through a fine grinder. To 500 cc. of water add 30 grams of glycerol and 250 grams of almond meal. Allow to stand over night and strain through gauze.

Analyses of these preparations are given in Table X.

[1] Williamson. Diabetes Mellitus and Its Treatment, The Macmillan Co., 1898.

TABLE X.—ANALYSES OF MILK SUBSTITUTES.

	Williamson's Formula.	Soybean Milk.	Almond Milk.[4]	Sugar-free Milk (Whiting's).
	%	%	%	%
Solids	6.21	2.49	13.09	16.70
Ash	0.11	0.33	0.49	0.76
Protein	1.50[1]	1.38[1]	3.03[1]	6.43[2]
Sugar	0.12	0.37	1.21	0.22
Fat	4.00	0.29	2.88[3]	9.34
Glycerol	....	....	5.48	....

[1] Factor 6.25.
[2] Factor 6.38
[3] May include some glycerol.
[4] Prepared by Miss Hoffman.

COMPILATION OF ANALYSES OF DIABETIC FOODS.

Table I of our report for 1913[1] contained analyses of diabetic foods made in this laboratory previous to that time, new analyses made that year and included also some data compiled from other sources. That tabulation has now been revised and enlarged to include many analyses made by us and published in our reports since 1913, our new analyses as given in Table IV of this report, and some analyses compiled from reports of other laboratories, and constitutes Table XI of this report.

In summary Table XI is made up as follows:

Analyses from Connecticut Report, 1913	387
Analyses from Connecticut Reports since 1913	107
New analyses made in 1919	85
Analyses compiled from other sources	51
Total	630

The analyses are identified by means of marginal symbols the interpretation of which will be found in the following list of references:

SOURCES OF COMPILED ANALYSES.

1. *California Agr. Exp. Station Report,* A, 1895, p. 161; B, 1902-3, p. 88; C, 1902-3, p. 97: 2. *Connecticut Agr. Exp. Station Report,* A, 1899, p. 138; B, 1901, p. 199; C, 1903, p. 140;

[1] Conn. Exp. Sta. Report of 1913, Part I, Section 1.

D, 1904, p. 188; E, 1906, p. 156-8; F, 1906, p. 165; G, 1907, p. 139; H, 1908, p. 603; I, 1908, p. 711; J, 1910, p. 550; K, 1911, p. 135; L, 1911, p. 161; M, 1912, p. 108; N, 1912, p. 197; O, 1912, p. 206; P, 1913, p. 18; Q, 1914, p. 146; R, 1915, p. 280; S, 1916, p. 193; T, 1917, p. 142-3; U, Bull. 218: 3. *Fetterolf, Univ. of Penn. Med. Bull.,* Sept., 1909: 4. *Inland Revenue Dept., Ottawa, Canada,* A, Bull. 354, pp. 6-9; B, Bull. 434: 5. *Janney, Münch. Med. Wochenschr.,* 40, 1910: 6. *König, Chem. Mensch. Nahr. u. Genussm.,* A, 1, 685, 1903; B, (Vers.-Stat. Münster); C, (Kornauth, Oesterr. Centralbl.); D, 1, 686 (Vers.-Stat. Münster); E, (Plagge and Lebbin); F, 1, 687 (Vers.-Stat. Münster); G, 1, 1463-4; H, 1, 1465; I, 1465 (Wintgen); J, 2, 535, 1904; K, 2, 883, 1904: 7. *König., Zeit. Nahr. u. Genussm.,* 1, 762, 1898: 8. *Kunz, Wein. klin. Wochenschr.,* 12, 509, 1899: 9. *Magnus-Levy, Berl. klin. Wochenschr.,* 47, 236, 1910: 10. *Maine Agr. Exp. Station,* A, Bull. 55, 1899, p. 96; B, Bull. 75, 99-101, 107, 1901; C, Bull. 158, p. 227-228, 1908; D, Off. Insp. 34, p. 123, 1911: 11. *Michigan Agr. Exp. Station,* Bull. 211, 1904, p. 18: 12. *New Hampshire State Board of Health,* A, 4, 5, 1916; B, 3, 65, 1914: 13. *North Dakota Agr. Exp. Station,* A, Report 1901, p. 20; B, Spec. Food Bull. 2, p. 184, 1912: 14. *Sandmeyer, Milch. Ztg.,* 29, 831, 1900: 15. *U. S. Dept. Agr., Notice of Judgment,* 1507: 16. *Wintgen, Zeit. Nahr. u. Genussm.* 5, 289, 1902: 17. *Zellner Pharm. Ztg.,* 46, 501, 1901.

TABLE XI.—COMPILATION OF ANALYSES OF DIABETIC FOODS.

Reference.	Manufacturer and Brand.	Water.	Ash.	Nitrogen.	Protein. N. x 6.25.	Protein. N. x 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
	FLOURS AND MEALS.										
	Acme Mills Co., Portland, Ore.										
1910-15	Acme Diabetic Flour	9.40	1.10	1.50	9.40	.....	0.80	71.40	6.00	1.90	364
	Amthor & Co., Halle.										
1904-6j	Weizen-Protein	8.60	1.10	13.46	.....	76.70	....	12.20		1.40	368
	Herman Barker, Somerville, Mass.										
1906-2e	Barker's Gluten Food "A"	10.10	0.20	13.66	.....	77.90	0.00	4.50[1]	6.70	0.60	362
1912-2m	Barker's Gluten Food "A"	7.40	0.40	13.90	.....	79.20	0.20	trace	12.30	0.50	370
1919	Barker's Gluten Food "A"	9.86	0.29	13.50	.....	76.95	0.06	2.56	9.84	0.44	361
1906-2e	Barker's Gluten Food "B"	10.10	0.20	13.50	.....	77.00	0.00	6.00[1]	6.10	0.60	362
1913-2p	Barker's Gluten Food "B"	6.30	0.40	13.62	.....	75.20	0.40	3.70	13.40	0.60	375
1919	Barker's Gluten Food "B"	9.72	0.33	12.98	.....	73.99	0.08	5.23	10.14	0.51	362
1906-2e	Barker's Gluten Food "C"	9.70	0.20	13.20	.....	75.20	0.00	8.30[1]	5.80	0.80	364
1913-2p	Barker's Gluten Food "C"	5.70	0.40	13.46	.....	76.70	0.60	3.40	12.60	0.60	377
1919	Barker's Gluten Food "C"	10.00	0.42	12.79	.....	72.90	0.09	6.39	9.80	0.40	360
	Battle Creek Sanitarium Co., Battle Creek, Mich.										
1916-4a	Gluten Meal	7.55	1.35	4.61	.....	26.28	0.12	55.03	8.65	1.02	369
1916-4a	Gluten Meal	7.35	1.20	6.90	.....	39.33	....	41.12	10.08	0.92	370
1914-2q	Gluten Meal 80%	6.83	....	13.44	.....	76.61	....	5.77	.....	.....	...
	Bischof & Co., London.										
1907-2g	Gluten Flour	10.10	1.30	12.77	.....	72.80	0.20	12.00		3.60	372
	Callard, Stewart & Watt, London.										
1906-2e	Casoid Flour	10.00	2.50	13.70	85.60	.....	....	none	1.40[2]	0.50	353
1909-3	Casoid Flour	10.30	2.50	13.20	82.50	.....	....	none	3.10[2]	1.60	357
1916-4a	Gluten Flour	9.70	....	12.88	.....	73.40	....	none	.....	.....	...
	Canada Cereal & Flour Co.										
1919-4b	Gluten Flour	12.02	2.61	3.26	.....	18.58	1.50	43.87	16.94	4.48	358
	Cereo Co., Tappan, N. Y.										
1912-2m	Soy Bean Gruel Flour	4.90	4.40	7.31	45.70	.....	1.90	0.60	22.00	20.50	458
1913-2p	Soy Bean Gruel Flour	4.20	4.20	6.90	43.10	.....	2.20	trace	24.90	21.40	465
1919	Soy Bean Gruel Flour	6.12	3.98	7.38	46.13	.....	2.38	0.90	21.86	18.63	443
	The Dieto Food Co., New York City.										
1914-2q	Flour, Pure Whole Wheat	7.85	1.15	2.36	.....	13.45	1.01	62.44	11.99	2.11	371
	Empire Flour Mills.										
1919-4b	Gluten Flour	10.46	0.48	2.30	.....	13.11	0.25	59.08	15.48	1.14	3.61

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	FLOURS AND MEALS—(*continued*).
	Farwell & Rhines, Watertown, N. Y.
1906-2e	Cresco Flour
1913-2p	Cresco Flour
1913-2p	Cresco Flour
1904-2d	Gluten Flour
1906-2e	Gluten Flour
1906-2e	Gluten Flour
1909-3	Gluten Flour
1913-2p	Gluten Flour
1913-2p	Gluten Flour
1916-4a	Gluten Flour
1916-4a	Gluten Flour
1919-4b	Gluten Flour
1919-4b	Gluten Flour
1919-4b	Gluten Flour
1919-4b	Gluten Flour 40%
1919	Genuine Gluten Flour 40%
1904-2d	Special Diabetic Food
1906-2e	Special Diabetic Food
1906-2e	Special Diabetic Food
1906-2e	Special Diabetic Food
1913-2p	Special Diabetic Food
	Gericke, Potsdam
1910-9	Aleuronat
	Golden Rod Milling Co., Portland, Ore.
1913-2p	Acme Special Flour
1919	Acme Special Flour
1916-4a	Gluten Flour
	O. B. Gilman, Boston, Mass.
1913-2p	Gluten Flour
	Karl Goldscheider, Carlsbad.
1909-3	Conalbin-Mehl No. 1
	Gumpert, Berlin.
1910-9	Ultramehl
1908-10c	Wheat Protein, Hazard's
	The Health Food Co., New York City.
1906-2e	Almond Meal
1913-2p	Almond Meal

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein. N. x 6.25.	Protein. N. x 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
1906-2e	12.70	0.50	1.78	11.10	.....	....	.....	74.80	0.90	352
1913-2p	12.70	0.40	2.90	18.10	.....	0.40	57.20	10.20	1.00	351
1913-2p	.....	....	3.22	20.10	.....	....	.....	.....	.....	...
1904-2d	.....	....	1.50	.....	8.55	....	much	.....	.....	...
1906-2e	12.70	0.40	1.82	.....	10.40	0.30	71.50[1]	3.80	0.90	351
1906-2e	13.30	0.50	1.73	.....	9.90	0.10	72.00[1]	3.20	1.00	349
1909-3	10.70	0.50	1.92	.....	10.90	....	77.40[2]		0.50	358
1913-2p	8.30	0.60	6.90	.....	39.30	0.20	38.10	12.30	1.20	370
1913-2p	8.60	0.50	7.41	.....	42.20	0.60	32.80	14.20	1.10	367
1916-4a	10.65	0.45	3.06	.....	17.44	0.04	63.39	7.05	0.98	360
1916-4a	7.05	0.35	7.04	.....	40.13	....	41.35	10.12	1.00	366
1919-4b	10.93	0.34	3.64	.....	20.75	trace	54.09	12.55	1.34	362
1919-4b	11.14	0.57	3.84	.....	21.89	trace	55.71	9.41	1.28	360
1919-4b	9.34	0.52	7.16	.....	40.82	trace	32.17	15.75	1.40	368
1919-4b	9.09	0.55	6.90	.....	39.32	trace	37.75	12.03	1.26	368
1919	10.65	0.75	7.10	.....	40.47	0.23	37.01	9.42	1.47	361
1904-2d	.....	....	2.16	13.50	.....	....	much	.....	.....	...
1906-2e	12.00	1.90	2.29	14.30	.....	1.40	58.30[1]	9.10	3.00	354
1906-2e	10.30	1.60	2.27	14.20	.....	1.10	62.10[1]	7.90	2.80	362
1906-2e	12.40	1.30	2.05	12.80	.....	0.60	70.30		2.60	358
1913-2p	9.60	1.80	4.40	27.50	.....	1.70	40.00	16.60	2.80	362
1910-9	9.30	0.90	13.34	.....	76.04	....	10.46[2]		3.30	376
1913-2p	10.00	0.70	2.53	15.80	.....	0.70	57.90	13.50	1.40	361
1919	11.73	1.02	2.42	15.13	.....	0.33	61.48	8.56	1.75	356
1916-4a	12.12	....	2.47	.....	14.08	....	66.97	.....	1.25	...
1913-2p	8.70	1.00	7.57	.....	43.20	0.60	31.40	13.10	2.00	369
1909-3	9.40	0.50	1.74	10.90	.....	....	78.80[2]		0.40	362
1910-9	6.60	2.90	5.84	36.50	.....	....	9.40[2]		44.60	585
1908-10c	7.00	0.60	6.69	.....	38.10	0.30	52.80		1.20	374
1906-2e	8.50	6.40	8.10	50.60	.....	2.90	7.20[1]	8.80	15.60	407
1913-2p	7.90	6.30	8.05	50.30	.....	2.80	trace	17.90	14.80	406

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES OF DIABETIC FOODS—(*Continued*).

