

EXCESSIVE use of refined sugar in the United States has become a serious nutritional problem, especially in the past half century. One hundred years ago less than one-tenth as much sugar per capita was consumed as food in this country, as compared with today.^{1*} During that same century, while the death rate from disease in general dropped considerably, statistics showed alarming increases in many of the degenerative diseases. These diseases are thought by many scientific investigators to be at least in part the result of excessive use of refined sugar. While Americans have shown a significant increase in these chronic diseases, other peoples of the world (African natives and others out of contact with civilization) who have been eating no refined sugar, fail to show many of

Refined Sugar:

A summary of scientific evidence

tiplied. Part of its effort, however, is being expended upon trying to further the use of sugar as a food.² The foundation claims that because one of the end-products of sucrose is glucose, which is a life's necessity to the body, sucrose must be a good food. It is overlooked that starch in the progress of digestion is changed to glucose.

The definition of a food is, "That which sustains life and promotes growth."³ Sugar refined to the state of being a pure chemical or drug, has been fed to rats and found to shorten life and stop growth.⁷

Throughout the world, wherever unrefined or natural sugars are found, an all-wise Creator has always accompanied them by vitamins and minerals which are of importance to the body in the digestion and metabolism of those sugars.²⁸ For thousands of years mankind lived without sugar and were in good health. Modern man came along after thousands of years and managed to refine sugar to an almost pure state.²⁸ The resulting chemical product, sucrose, now easily available in large quantities at low cost, is playing an important part in our present-day problems of civilization, especially in the cause of degenerative diseases.⁹ When the Word of Wisdom was revealed to the Prophet Joseph Smith, sugar was not mentioned.²⁹ Sugar was then a relatively scarce product; it was used mostly as a flavoring and did not constitute the large part of the dietary it now does.

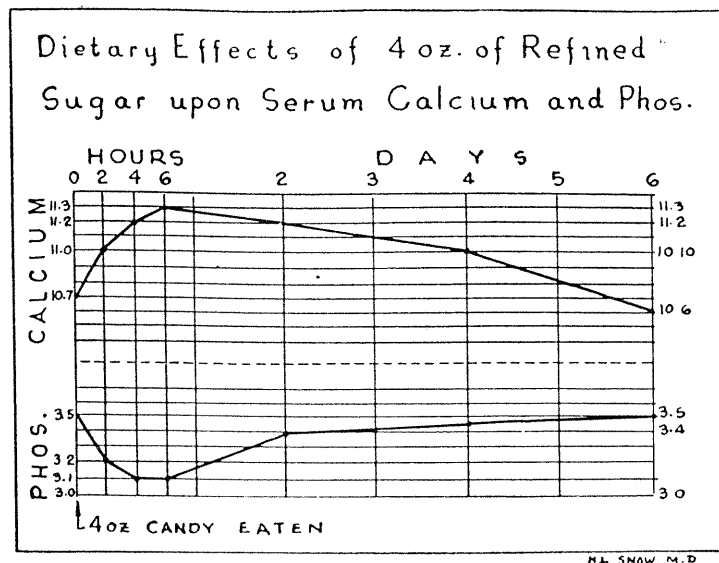
Like alcohol, tobacco, tea, coffee, and chocolate, sugar is habit-forming.^{20 23 24} Sugar eaters crave candy or sweet drinks. Cola drinks are doubly habit-forming because they also contain caffeine, in addition to a large amount of sugar.¹

Effects in infancy and childhood.

Sugar-sweetened cow's milk has all but replaced mother's breast milk in many parts of the United States. Mothers are being told even by some doctors that this convenient way of feeding their babies is as good as breast-feeding. Such is not the case.¹⁰ If mothers would improve their own sugar-saturated diets by eating proper nutritious foods instead, they could more easily nurse their babies and would have children less susceptible to disease, both of the infectious type, as well as of the degenerative type. It is doubtful practice to start a child on habit-forming sugar diets²⁴ in its early days and weeks of life.

Many rashes, infections,¹¹ catarrhal conditions, allergic manifestations, and nervous upsets of infants clear up when refined sugar is removed from their formulas.⁹

The resulting malnutrition especially in children is one of the



the chronic diseases which are believed to be the result of using refined sugar and white flour.^{2 3} Unrefined sugar, especially as it occurs in nature, eaten in small amounts, seems less objectionable because it is associated with the necessary minerals and some vitamins.

Refined sugar, however, has a wide field of usefulness in industry. It is one of the cheapest organic chemicals on the market.⁴ New industrial uses are being found constantly. Through research work undertaken at many large universities in the United States and financed from funds contributed by the Sugar Research Foundation, Inc., such industrial uses are mul-

Therefore sugar can't be called a food. Like alcohol, sugar furnishes only calories to the body.

A drug is defined as "any substance used as a chemical ingredient in the arts."⁶ Pharmacists agree that sugar meets the requirements of this definition of a drug.

In this article we shall consider, quoting in every instance scientific evidence:

1. Reasons why sugar is not a food, but a drug⁸
2. How sugar as a refined chemical excessively used is now damaging the human body:
 - a. In infancy^{9 10 11}
 - b. In childhood^{1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23}
 - c. In middle and old age^{8 12 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31}

*Numbers refer to bibliography at end of article

ITS USE AND MISUSE

By Harold Lee Snow, M.D.

BISHOP SAN PEDRO WARD, LONG BEACH STAKE

strongest arguments against refined sugar.⁹ Foods containing refined sugar taken either during or between meals, destroy the appetite for the nourishing foods, which are important to normal life and growth.^{8 9 12 17 18 19 28}

Parents of malnourished children often use sweets as a reward for eating a small portion of vegetables or milk, and the scene is thus set for repetition at the next meal.

Sugar eating creates deficiencies of vitamins even in children taking "vitamin pills," because most vitamin tablets or capsules now on the market contain several isolated synthetic vitamins which create a greater relative deficiency of the vitamins that are missing in that particular tablet than if the tablet were not taken at all.⁹ These chronic vitamin deficiencies show their effects in a long list of degenerative

heart, development of the bones, and coagulation of the blood.²⁶ Sugar itself further discourages calcium metabolism. Nervousness then results in these children and predisposes to delinquency, actual nervous breakdown, and even mental disease may follow.⁸

Furthermore, as these same sugar-eating children grow up, many of them develop tooth cavity after tooth cavity until by maturity or shortly thereafter, they need almost a mouth full of inlays, bridges, fillings, or in extreme cases complete upper and lower plates.^{14 24 25}

Others of these children having the wrong type of glandular inheritance, are destined to develop sugar diabetes if they continue long enough to indulge in the sugar foods that they now have come to crave.^{8 12 14 15 28 29 30 37}

Diabetes may strike early or late

ordinary diabetes, and it clears up when dietary-refined carbohydrates, such as sugar, are eliminated.¹¹ This disease includes dermatitis, pruritis, furunculosis, multiple abscess formations, boils, styes, and other bacterial infections of the skin. Sugar appears to favor the growth of bacterial organisms.^{11 38} In fact, sugar is used commercially in making bacterial cultures.³⁹

Some parents who are horrified at the idea of having a drunkard in the family think nothing of allowing their children to become habituated excessively to candy, chewing gum, soft drinks, ice cream, pie, cake, jam, and jellies. Many of these children grow up and transfer their sugar habit over to that other carbohydrate, alcohol, which has most of sugar's bad effects in addition to its own peculiar ability to cause drunkenness and insanity. Children are not benefited by eating sweets.^{12 13}