Reference.	Manufacturer and Brand.	Water.	Ash.	Nitrogen.	Protein. N. x 6.25.	Protein. N. x 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
	FLOURS AND MEALS—(*continued*).										
	The Health Food Co., New York City—(*continued*).										
1914-2q	Almond Meal	7.16	5.48	7.86	49.13	.....	0.48	none	15.91	21.84	457
1919	Almond Meal	7.90	6.01	8.04	50.25	.....	2.40	none	18.00	15.44	412
1919	Bran Biskue, Gluten Bran	9.19	3.38	4.85	.....	27.65	1.51	33.84	13.90	10.53	396
1911-2k	C. B. X. Cold Blast Flour, 25% Protein	8.70	0.50	1.62	10.10	.....	0.20	68.90	10.70	0.90	367
1919	Diabetic Casein Flour (self-raising)	11.93	9.16	11.56	72.25	.....	0.14	none	5.73	0.79	319
1914-2q	Gluten Flour No. 1	7.65	2.78	12.11	.....	69.03	0.21	7.09	12.36	0.88	362
1916-4a	Gluten Flour	7.70	....	7.28	.....	41.50	....	35.00	.....	.....	...
1919-4b	Gluten Flour 40%	8.48	0.65	6.88	.....	39.21	0.35	37.27	12.99	1.05	371
1906-2e	Glutosac Gluten Flour	10.10	1.10	5.45	.....	31.10	1.00	49.30[1]	5.80	1.60	359
1909-3	Glutosac Gluten Flour	8.00	1.10	5.65	.....	32.20	.....	58.10[2]		0.60	367
1911-10d	Glutosac Gluten Flour	8.70	....	5.86	.....	33.40	....	.....	.....	.....	...
1913-2p	Glutosac Gluten Flour	8.20	1.40	6.38	.....	36.40	0.70	36.90	14.10	2.30	370
1914-2q	Glutosac Gluten Flour	8.18	1.20	6.08	.....	34.65	0.48	41.96	11.84	1.69	369
1919	Glutosac Gluten Flour	10.53	0.75	7.28	.....	41.50	0.29	36.20	9.05	1.68	362
1913-2p	Pronireu (Gluten Griddle Cake Flour)	8.80	4.90	5.97	.....	34.00	0.50	37.70	12.90	1.20	349
1919	Pronireu (Gluten Griddle Cake Flour)	10.81	4.26	6.64	.....	37.85	0.20	36.56	9.14	1.18	345
1906-2e	Protosac Gluten Flour	10.60	0.70	5.86	.....	33.40	0.30	50.00[1]	4.10	0.90	358
1913-2p	Protosac Gluten Flour	8.00	0.90	6.83	.....	38.90	0.30	36.30	13.90	1.70	372
1914-2q	Protosac Gluten Flour	8.16	1.30	7.35	.....	41.90	0.38	31.50	14.80	1.96	370
1913-2p	Protosoy Soy Flour	3.00	5.00	6.77	42.30	.....	5.40	trace	24.50	19.80	446
1914-2q	Protosoy Soy Flour	3.86	5.30	6.86	42.88	.....	2.75	1.86	24.17	19.18	448
1919	Protosoy Soy Flour	6.32	4.43	6.30	39.38	.....	4.33	1.86	25.10	18.58	433
1906-2e	Pure Washed Gluten Flour	6.20	0.80	9.98	.....	56.90	0.20	27.50[1]	7.50	0.90	376
1913-2p	Pure Washed Gluten Flour	6.10	0.50	12.85	.....	73.20	0.40	7.00	11.20	1.60	380
1914-2q	Pure Washed Gluten Flour	7.03	0.58	13.70	.....	78.09	0.40	2.81	10.08	1.01	373
1919	Pure Washed Gluten Flour	8.31	0.71	13.14	.....	74.90	0.30	3.77	10.04	1.97	373
1919	Snow Flake Diabetic Casein Flour	10.41	6.07	12.67	79.19	.....	....	none	3.18	1.15	340
	R. Hundhausen, Hamm.										
1892-6j	Aleuronat (pure)	8.50	0.90	13.78	.....	78.55	....	11.55		0.50	365
1892-6j	Aleuronat (less pure)	9.10	1.20	12.43	.....	70.85	0.20	17.45		1.20	364
	Hudon Hebert (furn'r).										
1919-4b	Gluten Flour	11.84	1.24	2.52	.....	14.36	1.30	52.20	16.84	2.22	354
	Jireh Diabetic Food Co., New York City.										
1906-2e	Diabetic Flour	9.30	1.30	2.29	14.30	.....	1.00	66.60[1]	5.30	2.20	365
1906-2e	Diabetic Flour	11.00	1.30	1.94	12.10	.....	1.10	72.70		1.80	355
1919-4b	Diabetic Flour	10.36	1.04	2.60	.....	14.82	1.00	50.13	20.69	1.96	360
1919-4b	Diabetic Flour	12.03	1.01	2.49	.....	14.22	1.05	50.62	18.55	2.52	356
1913-2p	Flour	7.60	1.40	2.30	14.40	.....	1.40	60.90	12.00	2.30	370
1919-4b	Gluten Flour	9.10	1.40	2.52	.....	14.36	1.20	50.00	21.86	2.08	371
1919-4b	Gluten Flour	11.34	1.34	2.50	.....	14.25	1.60	48.66	20.41	2.40	355

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	FLOURS AND MEALS—(*continued*).
	Jireh Diabetic Food Co., New York City—(*continued*).
1913-2p	Patent Barley
1913-2p	Patent Cotton Seed Flour
1913-2p	Patent Lentils Flour
1913-2p	Protein Flour
1913-2p	Soja Bean Flour
1906-2e	Wheat and Barley Flour
1906-2e	Wheat and Barley Flour
	Johnson Educator Food Co., Boston, Mass.
1906-2e	Educator Standard Gluten Flour
1911-2k	Educator Standard Gluten Flour
1911-10d	Educator Standard Gluten Flour
	The Kellogg Food Co., Battle Creek, Mich.
1904-11	20% Gluten Meal
1909-3	20% Gluten Meal
1912-2m	20% Gluten Meal
1916-2s	20% Gluten Meal
1906-2e	40% Gluten Flour
1906-2e	40% Gluten Flour
1909-3	40% Gluten Flour
1912-2m	40% Gluten Flour
1913-2p	40% Gluten Flour
1916-2s	40% Gluten Flour
1919	40% Gluten Flour
1909-3	40% Gluten Flour, Self-Raising
1916-2s	40% Gluten Meal
1919	40% Gluten Meal, Thoroughly Cooked
1909-3	80% Gluten
1912-2m	80% Gluten
1916-4a	Gluten Meal
1916-2s	Pure Gluten Meal
1919	Pure Gluten Meal
	Lister Bros., New York City.
1917-2t	Lister's Diabetic Flour, Self-rising
1919	Lister's Diabetic Flour, Self-rising
	Lyster Bros., Whitefield, N. H.
1915-2r	Casein Flour
1916-12a	Diabetic Flour

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein.		Fiber.	Nitrogen-free extract.		Fat.	Calories.
				N. x 6.25.	N. x 5.70.		Starch.	Other nitrogen-free extract, by difference.		
1913-2p	5.00	1.10	1.82	11.40	.....	0.70	67.80	12.40	1.60	381
1913-2p	7.40	5.50	7.86	49.10	.....	4.00	6.00	15.30	12.70	396
1913-2p	5.90	2.50	4.37	27.30	.....	3.30	42.60	17.20	1.20	359
1913-2p	7.30	1.70	5.02	31.40	.....	0.90	48.50	8.20	2.00	370
1913-2p	4.40	4.60	6.77	42.30	.....	4.70	0.00	25.80	18.20	435
1906-2e	9.70	1.50	1.89	11.80	.....	1.60	66.20[1]	7.30	1.90	358
1906-2e	9.50	1.60	1.81	11.30	.....	1.40	74.40		1.80	359
1906-2e	11.30	1.00	4.22	.....	24.10	0.40	56.80[1]	4.70	1.70	358
1911-2k	7.30	0.80	6.42	.....	36.60	0.20	40.90	12.80	1.40	374
1911-10d	8.80	....	6.42	.....	36.60	....	.....	.....	.....	...
1904-11	10.50	1.00	2.53	.....	14.40	0.40	57.40	15.70	0.60	355
1909-3	8.90	1.10	3.36	.....	19.20	....	70.00[2]		0.80	364
1912-2m	9.80	1.40	4.40	.....	25.10	0.10	49.60	13.50	0.50	357
1916-2s	7.65	1.22	4.33	.....	24.68	0.12	51.24	14.17	0.92	369
1906-2e	10.50	0.50	6.45	.....	36.80	0.20	46.90[1]	3.90	1.20	361
1906-2e	8.50	1.40	6.14	.....	35.00	0.10	50.00[1]	3.80	1.20	366
1909-3	7.90	1.20	6.24	.....	35.60	....	53.50[2]		1.80	373
1912-2m	9.70	1.40	7.52	.....	42.90	0.20	31.90	13.00	0.90	359
1913-2p	8.00	1.20	6.99	.....	39.80	0.20	40.50	9.40	0.90	367
1916-2s	8.62	0.89	5.90	.....	33.63	0.08	48.04	7.31	1.43	369
1919	10.10	0.63	8.28	.....	47.20	0.26	30.66	10.17	0.98	261
1909-3	8.80	1.30	6.19	.....	35.30	....	53.60[2]		1.00	365
1916-2s	7.30	1.36	7.29	.....	41.55	0.10	36.59	11.99	1.11	371
1919	8.50	1.38	7.54	.....	42.98	0.31	33.38	12.00	1.45	380
1909-3	7.20	0.60	12.61	.....	71.90	....	19.40[2]		0.90	373
1912-2m	9.10	0.60	13.01	.....	74.20	0.20	6.20	8.80	0.90	365
1916-4a	5.10	0.45	12.90	.....	73.53	0.18	3.10	15.88	1.76	386
1916-2s	4.60	0.96	13.47	.....	76.78	0.08	6.77	10.00	0.81	374
1919	7.73	0.92	13.88	.....	79.12	0.19	2.56	8.74	0.74	368
1917-2t	11.62	2.77	10.78	67.38	.....	0.17	none	17.20	0.86	346
1919	11.53	9.44	10.93	68.31	.....	0.05	none	9.72	0.95	321
1915-2r	5.70	5.78	13.52	84.50	.....	0.05	none	0.37	3.60	381
1916-12a	6.58	7.90	12.68	79.25	.....	....	none	.....	3.00	...

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	FLOURS AND MEALS—(*continued*).
	Eugene Loeb, New York City.
1913-2p	Gluten Cracker Meal
1913-2p	Imported Gluten Flour
1913-2p	Pure Gluten Flour
1913-2p	Whole Wheat Flour
	E. Loeb & Co., New York City.
1913-2p	Gluten Flour
1919-4b	Gluten Flour
	Loeb's Diabetic Food Bakery, New York City.
1916-2s	Gluten Cracker Meal
1919	Gluten Cracker Meal
1919-4b	Gluten Cracker Meal
1916-2s	Pure Gluten Flour
1919	Pure Gluten Flour
	Thos. Martindale & Co., Philadelphia, Pa.
1913-2p	Special Gluten Flour
	Maple Leaf Milling Co.
1919-4b	Gluten Flour
	Mayflower Mills, Fort Wayne, Ind.
1913-2p	Bond's Diabetic Flour
1919	Gluten Flour
	A. McFarlane Co.
1919-4b	Gluten Flour
	P. McIntosh Co.
1919-4b	Gluten Flour
	Theo. Metcalf Co., Boston, Mass.
1906-2e	Soja Bean Meal, 5.5% Starch
1906-2e	Soja Bean Meal, 7.6% Starch
1913-2p	Soja Bean Meal, 18.0% Starch
1906-2e	Vegetable Gluten, 20.0% Starch
1913-2p	Vegetable Gluten, 8.1% Starch
	H. Niemöller, Gütersloh.
1901-16	Roborat

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein.		Fiber.	Nitrogen-free extract.		Fat.	Calories.
				N. x 6.25.	N. x 5.70.		Starch.	Other nitrogen-free extract, by difference.		
1913-2p	9.70	1.00	4.45	.....	25.40	0.30	40.20	15.70	7.70	394
1913-2p	9.20	1.40	12.21	.....	69.60	0.40	4.40	14.10	0.90	361
1913-2p	10.10	0.60	6.45	.....	36.80	0.30	39.60	10.20	2.40	368
1913-2p	11.10	1.10	2.34	.....	13.30	0.50	54.60	17.20	2.20	360
1913-2p	9.80	0.50	7.02	.....	40.00	0.30	39.80	8.50	1.10	363
1919-4b	9.72	0.48	6.12	.....	34.86	0.20	39.87	14.11	0.76	362
1916-2s	8.22	1.07	6.82	.....	38.87	0.19	31.59	11.14	8.92	407
1919	8.40	1.59	6.44	.....	36.71	0.28	30.66	11.48	10.88	417
1919-4b	7.94	1.39	6.46	.....	36.82	0.30	32.17	12.43	8.95	406
1916-2s	8.85	0.51	7.65	.....	43.61	0.13	35.78	10.11	1.01	333
1919	10.48	0.89	6.80	.....	38.76	0.15	38.22	10.30	1.20	360
1913-2p	8.20	0.60	6.45	.....	36.80	0.30	41.40	11.20	1.50	371
1919-4b	12.52	0.38	2.22	.....	12.66	0.25	61.51	11.52	1.16	353
1913-2p	9.40	0.60	6.43	40.20	.....	0.20	40.60	7.70	1.30	366
1919	10.35	0.85	8.42	.....	47.99	0.30	28.63	10.23	1.65	365
1919-4b	11.09	0.47	2.16	.....	12.14	0.30	60.34	14.28	1.38	358
1919-4b	10.65	0.45	2.64	.....	15.05	0.25	63.28	9.32	1.00	360
1906-2e	7.80	4.40	6.38	39.90	.....	3.90	9.00[1]	15.90	19.10	431
1906-2e	.....	....	5.89	36.80	.....	....	.....	.....	.....	...
1913-2p	6.50	4.10	6.56	41.00	.....	3.40	25.00		20.00	444
1906-2e	7.90	0.70	9.82	.....	56.00	0.30	26.80[1]	6.70	1.60	372
1913-2p	7.60	0.50	12.86	.....	73.30	0.20	5.90	11.00	1.50	374
1901-16	9.50	1.40	13.17	82.30	.....	0.20	2.90		3.70	374

[1] Includes water-soluble carbohydrates.

TABLE XI.—COMPILATION OF ANALYSES OF DIABETIC FOODS—(*Continued*).

FLOURS AND MEALS—(*continued*).

Reference.	Manufacturer and Brand.	Water.	Ash.	Nitrogen.	Protein. N. x 6.25.	Protein. N. x 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
	North Western Cereal Co., London, Ont.										
1916-4a	Gluten Flour	8.50	....	2.07	.....	11.80	....	60.60	.....	.....	...
1916-4a	Gluten Flour	11.10	....	2.42	.....	13.79	....	54.68	.....	.....	...
1916-4a	Gluten Flour	9.30	....	2.03	.....	11.57	....	53.20	.....	.....	...
1919-4b	Gluten Flour	10.21	2.10	2.99	.....	17.07	1.58	42.10	21.95	4.99	369
1916-4a	Gluten Flour	12.77	....	1.78	.....	10.14	....	64.80	.....	2.02	...
1919-4b	Gluten Flour, 40%	11.66	2.27	2.49	.....	14.20	2.40	38.65	25.56	5.26	361
	Norton-Truax, Chicago, Ill.										
1919	Diaprotein	11.72	6.35	12.44	77.75	.....	....	none	2.72	1.46	335
	Phospho Food Co., Los Angeles, Calif.										
1914-2q	Phospho D. & D. Special	8.74	1.22	2.19	13.69	.....	1.24	58.57	14.35	2.19	366
	Pieser-Livingston Co., Chicago, Ill.										
1913-2p	Gluten Flour	8.50	0.60	6.93	.....	39.50	0.10	38.40	11.60	1.30	370
1913-2p	Gluten Flour	8.70	0.60	6.69	.....	38.10	0.20	36.50	14.50	1.40	369
1919	Genuine Gluten Flour	10.16	0.81	7.26	.....	41.38	0.20	36.31	9.79	1.35	362
	Potter & Wrightington, Boston, Mass.										
1919	Diet-Ease Gluten Flour	12.50	0.98	4.64	.....	26.45	0.73	46.89	10.29	2.16	354
1919	Diet-Ease Gluten Flour	8.76	0.96	6.94	.....	39.56	0.42	36.20	11.78	2.32	371
	The Pure Gluten Food Co., New York City.										
1904-2d	Gum Gluten Flour	.....	....	8.69	.....	49.53	....	.....	.....	.....	...
1911-2k	Gum Gluten Flour	8.10	1.00	6.13	.....	34.90	0.20	42.40	11.80	1.60	371
1902-1b	Gum Gluten Ground	11.90	0.90	4.29	.....	24.50	....	61.30[2]		1.40	356
1904-11	Gum Gluten Ground	10.60	0.80	7.05	.....	40.20	0.40	30.00	16.70	1.30	359
1906-2e	Gum Gluten Self Raising	6.90	1.00	8.02	.....	45.70	0.50	38.60[1]	5.40	1.90	376
1902-1b	Gum Gluten Self Raising	9.80	3.80	5.04	.....	28.70	0.30	56.00		1.40	351
1906-2e	Hoyt's Gum Gluten	10.80	4.50	6.06	.....	34.50	0.50	42.90[1]	5.80	1.00	342
1906-2e	Hoyt's Gum Gluten Flour, 50%	11.20	1.00	5.09	.....	29.00	0.30	52.00[1]	4.90	1.60	358
1914-2q	Hoyt's Gum Gluten Flour, Ground	6.61	0.70	7.95	.....	45.32	0.33	37.07	8.82	1.15	375
1914-2q	Hoyt's Gum Gluten Self Raising Flour	8.21	0.60	6.71	.....	38.24	0.18	42.61	9.23	0.93	369
1914-2q	Hoyt's Gum Gluten Special Flour	7.30	3.88	6.83	.....	38.93	0.40	38.98	9.76	0.75	357
1901-10b	Plain Gluten Flour	5.63	0.93	14.51	.....	82.70	0.35	2.17	7.50	0.72	376
1911-10d	Pure Gluten Flour	9.90	0.60	8.58	.....	48.90	0.20	34.50		5.90	363
1911-10d	Pure Gluten Flour	.....	....	6.06	.....	34.54	....	.....	.....	.....	...
	Pure Gluten Food Co., Columbus, Ohio.	9.10	....	6.29	.....	35.54	....	.....	.....	.....	...
1919	Hoyt's Gluten Flour over 40% Protein	10.68	0.82	7.34	.....	41.84	0.27	33.19	12.07	1.13	359
1919	Hoyt's Gluten Self-raising Flour over 40% Protein	10.18	3.85	7.28	.....	41.50	0.50	33.38	9.72	0.87	346
1919	Hoyt's Gluten Special Flour 80% Protein	6.82	1.10	13.54	.....	77.18	0.27	2.81	10.63	1.19	373

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	FLOURS AND MEALS—(*continued*).
	Rademann's Nährmittelfabrik, Frankfurt.
1913-2p	Diabetiker Mehl
	Ralston Health Food Co.
1895-1a	Gluten Flour
1902-1b	Gluten Flour
	Schulenburg Oil Mill, Schulenburg, Texas.
1915-2r	Allison's Cotton Seed Flour
1919	Baumgarten Process Allison Flour
	Soy Bean Food Products Co., San Francisco, Calif.
1919	Soy Bean Flour A
1919	Soy Bean Flour B
	Sprague, Warner & Co., Chicago, Ill.
1913-2p	Richelieu Gluten Flour
	Still Rock Spa, Waukesha, Wis.
1919	Curdolac Flour
	G. Van Abbott & Sons, London.
1913-2p	Almond Flour
1913-2p	Gluten Flour
1913-2p	Gluten Semola
	Waukesha Health Products Co., Waukesha, Wis.
1917-2t	Ayos, the Improved Soja Bean Flour
1914-12b	Hepco Flour
1919	Hepco Flour
	White Swan Spice Co., Toronto.
1916-4a	Diet Flour
1916-4a	Diet Flour
1919-4b	Diet Flour
1919-4b	Gluten Flour
1919-4b	Gluten Flour
1919-4b	Gluten Flour
	Wilson Bros., Rochester, N. Y.
1919	Genteel Brand Flour
1911-10d	Gluten Flour, 4/7 Standard
1911-10d	Gluten Flour, 4/7 Standard
1913-2p	Gluten Flour, 4/7 Standard
1913-2p	Gluten Flour, Self-Raising, 4/7 Standard
1919	Gluten Flour

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein. N. x 6.25.	Protein. N. x 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
1913-2p	9.60	0.80	6.06	37.90	.....	0.20	46.80	3.90	0.80	362
1895-1a	12.80	0.60	2.40	.....	13.70	0.60	70.30		2.00	354
1902-1b	11.90	0.90	2.53	.....	14.40	....	72.30[2]		0.50	351
1915-2r	9.38	5.95	8.06	50.38	.....	2.70	1.07	19.28	11.24	384
1919	8.08	5.67	8.00	50.00	.....	3.47	1.13	21.61	10.04	381
1919	7.65	4.71	6.69	41.81	.....	1.98	0.34	24.07	19.44	440
1919	7.91	5.08	7.04	44.00	.....	2.07	0.76	25.98	14.20	411
1913-2p	8.70	0.50	7.95	.....	45.30	0.20	31.60	12.50	1.20	368
1919	10.25	3.99	9.06	56.63	.....	3.79	5.09	17.89	2.36	335
1913-2p	4.00	3.00	3.94	24.60	.....	1.90	none	7.90	58.60	657
1913-2p	10.20	0.80	12.02	.....	68.50	0.40	12.40	6.80	0.90	359
1913-2p	10.10	2.80	8.22	.....	46.90	0.40	28.20	8.70	2.90	361
1917-2t	8.75	4.13	6.63	41.44	.....	3.82	0.56	24.43	16.87	458
1914-12b	6.96	5.05	6.72	42.00	.....	5.05	none	23.82[3]	17.12	417
1919	8.09	4.31	7.04	44.00	.....	2.15	0.90	21.41	19.14	438
1916-4a	10.20	....	2.06	12.90	.....	....	60.75	.....	.....	...
1916-4a	11.25	0.90	1.65	10.30	.....	0.10	67.84	7.95	1.66	359
1919-4b	11.47	0.70	1.52	.....	8.66	0.55	61.29	16.05	1.28	356
1919-4b	9.21	0.77	1.72	.....	9.80	0.44	62.30	16.00	1.48	370
1919-4b	10.50	0.75	1.56	.....	8.89	0.46	62.00	15.95	1.45	360
1919-4b	10.84	0.87	1.61	.....	9.18	0.44	61.60	15.47	1.60	359
1919	11.60	0.98	4.70	29.38	.....	0.26	49.16	6.23	2.39	361
1911-10d	11.10	....	3.18	.....	18.10	....	.....	.....	.....	...
1911-10d	9.70	....	3.12	.....	17.80	....	.....	.....	.....	...
1913-2p	11.00	1.20	3.33	.....	19.00	0.30	54.60	11.80	2.10	361
1913-2p	12.20	4.60	2.78	.....	15.80	0.30	51.80	13.30	2.00	342
1919	10.52	0.74	8.04	.....	45.83	0.36	28.63	11.91	2.01	364

[2] Includes fiber.

[3] Includes soluble carbohydrates calculated as sugar 9.02 per cent.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.	Water.	Ash.	Nitrogen.	Protein. N. x 6.25.	Protein. N. x 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
	PROTEIN PREPARATIONS.										
	The Bauer Chemical Co., Berlin.										
1912-2n	Sanatogen	10.00	5.60	12.82	80.10	.....	....	4.20[2]		0.10	338
	Eiweiss Extrakt Co., Altona, Germany.										
1900-6g	Soson	6.40	1.00	14.59	91.20	.....	....	1.10[2]		0.30	372
	Krecke & Co., Salzuflen.										
1902-6i	Energin	9.10	1.00	13.41	83.80	.....	0.30	1.30		4.50	381
	Menley & James, New York City.										
1913-2p	Glidine	5.70	0.90	14.62	.....	83.30	0.20	none	9.10	0.80	377
	Plasmon Co., London.										
1899-6i	Plasmon (average 9 analyses)	11.90	7.50	11.23	.....	64.00	....	15.90[2]		0.70	326
1901-10b	Plasmon	8.50	7.40	12.00	.....	68.40	....	15.50[2]		0.20	337
1908-2h	Plasmon	12.40	7.70	11.25	.....	64.10	....	15.40[2]		0.40	322
1909-3	Plasmon	10.90	7.60	12.59	.....	70.10	....	8.70[2]		2.70	339
	Troponwerke, Mülheim.										
1898-6g	Tropon (average of many analyses)	9.30	1.20	13.86	86.60	.....	....	2.70[2]		0.20	359
1901-10b	Tropon	9.20	0.80	14.16	88.50	.....	....	1.20[2]		0.30	362
	SOFT BREADS.										
	Canada Bread Co., Toronto, Canada.										
1919-4b	Gluten Bread	35.00	2.34	1.73	.....	9.87	0.34	34.82	16.52	1.11	255
	The Dieto Food Co., New York City.										
1914-2q	Dieto Bread, Pure Whole Wheat	40.42	1.69	1.55	.....	8.84	0.71	36.57	11.41	0.36	231
	Ferguson Bakery, Boston, Mass.										
1913-2p	Gluten Bread	37.20	1.70	3.87	.....	22.10	0.20	25.20	10.50	3.10	259
	Frank & Co., Bockenheim.										
1892-6f	Protein-Roggenbrot	32.00	2.80	3.79	.....	21.60	2.30	35.10		6.20	283
1892-6f	Protein-Weizenbrot	31.90	2.70	3.74	.....	21.30	2.20	45.60		6.30	284
	Fritz, Vienna.										
....-6c	Aleuronatbrot	35.50	1.30	2.50	.....	14.30	0.20	47.90		0.80	256
1910-5	Kleberbrot, Schwarz	.....	....	3.44	.....	19.60	....	50.50		.....	...
1910-5	Litonbrot	.....	....	6.18	38.60	.....	....	15.40		.....	...
	Fromm & Co., Dresden.										
1910-5	Conglutinbrot	.....	....	2.93	18.30	.....	....	47.30		.....	...
1910-5	Litonbrot	.....	....	5.73	35.80	.....	....	14.30		.....	...

[2] Includes fiber.

OF DIABETIC FOODS—(*Continued*).

TABLE XI.—COMPILATION OF ANALYSES OF DIABETIC FOODS—(*Continued*).

Reference.	Manufacturer and Brand.	Water.	Ash.	Nitrogen.	Protein. N. x 6.25.	Protein. N. x 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
	SOFT BREADS—(*continued*).										
	Gericke, Potsdam.										
1910-5	Doppel-Porterbrot	38.60	....	4.30	26.90	.....	....	35.10		.....	...
1910-9	Doppel-Porterbrot	38.90	1.10	3.50	21.90	.....	....	36.60[2]		1.50	248
1910-9	Dreifach-Porterbrot	35.10	1.30	4.91	30.70	.....	0.40	19.80	6.20	6.50	285
1910-9	Einfach-Porterbrot	30.50	1.60	2.85	17.80	.....	....	48.30[2]		1.80	280
1910-9	Sifarbrot	39.60	2.20	5.97	37.30	.....	0.60	12.30	2.70	5.30	257
	Karl Goldscheider, Carlsbad.										
1910-9	Sinamylbrot	39.10	3.50	4.51	28.20	.....	4.40	17.30	2.90	4.60	235
	Gumpert, Berlin.										
1910-9	Diabetiker-Doppel-Schwarzbrot	27.90	1.60	2.54	15.90	.....	0.50	39.40	2.60	11.80	348
1910-9	Diabetiker-Doppel-Schwarzbrot	25.60	1.60	2.96	18.50	.....	....	41.90[2]		12.70	346
1910-9	Diabetiker-Doppel-Weissbrot	23.70	2.30	3.01	18.80	.....	0.40	36.80	2.60	15.40	371
1910-9	Einfach-Schwarzbrot	30.10	1.40	2.50	15.60	.....	....	49.50[2]		3.40	291
1910-9	Einfach-Weissbrot	29.40	1.50	2.59	16.20	.....	....	46.40[2]		6.50	309
1910-9	Ultrabrot	27.90	3.10	4.51	28.20	.....	0.80	6.80	1.00	32.20	434
	F. Günther, Frankfurt.										
1892-6d	Kleberbrot	33.70	2.40	2.75	.....	15.68	0.70	47.02		0.50	255
	Health Food Co., New York City.										
1906-2e	Glutosac Bread	31.50	1.90	4.38	.....	24.40	0.40	29.90[1]	9.20	2.70	278
1914-2q	Glutosac Bread	37.20	1.64	4.34	.....	24.74	0.82	22.17	11.33	2.10	252
1919	Glutosac Bread	28.28	1.72	4.86	.....	27.70	1.49	26.78	10.33	3.70	293
1919-2u	Glutosac Bread	23.10	1.95	5.22	.....	29.75	0.84	29.53	12.26	2.57	309
1906-2e	Protosac Bread	27.30	1.40	5.20	.....	29.60	0.20	33.10[1]	6.80	1.60	292
1914-2q	Protosac Bread	30.70	2.11	4.77	.....	27.19	0.38	27.66	10.16	1.80	276
1919	Protosac Bread, No. 1	28.85	2.42	6.31	.....	35.97	0.84	20.53	7.39	4.00	292
1919	Protosac Bread, No. 2	28.49	1.83	4.73	.....	26.96	0.30	30.47	8.43	3.52	302
	J. Heinbockel & Co., Baltimore, Md.										
1914-2q	Diabeto Bread for Diabetes	33.47	3.22	1.37	8.55	.....	1.15	40.39	11.73	1.49	256
	R. Hundhausen, Hamm.										
1892-6a	Aleuronatbrot, low gluten	39.60	1.60	2.77	.....	15.80	0.60	42.10		0.30	234
	Jireh Diabetic Food Co., New York City.										
1906-2e	Whole Wheat Bread	39.20	1.80	1.50	.....	8.60	0.60	43.80[1]	5.60	0.40	236
1913-2p	Whole Wheat Bread (not fresh)	21.80	2.50	1.98	.....	11.30	0.60	44.90	18.20	0.70	304
	Eugen Loeb, New York City.										
1913-2p	P. & L. Genuine Gluten Bread	31.40	1.60	1.66	.....	9.50	0.30	44.20	10.40	2.60	280
	Loeb's Diabetic Food Bakery, New York City.										
1919	Caseine Bread	40.42	4.47	6.53	40.84	.....	0.08	none	3.35	10.84	274
1919-2u	Caseine Bread	39.73	4.35	6.57	41.05	.....	0.09	trace	3.71	11.07	323

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.	Water.	Ash.	Nitrogen.	Protein. N. x 6.25.	Protein. N. x 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
	SOFT BREADS—(*continued*).										
	Loeb's Diabetic Food Bakery, New York City—(*continued*).										
1919	Caseine Muffins	30.82	4.89	7.32	45.74	.....	0.15	none	7.03	11.37	313
1916-2s	Genuine Gluten Bread	27.72	1.51	5.66	.....	32.26	0.21	26.37	11.76	0.17	282
1919	Genuine Gluten Bread	32.01	1.80	4.98	.....	28.39	0.28	28.56	6.86	2.10	273
1914-2q	P. & L. Genuine Glubetic Bread	30.07	1.06	6.20	.....	35.34	0.36	19.15	9.97	4.05	294
	Lyster Bros., Whitefield, N. H.										
1915-2r	Casein Bread	38.27	4.24	5.85	36.57	.....	0.05	none	2.49	18.38	322
	Rademann's Nährmittelfabrik, Frankfurt.										
1910-9	Diabetiker-Grahambrot	31.70	1.80	1.57	9.80	.....	2.10	45.60	3.90	5.10	283
1910-5	Diabetiker-Schwarzbrot (dry)	.....	....	6.05	37.80	.....	....	33.30		.....	...
1910-9	Diabetiker-Schwarzbrot	29.10	1.90	2.32	14.50	.....	1.40	45.80	4.80	2.50	283
1910-9	Diabetiker-Schwarzbrot	33.60	1.90	2.38	14.90	.....	....	47.70[2]		1.90	267
1910-5	Diabetiker-Weissbrot (dry)	.....	....	6.94	43.40	.....	....	28.10		.....	...
1910-9	Diabetiker-Weissbrot	33.80	1.90	3.73	23.30	.....	0.40	37.00	3.10	0.50	258
1910-5	"D-K" Brot (dry)	.....	....	1.97	12.30	.....	....	58.90		.....	...
1892-6f	Erdnuss-Brot	24.60	3.80	5.38	33.60	.....	5.50	19.70		12.80	328
1910-9	Litonbrot	42.60	2.40	4.83	30.20	.....	0.70	17.50	4.10	2.50	230
	Schelte, Münster.										
1894-6b	Aleuronatbrot	38.80	1.30	2.93	.....	16.70	0.90	41.70		0.60	239
	Seidl, München.										
1910-5	Aleuronatbrot	28.00	....	3.50	.....	20.00	....	49.20		0.30	280
1910-5	Kleberbrot	24.20	....	2.98	.....	17.00	....	56.00		0.70	298
	Slinn-Shouldis Co.										
1919-4b	Gluten Bread	35.00	0.69	1.62	.....	9.20	0.17	39.00	13.36	2.58	269
	Troponwerke, Mülheim.										
1899-8	Tropon-Brot	42.10	....	3.12	19.50	.....	....	.....	.....	.....	...
	Weston Bakery, Boston, Mass.										
1915-2r	Gluten Bread	.....	....	3.34	.....	19.04	....	28.16	.....	.....	...
	HARD BREADS AND BAKERY PRODUCTS.										
	James Aird.										
1916-4a	Gluten Bread	8.10	2.05	2.25	.....	13.13	0.70	59.75	15.91	0.72	360
	Bichof & Co., London.										
1907-2g	Diabetic Gluten Bread	7.40	4.70	11.70	.....	66.70	0.00	20.70		0.50	354
1907-2g	Essentiel Bread for Super Alimentation	7.30	4.80	4.26	26.60	.....	0.10	59.60		1.60	359

[2] Includes fiber.

OF DIABETIC FOODS—(*Continued*).

TABLE XI.—COMPILATION OF ANALYSES

OF DIABETIC FOODS—(*Continued*).

Reference.	Manufacturer and Brand.	Water.	Ash.	Nitrogen.	Protein. N. x 6.25.	Protein. N. x 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
	HARD BREADS AND BAKERY PRODUCTS—(*continued*).										
	Brusson Jeune, Villemur, France.										
1910-2j	Gluten Bread	7.80	1.10	5.14	.....	29.30	0.20	49.80	10.00	1.80	373
1912-2m	Gluten Bread	12.70	0.80	5.97	.....	34.00	0.30	40.10	10.30	1.80	354
	Callard, Stewart & Watt, London.										
1909-3	Almond Biscuit, Plain	3.70	3.20	4.53	28.30	.....	....	36.80[2]		28.00	512
1909-3	Almond Shortbreads	4.20	3.50	3.12	19.50	.....	....	20.70[2]		52.10	630
1916-4a	Casoid Biscuits	7.52	....	8.99	56.18	.....	....	trace	.....	27.10	...
1906-2e	Casoid Biscuits, No. 1	7.80	3.90	10.08	63.00	.....	....	8.10[1]	.....	17.30	440
1909-3	Casoid Biscuits, No. 1	7.20	2.50	10.37	64.80	.....	....	8.70[2]		16.80	445
1913-2p	Casoid Biscuits, No. 1	4.80	3.40	10.69	66.80	.....	0.40	4.00	1.80	18.80	460
1908-2i	Casoid Biscuits, No. 2	.....	....	9.30	58.10	.....	....	0.00	.....	.....	...
1909-3	Casoid Biscuits, No. 2	7.50	3.60	9.25	57.80	.....	....	5.60[2]		25.50	483
1908-2i	Casoid Biscuits, No. 3	.....	....	8.75	54.70	.....	....	trace	.....	.....	...
1909-3	Casoid Biscuits, No. 3	7.90	5.00	8.69	54.30	.....	....	7.80[2]		25.00	473
1908-2i	Casoid Dinner Rolls	.....	....	12.93	80.80	.....	....	3.30[1]	.....	.....	...
1909-3	Casoid Dinner Rolls	7.00	1.80	12.48	78.00	.....	....	2.10[2]		11.10	420
1909-3	Casoid Lunch Biscuit	4.20	3.80	4.08	25.50	.....	....	21.60[2]		44.90	593
1909-3	Casoid Rusk	5.40	4.50	5.92	37.00	.....	....	20.80[2]		32.30	522
1909-3	Cocoanut Biscuit + Saccharin	2.60	3.10	2.66	16.60	.....	....	16.40[2]		61.30	684
1909-3	Ginger Biscuit + Saccharin	2.50	3.70	2.74	17.10	.....	....	18.10[2]		58.60	668
1909-3	Kalari Batons	8.10	4.40	8.46	52.90	.....	....	0.90[2]		33.70	519
1913-2p	Kalari Batons	4.50	5.20	6.91	43.20	.....	0.70	none	7.40	39.00	553
1909-3	Kalari Biscuits	6.30	3.70	9.10	56.90	.....	....	1.70[2]		31.40	517
1909-3	Prolactic Biscuits	6.30	4.00	6.86	42.90	.....	....	19.30[2]		27.50	496
	Canada Bread Co., Toronto, Canada.										
1916-4a	Gluten Health Bread	7.45	1.95	2.70	.....	15.39	0.78	57.88	13.19	3.36	376
	The Dieto Food Co., New York City.										
1914-2q	Dieto Crackers	6.59	1.75	1.98	13.38	.....	0.98	54.84	13.92	9.24	409
1914-2q	Dieto Rusks	6.43	1.50	2.55	15.94	.....	0.98	52.09	13.95	9.11	410
	Frank & Co., Bockenheim.										
1892-6f	Erdnuss-Kakes	6.40	2.70	5.15	32.20	.....	3.10	36.50		19.10	447
	Fritz, Vienna.										
1910-5	Braunes Luftbrot "B"	.....	....	6.82	42.60	.....	....	19.80		.....	...
1910-5	Mandelbrot	.....	....	2.46	15.40	.....	....	23.10		.....	...
	Fromm & Co., Dresden.										
1913-2p	Almond-form Wafers with Chocolate	2.60	1.00	0.77	4.80	.....	0.30	14.00	48.30	29.00	529
1913-2p	Butterbrezeln	6.30	2.00	1.97	12.30	.....	0.20	43.10	19.60	16.50	449
1914-2q	Conglutin Drops	6.49	5.23	8.13	50.81	.....	0.23	29.19	6.94	1.11	358

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	HARD BREADS AND BAKERY PRODUCTS—(*continued*).
	Fromm & Co., Dresden—(*continued*).
1914-2q	Conglutin-Zwieback
1913-2p	Crackers
1913-2p	Eierbiscuit
1910-5	Eiweissbrot
1913-2p	Hazelnuss-Stangen
1913-2p	Luft Bread
1913-2p	Makronen
1913-2p	Salz-Stangen
1913-2p	Stangenin
1910-5	Uni Bread
1913-2p	Uni Bread
	Gericke, Potsdam.
1910-5	Doppel-Porterzwieback
1910-9	Doppel-Porterzwieback
1910-5	Mandelbrot
1910-5	Porterbiskuits
1910-5	Porterzwieback
1910-5	Sifarbiskuits
	Karl Goldscheider, Karlsbad.
1914-2q	Aleuronat-Conglutin Cakes
1914-2q	Butter-Brezeln
1914-2q	Feinste Cocosnuss-Biskuits für Diabetiker "3.6% carbohydrates"
1914-2q	Feinste Vanille-Biskuits für Diabetiker, "3.6% carbohydrates"
1914-2q	Honigküchen für Diabetiker, "3.6% carbohydrates"
1914-2q	Saccharin-Oblaten ohne Zucker
1914-2q	Tee-Gebäck
1914-2q	Zwieback
	Groetzsch, Frankfurt.
1910-9	Diabetiker-Salzbrezch
1910-9	Diabetiker-Salzbrezch
1910-9	Pfeffernüsse
1910-9	Pfeffernüsse
	Gumpert, Berlin.
1910-9	Diabetiker-Stangen
1910-9	Doppel-Diabetiker-Zwieback
	F. Gunther, Frankfurt.
1892-6d	Aleuronat-Kakes
1892-6d	Aleuronat-Kakes
1897-6e	Aleuronat-Kakes

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein.		Fiber.	Nitrogen-free extract.		Fat.	Calories.
				N. x 6.25.	N. x 5.70.		Starch.	Other nitrogen-free extract, by difference.		
1914-2q	4.48	2.00	2.28	14.25	.....	0.40	29.70	27.92	21.25	479
1913-2p	7.40	3.40	2.06	12.90	.....	0.20	58.20	10.20	7.70	395
1913-2p	7.70	1.30	3.01	18.80	.....	0.20	37.50	23.10	11.40	420
1910-5	.....	....	7.28	45.50	.....	....	37.50		.....	...
1913-2p	5.20	2.90	2.14	13.40	.....	1.70	none	60.80	16.00	441
1913-2p	8.30	8.90	8.14	50.90	.....	0.20	23.40	7.30	1.00	335
1913-2p	6.00	3.00	2.26	14.10	.....	1.30	none	56.20	19.40	456
1913-2p	6.20	3.60	2.08	13.00	.....	0.40	39.10	22.10	15.60	437
1913-2p	6.60	1.60	2.24	14.00	.....	0.40	51.60	12.80	13.00	431
1910-5	.....	....	11.41	71.30	.....	....	8.60		.....	...
1913-2p	8.10	5.60	11.47	71.70	.....	3.50	2.90	6.50	1.70	340
1910-5	.....	....	3.06	19.10	.....	....	41.00		.....	...
1910-9	4.90	1.70	5.47	34.20	.....	....	39.70[2]		19.50	471
1910-5	.....	....	2.59	16.20	.....	....	43.30		.....	...
1910-5	.....	....	2.58	16.10	.....	....	63.00		.....	...
1910-5	.....	....	4.22	26.40	.....	....	72.00		.....	...
1910-5	.....	....	3.23	20.20	.....	....	35.30		.....	...
1914-2q	5.17	1.25	4.26	26.63	.....	0.08	31.67	19.63	15.57	452
1914-2q	5.16	1.83	1.68	10.50	.....	0.08	43.93	23.64	14.86	446
1914-2q	2.71	2.73	5.50	34.44	.....	0.88	0.00	13.86	45.38	602
1914-2q	3.14	2.85	7.42	46.38	.....	0.55	none	16.75	30.33	525
1914-2q	2.98	3.05	6.45	40.31	.....	1.00	none	13.91	38.75	566
1914-2q	5.42	2.43	2.64	16.50	.....	1.95	33.47	17.63	22.60	474
1914-2q	3.44	1.28	1.12	7.00	.....	0.23	18.00	42.79	27.26	517
1914-2q	6.85	2.70	3.41	21.31	.....	0.23	51.69	13.61	3.61	379
1910-9	14.00	3.30	5.81	36.30	.....	....	17.10[2]		29.30	477
1910-9	5.30	1.60	5.52	34.50	.....	0.30	22.90		35.40	548
1910-9	25.20	2.80	6.19	38.70	.....	....	9.30[2]		24.00	408
1910-9	15.20	2.60	6.27	39.20	.....	0.70	10.30		32.00	486
1910-9	5.50	2.90	4.98	31.10	.....	....	11.00[2]		49.50	614
1910-9	4.60	2.50	5.20	32.50	.....	0.80	27.10	0.40	32.10	529
1892-6d	5.10	0.80	2.38	.....	13.60	0.40	70.80		9.30	421
1892-6d	4.50	1.60	2.85	.....	16.30	0.90	68.80		7.90	412
1897-6e	4.50	1.50	2.45	.....	14.00	....	71.30[2]		8.70	420

[2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	HARD BREADS AND BAKERY PRODUCTS—(*continued*).
	Health Food Co., New York City.
1919	Alpha
1913-2p	Alpha Best Diabetic Wafer
1914-2q	Alpha Best Diabetic Wafer
1919	Alpha No. 1 Best Diabetic Wafer, Casein
1919	Alpha No. 2 Best Diabetic Wafer
1906-2e	Diabetic Biscuit
1913-2p	Diabetic Biscuit
1914-2q	Diabetic Biscuit
1919	Gluten Cracker Dust
1913-2p	Gluten Nuggets
1914-2q	Gluten Nuggets
1919	Gluten Nuggets
1906-2e	Glutona
1919	Glutona Bread Sticks
1906-2e	Glutosac Butter Wafers
1914-2q	Glutosac Butter Wafers
1919	Glutosac Butter Wafers
1906-2e	Glutosac Rusks
1914-2q	Glutosac Rusks
1919	Glutosac Rusks
1906-2e	Glutosac Wafers, Plain
1914-2q	Glutosac Wafers, Plain
1919	Glutosac Wafers, Plain
1906-2e	Glutosac Zwieback
1914-2q	Glutosac Zwieback
1919	Glutosac Zwieback
1906-2e	No. 1 Proto Puffs
1913-2p	No. 1 Proto Puffs
1914-2q	No. 1 Proto Puffs
1919	No. 1 Proto Puffs
1911-2k	No. 2 Proto Puffs
1913-2p	No. 2 Proto Puffs
1914-2q	No. 2 Proto Puffs
1906-2e	Protosac Rusk
1914-2q	Protosac Rusk
1919	Protosac Rusk
1913-2p	Protosoy Diabetic Wafer
1914-2q	Protosoy Diabetic Wafer
1919	Protosoy Diabetic Wafer
1906-2e	Salvia Almond Sticks
1914-2q	Salvia Almond Sticks
1919	Salvia Almond Sticks

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein. N. × 6.25.	Protein. N. × 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
1919	9.48	5.76	10.97	68.56	.....	0.35	1.01	6.40	8.44	380
1913-2p	4.90	3.60	10.58	66.10	.....	0.50	trace	11.30	13.60	432
1914-2q	7.61	5.03	10.73	67.06	.....	0.16	1.26	10.47	8.41	391
1919	6.81	6.23	7.74	48.38	.....	0.17	none	4.89	33.52	515
1919	12.88	5.09	11.28	70.50	.....	0.13	1.13	6.25	4.02	348
1906-2e	4.70	3.10	4.50	28.10	.....	0.30	51.10[1]	13.70	9.00	413
1913-2p	8.90	2.50	4.00	25.00	.....	0.20	46.50	7.70	9.20	400
1914-2q	5.80	2.55	5.75	35.94	.....	0.35	39.77	6.76	8.83	409
1919	8.58	2.42	7.81	.....	44.52	0.71	23.18	11.83	8.76	398
1913-2p	5.70	2.80	4.83	.....	27.50	0.20	38.60	12.40	12.80	429
1914-2q	5.32	2.75	5.07	.....	28.90	0.27	34.93	13.53	14.30	438
1919	8.59	2.35	5.06	.....	28.84	0.33	32.18	15.38	12.33	417
1906-2e	4.80	2.50	3.38	.....	19.30	0.30	54.90[1]	6.40	11.80	429
1919	8.21	2.29	5.86	.....	33.40	0.29	30.60	14.10	11.11	412
1906-2e	4.70	3.80	4.42	.....	25.20	1.60	41.20[1]	10.60	12.90	424
1914-2q	5.44	2.10	4.98	.....	28.39	0.38	38.93	10.82	13.94	438
1919	10.30	1.89	5.46	.....	31.12	0.36	40.42	7.92	7.99	390
1906-2e	4.50	2.70	5.84	.....	33.30	0.90	42.50[1]	12.30	3.80	387
1914-2q	6.66	2.50	6.29	.....	35.85	1.13	33.64	16.78	3.44	376
1919	9.91	2.20	6.08	.....	34.65	0.83	34.26	12.53	5.62	376
1906-2e	6.10	3.50	4.70	.....	26.80	1.50	41.60[1]	10.90	9.60	404
1914-2q	7.24	2.55	6.82	.....	38.87	1.58	29.55	18.47	1.74	363
1919	10.47	2.55	7.20	.....	41.04	1.19	25.12	12.09	7.54	342
1906-2e	7.60	2.50	5.20	.....	29.60	1.20	40.90[1]	11.30	6.90	389
1914-2q	5.92	2.50	5.82	.....	33.17	0.85	32.46	17.39	7.71	401
1919	9.18	2.04	5.06	.....	28.84	0.83	33.34	15.24	10.53	405
1906-2e	8.60	1.30	12.14	.....	69.20	0.10	9.90[1]	9.90	1.00	365
1913-2p	7.20	2.70	12.21	.....	69.60	0.20	4.30	13.10	2.90	374
1914-2q	8.71	2.80	11.56	.....	65.89	0.40	9.23	10.15	2.82	366
1919	9.32	2.73	12.12	.....	69.08	0.20	3.26	10.74	4.67	371
1911-2k	8.20	1.80	8.38	.....	47.80	0.20	27.20	13.30	1.50	367
1913-2p	7.90	2.50	9.06	.....	51.60	0.20	19.00	16.70	2.10	368
1914-2q	9.16	2.60	9.40	.....	53.58	0.40	20.70	11.47	2.09	362
1906-2e	5.90	2.00	6.54	.....	37.30	0.50	43.90[1]	8.40	2.00	376
1914-2q	7.21	2.93	6.35	.....	36.19	0.48	35.89	14.30	3.00	373
1919	11.00	2.22	5.74	.....	32.71	1.95	39.26	7.84	5.02	364
1913-2p	3.90	5.00	6.90	43.10	.....	1.90	4.70	16.50	24.90	481
1914-2q	4.76	3.50	5.93	37.07	.....	1.80	14.40	14.94	23.53	477
1919	7.35	4.03	7.44	46.50	.....	1.80	10.58	14.23	15.51	421
1906-2e	6.60	7.50	6.27	39.20	.....	1.90	18.70[1]	5.30	20.80	440
1914-2q	2.63	3.38	3.57	22.31	.....	0.70	28.29	12.75	29.94	523
1919	7.11	3.28	5.14	32.13	.....	0.85	21.40	9.10	26.13	486

[1] Includes water-soluble carbohydrates.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	HARD BREADS AND BAKERY PRODUCTS—(*continued*).
	Heintz Food Co., Chicago, Ill.
1912-13b	Gluten Biscuits
1913-2p	Gluten Biscuits
1913-2p	Glutin Biscuits
	Ch. Heudebert, Paris.
1914-2q	Pain d'Aleurone pour Diabétiques, "5% carbohydrates"
1914-2q	Pain "Essentiel" en Biscottes
1914-2q	Pain de Gluten pour Diabétiques
	R. Hundhausen, Hamm.
1892-6k	Aleuronatzwieback, high gluten
1892-6k	Aleuronatzwieback, low gluten
1894-6b	Aleuronat-Biskuits
1891-6b	Aleuronat-Kakes.
	Huntley & Palmer, London.
1912-2m	Akoll Biscuits
1913-2p	Akoll Biscuits
1916-2s	Akoll Biscuits
	Jireh Diabetic Food Co., New York City.
1906-2e	Diabetic Biscuits
1906-2e	Diabetic Biscuits
1913-2p	Diabetic Biscuits
1906-2e	Diabetic Rusks
1913-2p	Diabetic Rusks
1906-2e	Wheat Nuts
1906-2e	Wheat Nuts
	Johnson Educator Food Co., Boston, Mass.
1906-2e	Almond Biscuits
1906-2e	Diabetic Biscuits
1906-2e	Educator Crackers, Greseni Gluten
1913-2p	Educator Gluten Bread Sticks
1911-2k	Gluten Cookies
1919-4b	Gluten Cookies
1906-2e	Gluten Rusk, Greseni Gluten
1906-2e	Gluten Wafers
1906-2e	Glutine, Greseni Gluten
1899-10a	Glutine, Greseni Gluten
	The Kellogg Food Co., Battle Creek, Mich.
1912-2m	Avena-Gluten Biscuit
1906-2e	Potato Gluten Biscuit

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein. N. x 6.25.	Protein. N. x 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
1912-13b	.....	....	2.10	.....	11.97	....	.....	.....	.....	...
1913-2p	6.40	3.50	2.05	.....	11.70	1.30	21.40	37.40	18.30	447
1913-2p	7.30	3.00	2.32	.....	13.20	1.00	45.50	22.80	7.20	391
1914-2q	8.18	4.43	12.17	.....	69.21	0.71	4.22	11.80	1.45	354
1914-2q	7.67	2.33	4.22	26.38	.....	0.20	49.89	12.33	1.20	365
1914-2q	7.85	3.96	12.90	.....	73.53	0.16	3.38	10.28	0.84	356
1892-6k	8.50	2.60	10.59	.....	60.40	....	23.50[2]		5.00	381
1892-6k	6.50	1.60	3.66	.....	20.90	0.80	61.60		8.60	407
1894-6b	6.60	4.70	3.97	.....	22.60	0.50	54.40		11.20	409
1891-6b	3.40	1.10	3.22	.....	18.40	1.20	66.50		9.40	424
1912-2m	9.30	3.90	8.51	53.20	.....	0.40	trace	6.30	26.90	480
1913-2p	7.20	3.40	8.72	54.50	.....	0.70	trace	6.80	27.40	492
1916-2s	7.97	3.43	8.57	53.56	.....	0.49	trace	6.22	28.33	493
1906-2e	6.30	2.00	2.37	14.80	.....	0.90	65.40[1]	6.90	3.70	382
1906-2e	8.90	2.30	2.10	13.10	.....	1.20	70.60		3.90	370
1913-2p	5.40	2.00	2.11	13.20	.....	1.20	49.60	21.20	7.40	403
1906-2e	8.70	3.10	2.34	14.60	.....	0.90	67.70		5.00	374
1913-2p	5.40	1.90	2.38	14.90	.....	1.10	47.00	21.00	8.70	410
1906-2e	7.60	2.30	3.04	19.00	.....	1.00	50.10[1]	4.40	15.60	434
1906-2e	6.00	3.20	3.36	21.00	.....	1.20	46.30		22.30	470
1906-2e	5.30	2.10	4.64	29.00	.....	0.50	50.00[1]	4.30	8.80	412
1906-2e	5.90	1.90	4.05	25.30	.....	0.40	54.90[1]	4.10	7.50	405
1906-2e	6.20	2.90	3.68	.....	21.00	0.20	57.90[1]	7.20	4.60	386
1913-2p	8.40	2.40	5.74	.....	32.70	0.30	37.50	11.50	7.20	392
1911-2k	4.80	2.70	4.22	.....	24.10	0.30	37.80	14.30	16.00	449
1919-4b	5.94	3.16	5.08	.....	28.96	0.40	36.49	13.45	11.60	422
1906-2e	6.20	3.00	3.54	.....	20.20	0.30	63.30[1]	6.70	0.30	364
1906-2e	6.90	0.90	4.85	.....	27.60	0.30	57.00[1]	6.90	0.40	370
1906-2e	6.40	2.60	3.50	.....	20.00	0.40	63.10[1]	6.50	0.80	366
1899-10a	10.20	1.10	2.21	.....	12.60	....	75.20[2]		0.90	359
1912-2m	7.90	2.10	3.42	.....	19.50	0.40	41.10	16.30	12.70	422
1906-2e	8.20	0.80	12.80	.....	73.00	0.00	9.80[1]	7.80	0.40	366

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	HARD BREADS AND BAKERY PRODUCTS—(*continued*).
	The Kellogg Food Co, Battle Creek, Mich.—(*continued*).
1909-3	Potato Gluten Biscuit
1913-2p	Potato Gluten Biscuit
1906-2e	Pure Gluten Biscuit
1909-3	Pure Gluten Biscuit
1916-2s	Pure Gluten Biscuit
1919	Pure Gluten Biscuit
1913-2p	Taro-Gluten Biscuits
1906-2e	40% Gluten Biscuit
1909-3	40% Gluten Biscuit
1911-2k	40% Gluten Biscuit
1912-2m	40% Gluten Biscuit
1913-2p	40% Gluten Biscuit
1916-2s	40% Gluten Biscuit
1919	40% Gluten Biscuit
1912-2m	80% Gluten Biscuit
	Kirche, Düsseldorf.
1895-6b	Aleuronat-Kakes
	Klopfer Chemische Fabrik, Dresden.
1910-9	Glidinebrot
	Eugene Loeb, New York City.
1913-2p	Gluten Luft Bread
	Loeb's Diabetic Food Bakery, New York City.
1919	Aereated Gluten Bread
1914-2q	Diabetic Almond Macaroons
1916-2s	Diabetic Almond Macaroons
1919	Diabetic Almond Macaroons
1914-2q	Diabetic Bread Sticks
1916-2s	Diabetic Bread Sticks
1919	Diabetic Bread Sticks
1919-4b	Diabetic Bread Sticks
1919	Diabetic Bread Sticks, Almond
1916-2s	Diabetic Butter Cookies
1916-2s	Diabetic Butter Cookies
1919	Diabetic Butter Cookies
1914-2q	Diabetic Lady Fingers
1916-2s	Diabetic Lady Fingers
1919	Diabetic Lady Fingers
1914-2q	Diabetic Sponge Cookies
1916-2s	Diabetic Sponge Cookies

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein. N. x 6.25.	Protein. N. x 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
1909-3	7.60	0.90	12.10	.....	69.00	....	19.90[2]		2.60	379
1913-2p	8.80	0.80	6.64	.....	37.90	0.40	39.50	12.10	0.50	363
1906-2e	7.50	1.00	12.85	.....	73.20	0.20	9.10[1]	8.20	0.80	369
1909-3	8.20	1.10	7.73	.....	44.10	....	43.30[2]		3.30	379
1916-2s	8.30	2.04	12.96	.....	73.87	0.12	4.02	10.82	0.83	362
1919	8.33	2.04	13.75	.....	78.38	0.35	2.87	6.53	1.50	365
1913-2p	9.40	0.70	5.01	.....	28.60	0.40	48.20	12.20	0.50	361
1906-2e	7.50	1.60	5.73	.....	32.70	0.10	52.60[1]	4.50	1.00	368
1909-3	7.50	1.40	5.82	.....	33.20	....	55.10[2]		2.80	378
1911-2k	8.00	1.60	6.93	.....	40.40	0.20	35.30	13.30	1.20	367
1912-2m	10.20	0.50	7.60	.....	43.30	0.20	35.00	10.30	0.50	359
1913-2p	7.20	1.30	5.95	.....	31.90	0.30	45.00	13.50	0.80	369
1916-2s	8.50	1.48	7.22	.....	41.15	0.08	36.98	10.83	0.98	365
1919	9.55	1.24	7.18	.....	40.92	0.23	35.55	10.89	1.62	364
1912-2m	10.10	2.10	13.18	.....	75.10	0.10	4.70	7.00	0.90	355
1895-6b	5.00	0.90	2.72	.....	15.50	1.60	63.30		13.70	439
1910-9	12.70	2.30	7.62	.....	43.40	0.30	32.80	6.30	2.20	350
1913-2p	7.30	1.00	4.46	.....	25.40	0.40	44.10	12.60	9.20	411
1919	9.17	1.78	8.04	.....	47.83	0.18	26.78	3.18	11.08	411
1914-2q	3.22	2.98	7.44	46.50	.....	1.53	0.64	7.36	37.77	558
1916-2s	4.55	4.01	5.48	34.25	.....	1.72	trace	10.46	45.01	584
1919	5.90	4.39	4.86	30.38	.....	1.93	0.59	10.48	46.33	713
1914-2q	8.72	2.28	8.07	50.44	.....	0.60	24.64	9.88	3.44	371
1916-2s	8.15	2.87	7.41	46.31	.....	0.19	35.02	7.17	0.29	339
1919	9.14	2.67	6.69	41.81	.....	0.20	35.44	6.93	3.81	331
1919-4b	7.99	3.87	6.72	42.00	.....	0.15	35.23	10.32	0.44	314
1919	7.93	2.00	6.30	39.38	.....	0.70	31.22	7.08	11.69	416
1916-2s	6.14	2.22	6.29	39.31	.....	0.15	32.18	5.07	14.93	471
1916-2s	4.07	2.86	5.02	31.38	.....	0.35	30.66	8.39	22.29	482
1919	8.85	3.06	5.84	36.50	.....	0.13	31.05	8.38	12.03	412
1914-2q	6.01	2.75	9.05	56.56	.....	0.35	1.81	4.23	28.29	505
1916-2s	5.97	3.46	7.68	48.00	.....	0.07	2.14	7.57	32.79	527
1919	8.33	4.41	7.64	47.75	.....	0.05	1.91	3.50	34.05	519
1914-2q	6.92	2.75	8.75	54.69	.....	0.55	1.24	3.74	30.11	510
1916-2s	5.82	3.49	7.14	44.63	.....	0.23	1.91	6.75	37.17	548

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	HARD BREADS AND BAKERY PRODUCTS—(*continued*).
	Loeb's Diabetic Food Bakery, New York City—(*continued*).
1919	Diabetic Sponge Cookies
1919-2u	Gluten Bread
1914-2q	Gluten Luft Bread
1916-2s	Gluten Luft Bread
1916-2s	Gluten Zwieback
1915-2r	Gluten Zwieback
1919	Gluten Zwieback
1915-2r	Gluten Almond Zwieback
1916-2s	Gluten Almond Zwieback
1919	Gluten Almond Zwieback
	Gustav Müller & Co., Agent, New York City.
1913-2p	Charasse Biscuits Croquettes au Gluten
1913-2p	Charasse Biscottes Lucullus
1913-2p	Charasse Gluten Exquis Biscuits aux Amandes
1913-2p	Charasse Gluten Fleur de Neige Pain
1913-2p	Charasse Mignonettes au Gluten
1913-2p	Charasse Pain de Gluten
1913-2p	Charasse Tranches Grilles pour Potage
	Nasmith's Ltd., Toronto.
1916-4a	Diabetic Bread
	Pure Gluten Food Co., New York City.
1914-2q	No. 1 Dainty Fluffs
1914-2q	No. 2 Dainty Fluffs
1916-4a	Dainty Fluffs
1913-2p	Gum Gluten Biscuit Crisps
1914-2q	Gum Gluten Biscuit Crisps
	Rademann's Nährmittelfabrik, Frankfurt.
1893-6f	Diabetiker-Biscuits
1913-2p	Diabetiker-Biscuits
1913-2p	Diabetiker-Bretzel
1910-5	Diabetiker-Cakes
1913-2p	Diabetiker-Cakes
1893-6b	Diabetiker-Chokolade-Biskuits
1913-2p	Diabetiker-Dessert-Gebäck
1910-5	Diabetiker-Makronen
1910-9	Diabetiker-Makronen
1913-2p	Diabetiker-Makronen
1910-5	Diabetiker-Stangen
1910-9	Diabetiker-Stangen
1913-2p	Diabetiker-Stangen

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein.		Fiber.	Nitrogen-free extract.		Fat.	Calories.
				N. x 6.25.	N. x 5.70.		Starch.	Other nitrogen-free extract, by difference.		
1919	8.66	4.45	7.95	49.69	.....	0.11	1.91	1.41	33.77	516
1919-2u	7.85	1.80	7.46	.....	42.52	0.22	27.71	8.76	11.14	416
1914-2q	5.68	2.05	8.38	.....	47.77	0.63	22.89	7.74	13.24	433
1916-2s	7.05	1.20	7.12	.....	40.58	0.18	29.93	11.28	9.78	415
1916-2s	8.27	2.34	7.27	.....	41.44	0.20	35.72	9.64	2.39	369
1915-2r	8.39	1.45	7.47	.....	42.58	0.18	23.43	10.52	13.45	427
1919	9.61	1.91	6.78	.....	38.65	0.14	36.06	10.64	2.99	368
1915-2r	7.84	2.38	6.81	42.56	.....	0.60	19.13	6.90	20.59	620
1916-2s	8.04	1.97	7.04	44.00	.....	0.33	33.10	6.46	6.10	389
1919	8.91	1.94	6.60	41.25	.....	0.58	32.57	6.97	7.78	392
1913-2p	7.30	0.50	5.49	.....	31.30	0.20	30.60	14.70	5.40	395
1913-2p	7.50	1.80	1.82	11.40	.....	0.20	59.20	14.20	5.70	391
1913-2p	5.30	1.60	2.90	.....	16.50	0.60	25.50	26.70	23.80	489
1913-2p	6.10	2.30	5.74	.....	32.70	0.40	25.10	20.90	12.50	427
1913-2p	8.20	2.10	6.42	.....	36.60	0.30	27.30	19.80	5.70	386
1913-2p	8.10	2.10	6.53	.....	37.20	0.20	27.20	19.90	5.30	385
1913-2p	7.70	2.30	6.50	40.60	.....	0.30	28.80	16.70	3.60	377
1916-4a	8.15	1.75	1.82	11.38	.....	....	63.71	13.77	1.24	331
1914-2q	7.04	0.75	12.79	79.94	.....	0.45	10.74	0.54	0.54	370
1914-2q	7.45	0.68	10.60	66.25	.....	0.28	21.85	3.02	0.47	369
1916-4a	7.15	1.25	12.81	80.04	.....	0.12	7.65	2.97	0.82	370
1913-2p	5.30	1.70	6.86	.....	39.10	0.90	39.30	13.00	0.70	372
1914-2q	5.97	1.70	8.43	.....	48.05	1.08	31.22	11.46	0.52	368
1893-6f	2.90	3.50	7.06	44.10	.....	....	10.00	9.70	29.80	523
1913-2p	5.00	1.10	4.74	29.60	.....	0.20	25.90	18.60	19.60	473
1913-2p	6.80	3.00	5.02	31.40	.....	0.20	40.70	9.40	8.50	402
1910-5	.....	....	2.02	12.60	.....	....	39.80		.....	...
1913-2p	6.50	3.00	4.74	29.60	.....	0.20	39.10	8.10	13.50	429
1893-6b	1.80	3.80	7.18	44.90	.....	....	11.80	10.10	27.60	516
1913-2p	4.30	2.50	3.55	22.20	.....	1.10	5.90	21.60	42.40	580
1910-5	.....	....	1.97	12.30	.....	....	11.30		.....	...
1910-9	4.50	3.20	3.57	22.30	.....	1.10	8.80	12.10	48.00	605
1913-2p	4.00	3.00	3.71	23.20	.....	1.20	3.00	17.60	48.00	607
1910-5	.....	....	3.63	22.70	.....	....	17.00		.....	...
1910-9	10.50	2.10	4.77	29.80	.....	....	24.60[2]		33.00	515
1913-2p	4.50	3.60	2.83	17.70	.....	0.50	21.40	8.10	44.20	586

[2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	HARD BREADS AND BAKERY PRODUCTS—(*continued*).
	Rademann's Nährmittelfabrik, Frankfurt—(*continued*).
1910-5	Diabetiker-Zwieback
1910-9	Diabetiker-Zwieback
1893-6b	Erdnuss-Biskuits
1910-9	Käsestangen
1913-2p	Käsestangen
1910-5	Sanitätszwieback
	Schelle, Braunschweig.
1897-6e	Aleronat-Kakes
	Seidl, München.
1910-5	Kleberzwieback
	James Strachen.
1916-4a	Gluten Bread
	Roman Uhl, Karlsbad.
1913-2p	Carlsbad-Water Biscuits, "Sprudel" Brand
	G. Van Abbott & Sons, London.
1913-2p	Caraway Biscuits for Diabetics
1913-2p	Diabetic Rusks for Diabetics
1913-2p	Euthenia Biscuits
1913-2p	Gluten Biscottes or Rolls
1913-2p	Gluten Bread or Slices
1913-2p	Gluten Butter Biscuits for Diabetics
1913-2p	Ginger Biscuits for Diabetics
1913-2p	Midolia Biscuits
1913-2p	Walnut Biscuits for Diabetics
	Waukesha Health Products Co., Waukesha, Wis.
1919	Hepco Dodgers
	Weston's Bakery, Boston, Mass.
1915-2r	Gluten Cookies
	BREAKFAST FOODS.
	Brusson Jeune, Villenur, France.
1913-2p	Farine au Gluten
1910-2j	Gluten Semolina
	Dieto Food Co., New York City.
1914-2q	Dieto Nut Cereal
1914-2q	Wheat and Barley Cereal

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein.		Fiber.	Nitrogen-free extract.		Fat.	Calories.
				N. x 6.25.	N. x 5.70.		Starch.	Other nitrogen-free extract, by difference.		
1910-5	.....	....	2.62	16.40	.....	....	37.60		.....	...
1910-9	9.40	2.20	4.03	25.20	.....	....	47.00	4.30[2]	11.90	413
1893-6b	1.90	2.70	5.57	34.80	.....	....	9.00	30.10	21.50	489
1910-9	6.90	2.20	1.79	11.20	.....	....	50.49[2]		29.30	511
1913-2p	6.70	3.80	1.49	9.30	.....	0.10	38.00	8.40	33.70	524
1910-5	.....	....	2.80	17.50	.....	....	58.40		.....	...
1897-6e	4.90	1.30	3.18	.....	18.10	....	64.90[2]		10.80	429
1910-5	6.30	....	2.37	.....	13.50	....	67.90		7.80	396
1916-4a	6.20	2.20	2.96	.....	16.87	0.10	52.74	21.29	0.60	369
1913-2p	8.10	1.70	1.60	10.00	.....	0.20	55.60	19.20	5.20	386
1913-2p	6.70	3.60	5.70	35.60	.....	0.70	8.60	7.30	37.50	544
1913-2p	10.80	1.20	11.34	70.90	.....	0.30	12.60	3.40	0.80	355
1913-2p	5.50	3.40	5.73	35.80	.....	1.40	6.90	6.30	40.70	562
1913-2p	10.50	2.40	8.26	.....	47.10	0.20	29.80	7.70	2.30	359
1913-2p	10.60	2.00	8.66	.....	49.40	0.20	27.40	8.20	2.20	361
1913-2p	6.10	3.00	7.06	.....	40.20	0.90	9.00	7.60	33.20	526
1913-2p	4.10	3.40	5.54	34.60	.....	1.80	10.90	5.80	39.40	560
1913-2p	6.00	4.30	2.82	17.60	.....	4.10	13.40	18.20	36.40	524
1913-2p	4.40	2.90	3.34	20.90	.....	2.30	trace	12.30	57.20	648
1919	8.73	5.68	6.79	42.44	.....	3.85	1.01	21.56	16.73	411
1915-2r	.....	....	4.86	.....	27.70	....	19.59	.....	.....	...
1913-2p	10.90	0.60	5.42	.....	30.90	0.20	48.80	8.00	0.60	356
1910-2j	9.70	0.70	2.75	.....	15.70	0.30	64.90	8.20	0.50	360
1914-2q	5.00	1.95	3.46	21.63	.....	1.22	39.54	12.28	18.38	459
1914-2q	6.77	1.68	1.86	11.63	.....	2.00	61.42	14.35	2.15	359

[2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	BREAKFAST FOODS—(*continued*).
	Farwell & Rhines, Watertown, N. Y.
1913-2p	Barley Crystals
1913-2p	Cresco Grits
	William Hazard Co., New York City.
1908-10c	Hazard's Wheat Protein Breakfast Food
	Health Food Co., New York City.
1913-2p	Manana
1914-2q	Manana Gluten Breakfast Food
1919	Manana Gluten Breakfast Food
1919	Protosoy (Cereal)
	Jireh Diabetic Food Co., New York City.
1913-2p	Whole Wheat Farina
1913-2p	Frumenty
	Kellogg Food Co., Battle Creek, Mich.
1911-2k	Granola
	Loeb's Diabetic Food Bakery, New York City.
1919	Caseine Breakfast Cereal
1919	Gluten Breakfast Cereal
	Pure Gluten Food Co., New York City.
1919-4b	Gluten Breakfast Food
1904-11	Gum Gluten Breakfast Food
1906-2e	Gum Gluten Breakfast Food
1911-2k	Gum Gluten Breakfast Food
1911-2k	Gum Gluten Granules
1916-4a	Gum Gluten Granules
1914-2q	Hoyt's Gum Gluten Breakfast Food
1914-2q	Hoyt's Gum Gluten Granules
1901-10b	Pure Gluten Breakfast Cereal
	Pure Gluten Food Co., Columbus, Ohio.
1919	Hoyt's Gluten Breakfast Food, 40% Protein
1919	Hoyt's Gluten Granules, over 40% Protein
	Waukesha Health Products Co., Waukesha, Wis.
1919	Hepco Grits
	MACARONI, NOODLES, ETC.
	Brusson Jeune, Villemur, France.
1910-2k	Pâtes aux Oeufs Macaroni
1910-2k	Pâtes aux Oeufs Nouillettes

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein. N. × 6.25.	Protein. N. × 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
1913-2p	9.90	1.20	1.84	11.50	.....	0.90	62.70	12.50	1.30	359
1913-2p	11.10	0.60	2.85	17.80	.....	0.50	54.10	14.50	1.40	358
1908-10c	8.50	0.70	6.42	.....	36.60	....	53.20[2]		1.00	368
1913-2p	10.20	2.40	6.02	37.60	.....	1.10	31.00	15.80	1.90	355
1914-2q	7.56	2.53	6.82	.....	38.87	1.73	29.87	17.45	1.99	363
1919	8.49	2.47	7.86	.....	44.80	1.09	21.99	12.47	8.69	396
1919	7.65	5.39	6.42	40.13	.....	3.78	trace	24.88	18.17	424
1913-2p	6.20	1.80	2.06	.....	11.70	2.20	59.50	16.30	2.30	371
1913-2p	6.20	1.40	1.97	12.30	.....	1.10	65.40	11.90	1.70	374
1911-2k	6.10	2.30	2.22	13.90	.....	0.60	45.20	31.10	0.80	368
1919	4.52	4.61	5.86	36.63	.....	....	0.70	11.02[2]	42.52	576
1919	4.38	2.73	5.12	.....	29.18	1.04	25.51	17.78	19.38	464
1919-4b	9.17	1.32	7.16	.....	40.75	0.10	35.70	12.28	0.68	361
1904-11	9.50	0.90	8.70	.....	49.60	0.50	30.40	8.30	0.80	360
1906-2e	9.10	1.10	8.54	.....	48.70	0.30	31.00[1]	8.20	1.60	366
1911-2k	7.50	1.20	6.05	.....	34.40	0.40	37.90	17.30	1.30	370
1911-2k	7.50	1.50	7.28	.....	41.50	0.30	32.30	15.30	1.60	371
1916-4a	6.95	0.80	6.90	.....	39.33	0.08	40.50	11.42	0.92	363
1914-2q	6.48	0.60	7.26	.....	41.38	0.28	39.21	11.19	0.86	375
1914-2q	6.64	0.73	6.83	.....	38.93	0.45	41.93	10.63	0.69	372
1901-10b	9.30	0.70	6.99	.....	39.80	0.30	48.30		1.60	367
1919	9.23	0.93	8.07	.....	46.00	0.51	31.39	10.15	1.79	366
1919	9.75	0.97	7.68	.....	43.78	0.68	32.15	10.08	2.59	327
1919	8.88	5.51	6.44	40.25	.....	4.19	0.87	23.91	16.39	408
1910-2k	8.80	0.70	2.22	13.90	.....	trace	69.20	7.00	0.40	364
1910-2k	8.70	0.70	2.30	14.40	.....	trace	68.90	6.80	0.50	365

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	MACARONI, NOODLES, ETC.—(*continued*).
	Brusson Jeune, Villemur, France—(*continued*).
1913-2p	Petites Pâtes au Gluten
1910-2k	Vermicelle au Gluten
	The Dieto Food Co., New York City.
1914-2q	Whole Wheat Brand Macaroni
	Jireh Diabetic Food Co., New York City.
1913-2p	Macaroni
	Eugene Loeb, New York City.
1913-2p	Home Made Noodles
	Loeb's Diabetic Food Bakery, New York City.
1916-2s	Gluten Noodles
1919	Gluten Noodles
	The Marvelli Co., Detroit, Mich.
1901-2b	Macaroni
1912-20	Spaghetti
	Pure Gluten Food Co., New York City.
1906-2f	Gum Gluten Macaroni
1911-2k	Gum Gluten Noodles
1914-2q	Hoyt's Gum Gluten Noodles
	PEANUT BUTTER.
	Atlantic Peanut Refinery, Philadelphia, Pa.
1899-2a	Peanut Butter
	J. W. Beardsley's Sons, New York City.
1913-2p	Acme Red Brand
1919	Acme Brand
	Beech-Nut Packing Co., Canajoharie, N. Y.
1913-2p	Beech-Nut
1919	Beech-Nut
	A. C. Blenner & Co., New Haven, Conn. (distributed by).
1913-2p	Peanut Butter
	D. W. Brooke, Newark, N. J.
1913-2p	Peanut Butter
	Dillon & Douglass, New Haven, Conn. (distributed by).
1913-2p	Perfection

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein.		Fiber.	Nitrogen-free extract.		Fat.	Calories.
				N. x 6.25.	N. x 5.70.		Starch.	Other nitrogen-free extract, by difference.		
1913-2p	9.00	0.80	2.98	.....	17.00	0.20	61.20	10.80	1.00	365
1910-2k	8.00	0.80	2.94	.....	16.80	trace	65.80	8.20	0.40	367
1914-2q	9.81	0.90	2.22	13.88	.....	0.57	58.72	14.98	1.14	361
1913-2p	8.80	1.10	2.70	16.90	.....	0.90	58.80	12.60	0.90	361
1913-2p	9.80	1.00	6.69	41.80	.....	0.20	36.70	5.00	5.50	384
1916-2s	9.25	0.69	7.23	.....	41.21	0.15	33.19	14.48	1.03	365
1919	10.23	1.63	6.54	.....	37.28	0.15	36.84	10.28	3.59	370
1901-2b	13.40	0.50	3.31	20.70	.....	....	64.80[2]		0.60	347
1912-20	.....	....	2.48	15.50	.....	....	.....	.....	.....	...
1906-2f	10.30	0.70	6.62	.....	37.70	0.30	46.20[1]	3.80	1.00	360
1911-2k	8.30	1.10	5.86	.....	33.40	0.20	42.00	12.60	2.40	374
1914-2q	8.21	0.65	6.48	.....	36.93	0.33	41.82	10.83	1.23	369
1899-2a	2.10	4.00	4.59	28.70	.....	2.30	6.20	10.30	46.40	598
1913-2p	2.20	4.40	4.51	28.20	.....	1.70	4.00	11.20	48.30	608
1919	1.82	3.07	5.00	31.25	.....	1.77	5.29	8.53	48.27	615
1913-2p	2.00	3.50	4.70	29.40	.....	1.90	4.50	12.10	46.60	593
1919	1.99	3.32	4.86	30.38	.....	1.81	5.04	7.55	49.91	621
1913-2p	2.90	4.00	4.75	29.70	.....	1.20	4.60	9.70	47.90	607
1913-2p	1.80	3.80	4.72	29.50	.....	1.50	4.30	10.60	48.50	614
1913-2p	1.80	4.40	4.66	29.10	.....	1.80	4.80	15.30	42.80	582

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	PEANUT BUTTER—(*continued*).
	H. J. Heinz Co., Pittsburgh, Pa.
1913-2p	Peanut Butter
	The Kellogg Food Co., Battle Creek, Mich.
1913-2p	Peanut Butter
1913-2p	Peanut Butter
	Francis H. Leggett & Co., New York City.
1913-2p	Premier
	MacLaren Imperial Cheese Co., Detroit, Mich.
1913-2p	Eagle
	Nut Products Co., New Haven, Conn.
1913-2p	Penolia
	Penolia Food Co., New Haven, Conn.
1899-2a	Penolia
	S. S. Pierce Co., Boston, Mass.
1913-2p	Acharis Brand
	ALMOND PASTE.
	Chapman, Chicago, Ill.
1902-1c	Almond Paste
	Henry Heide, New York City.
1902-1c	Almond Paste
	Spencer, New York City.
1902-1c	Almond Paste
	NUTS AND NUT PREPARATIONS.
	Dieto Food Co., New York City.
1914-2q	Pine Nuts
	Chas. Lawrence Co., Boston, Mass. (sold by).
1913-2p	California Paper Shell Almonds, edible portion
	Christian National Food Co., Kenilworth, N. J.
1916-2s	Christian's Protoid Nuts
	Jireh Diabetic Food Co., New York City.
1913-2p	Diabetic Pine Nuts (Pignolias)
	The Kellogg Food Co., Battle Creek, Mich.
1906-2e	Almond Butter (Sanitas)
1908-10c	Almond Butter (Sanitas)
1901-10b	Malted Nuts
1913-2p	Nut Bromose (Meltose and Nuts)
1906-2e	Nut Butter (Sanitas)

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein.		Fiber.	Nitrogen-free extract.		Fat.	Calories.
				N. x 6.25.	N. x 5.70.		Starch.	Other nitrogen-free extract, by difference.		
1913-2p	3.00	3.90	4.62	28.90	.....	1.70	4.00	11.20	47.30	592
1913-2p	3.10	3.00	4.50	28.10	.....	1.40	3.40	11.30	49.70	619
1913-2p	3.60	3.30	4.90	30.60	.....	1.50	3.20	9.00	48.80	610
1913-2p	2.10	4.00	4.75	29.70	.....	1.70	6.50	12.30	43.70	587
1913-2p	1.50	3.80	5.14	32.10	.....	1.70	4.30	11.70	44.90	597
1913-2p	2.40	3.90	4.46	27.90	.....	1.50	3.90	9.10	51.30	625
1899-2a	2.00	6.00	4.78	29.90	.....	2.10	5.60	7.70	46.70	593
1913-2p	1.70	3.70	4.59	28.70	.....	3.00	5.10	9.50	48.30	608
1902-1c	23.70	1.40	2.10	13.10	.....	....	11.30	25.00[2]	25.50	427
1902-1c	22.00	1.60	2.03	12.70	.....	....	small	43.70[2]	20.00	406
1902-1c	27.00	1.70	2.16	13.50	.....	....	trace	31.60[2]	26.20	416
1914-2q	2.23	4.55	6.35	39.69	.....	0.75	none	2.76	50.02	620
1913-2p	3.50	3.50	2.94	18.40	.....	3.00	none	16.30	55.30	637
1916-2s	4.23	4.27	6.02	37.63	.....	....	trace	5.65[2]	48.22	607
1913-2p	2.00	4.60	6.35	39.70	.....	0.90	none	3.40	49.40	617
1906-2e	0.90	2.90	3.62	22.60	.....	3.90	3.70[1]	4.50	61.50	677
1908-10c	2.30	3.00	3.47	21.70	.....	....	11.50[2]		61.50	686
1901-10b	2.60	2.20	3.79	23.70	.....	....	43.90[2]		27.60	519
1913-2p	14.00	1.50	2.73	17.10	.....	1.20	3.20	36.20	26.80	467
1906-2e	0.20	2.90	4.61	28.80	.....	3.70	9.10[1]	4.80	50.50	625

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES

Reference.	Manufacturer and Brand.
	NUTS AND NUT PREPARATIONS—(*continued*).
	The Kellogg Food Co., Battle Creek, Mich.—(*continued*).
1906-2e	Nut Meal
1906-2e	Nuttolene
1913-2p	Pine Nuts
1906-2e	Protose
	Nashville Sanitarium-Food Co., Nashville, Tenn.
1913-2p	Malted Nut Food
1913-2p	Nut Butter
1913-2p	Nutcysa
1913-2p	Nutfoda
	CHOCOLATE AND CHOCOLATE PREPARATIONS.
	Brusson, Jeune, Villemur, France.
1913-2p	Chocolate with Added Gluten à la Vanille
	Callard, Stewart & Watt, London.
1913-2p	Casoid Chocolate Almonds
	Fromm & Co., Dresden.
1913-2p	Conglutin-Diabetiker-Schokolade
	Karl Goldscheider, Karlsbad.
1914-2q	Feinste Dessert-Schokolade für Diabetiker, "9.98% carbohydrates"..
1914-2q	Feinste Mocca-Schokolade für Diabetiker, "10.26% carbohydrates"..
1914-2q	Feinste Nuss-Schokolade für Diabetiker, "11.32% carbohydrates"...
1914-2q	Feinste Orange-Schokolade für Diabetiker, "9.98% carbohydrates"..
	Groetzsch, Frankfurt.
1910-9	Essschokolade (Orange)
1910-9	Kochschokolade
	Loeb's Diabetic Food Bakery, New York City.
1914-2q	Almond Chocolate Bars
1914-2q	Diabetic Chocolates
1919	Almond Chocolate Bars
1919	Diabetic Chocolate
	Plasmon Co., London.
1901-13a	Plasmon Chocolate
1903-2c	Plasmon Chocolate
	Rademann's Nährmittelfabrik, Frankfurt.
1910-5	Diabetiker-Chokolade
1913-2p	Diabetiker-Chokolade
	Troponwerke, Mülheim.
1898-7	Tropon-Chokolade
1899-8	Tropon-Chokolade

OF DIABETIC FOODS—(*Continued*).

Reference.	Water.	Ash.	Nitrogen.	Protein.		Fiber.	Nitrogen-free extract.		Fat.	Calories.
				N. x 6.25.	N. x 5.70.		Starch.	Other nitrogen-free extract, by difference.		
1906-2e	3.00	2.20	4.64	29.00	.....	2.00	8.90[1]	3.20	51.70	630
1906-2e	55.20	2.20	2.03	12.70	.....	1.80	6.30		21.80	272
1913-2p	2.60	4.50	6.08	38.00	.....	1.10	4.20		49.60	615
1906-2e	62.20	1.50	3.62	22.60	.....	0.90	3.60		9.20	188
1913-2p	3.40	1.70	3.95	24.70	.....	....	3.40	24.10[2]	42.70	593
1913-2p	1.90	2.90	4.48	28.00	.....	1.60	3.80	9.20	52.60	637
1913-2p	57.00	1.80	2.06	12.90	.....	1.00	trace	6.30	21.00	266
1913-2p	62.30	1.60	3.33	20.80	.....	0.50	trace	6.80	8.00	182
1913-2p	2.60	3.20	2.54	15.90	.....	2.20	9.20	17.20	49.70	617
1913-2p	3.50	3.10	3.57	22.30	.....	3.20	trace	16.10	51.80	620
1913-2p	4.00	5.40	2.82	17.60	.....	1.20	4.30	28.40	39.10	553
1914-2q	2.17	1.80	1.82	11.38	.....	1.68	4.98	20.44	57.55	665
1914-2q	2.20	2.25	1.63	10.19	.....	1.65	4.11	19.38	60.22	677
1914-2q	3.37	2.65	2.34	14.63	.....	1.70	6.86	16.44	54.35	641
1914-2q	2.38	2.20	1.83	11.44	.....	1.43	4.98	19.93	57.64	664
1910-9	4.60	2.30	1.73	10.80	.....	4.40	12.00	5.20	60.70	658
1910-9	10.90	6.70	4.05	25.30	.....	5.90	15.90	20.20	25.10	432
1914-2q	2.88	3.77	2.60	16.25	.....	4.32	5.74	26.04	41.00	561
1914-2q	1.98	3.85	2.38	14.88	.....	4.90	6.92	16.05	51.42	614
1919	4.76	3.43	2.38	14.88	.....	2.81	5.34	15.55	53.23	622
1919	4.72	3.45	2.35	14.69	.....	2.62	7.26	15.52	51.74	716
1901-13a	.....	....	3.38	21.10	.....	....	.....	.....	.....	...
1903-2c	3.50	2.50	3.23	20.20	.....	0.70	trace	48.00	25.10	499
1910-5	.....	....	2.58	16.10	.....	....	9.60		.....	...
1913-2p	2.50	3.20	2.80	17.50	.....	2.30	3.80	13.10	57.60	656
1898-7	1.70	1.60	2.91	18.20	.....	2.70	49.90		25.90	506
1899-8	1.80	....	2.94	18.40	.....	....	.....	.....	.....	...

[1] Includes water-soluble carbohydrates. [2] Includes fiber.

TABLE XI.—COMPILATION OF ANALYSES OF DIABETIC FOODS—(*Concluded*).

Reference.	Manufacturer and Brand.	Water.	Ash.	Nitrogen.	Protein. N. x 6.25.	Protein. N. x 5.70.	Fiber.	Nitrogen-free extract. Starch.	Nitrogen-free extract. Other nitrogen-free extract, by difference.	Fat.	Calories.
	COCOA.										
	The Dieto Food Co., New York City.										
1914-2q	Dieto Cocoa	4.29	5.40	3.77	23.56	.....	4.87	12.38	26.57	22.93	456
	Jireh Diabetic Food Co., New York City.										
1906-2e	Diabetic Cocoa	3.10	4.30	3.30	20.60	.....	3.60	32.60[1]	18.00	17.80	445
1906-2e	Diabetic Cocoa	7.30	3.90	3.06	19.10	.....	3.40	29.00[1]	18.90	18.40	434
	Gustav Müller, New York City (Agent).										
1913-2p	Charrasse Gluto-Cacao	6.40	6.70	3.44	21.50	.....	3.10	16.30	23.80	22.20	446
	Plasmon Co., London.										
1903-2c	Plasmon Cocoa	8.90	6.60	8.45	52.80	.....	....	5.10	15.80[2]	10.80	392
	Rademann's Nährmittelfabrik, Frankfurt.										
1913-2p	Diabetiker-Cacao	5.20	5.90	2.82	17.60	.....	3.00	10.70	34.00	23.60	462
	MISCELLANEOUS PRODUCTS.										
	Dieto Food Co., New York City.										
1914-2q	Dieto Baking Powder	.....	....	.....	.....	.....	....	12.94	.....	.....	...
1914-2q	Dieto Barley Coffee	3.42	3.08	2.11	13.19	.....	9.14	17.72	46.15	7.30	374
1917-2t	Longuets de Lausanne, **Manual Freres**	10.78	3.04	2.27	14.19	.....	0.44	49.16	16.86	5.53	370
	Health Food Co., New York City.										
1913-2p	Kaffeebrod	4.50	2.20	2.06	12.90	.....	6.40	10.10	62.40	1.50	355
	Genevieve Jackson, Los Angeles, Calif.										
1919	Dia-Biskit	6.08	6.13	2.82	17.63	.....	11.99	6.13[4]	47.21	4.83	328
	The Kellogg Food Co., Battle Creek, Mich.										
1911-2l	Sanitas Meltose	26.80	0.50	0.10	0.60	.....	....	.....	72.10[2]	.....	291
	Mansfield Laboratories, Mansfield, Mass.										
1914-2q	No Name (square)	9.34	5.53	4.72	29.50	.....	0.43	34.26	13.53	7.41	376
1914-2q	No Name (hexagonal)	8.65	4.84	4.06	25.38	.....	0.47	31.16	14.33	15.17	420
	Gustav Müller & Co., New York City.										
1913-2p	Dr. Bouma Sugar-Free Fat-Milk	91.80	0.50	0.38	2.40	.....	....	.....	.....	5.30	57
	S. S. Pierce Co., Boston, Mass. (prepared for)										
1919	Svea Wafers	10.58	2.85	1.04	6.50	.....	0.13	53.72	25.53	0.69	349
1900-14	Diabetes Milch, 5%, **Rose's**	92.50	0.20	0.18	1.10	.....	....	.....	1.20	5.00	54
1900-14	Diabetes Milch, 10%, **Rose's**	86.30	0.20	0.37	2.30	.....	....	.....	1.20	10.00	104
	D. Whiting & Sons, Boston, Mass.										
1913-2p	Sugar-Free Milk (ave. 3 analyses)	86.40	0.70	0.91	5.70[5]		....	.....	trace	7.20	88
1919	Sugar-Free Milk	83.30	0.76	1.01	6.43[5]		....	.....	0.22[6]	9.34	111

[1] Includes water-soluble carbohydrates.
[2] Includes fiber.
[4] Includes some reducing material derived from agar-agar.
[5] Nitrogen x 6.38.
[6] Reducing sugar calculated as lactose.

GENERAL SUMMARY.

Analyses from Connecticut Report, 1913		387
Analyses from Connecticut Reports since 1913		107
New analyses made in this laboratory in 1919:		
Commercial diabetic products	85	
Commercial and experimental preparations	22	107
Recent analyses compiled from other sources		51
Total		652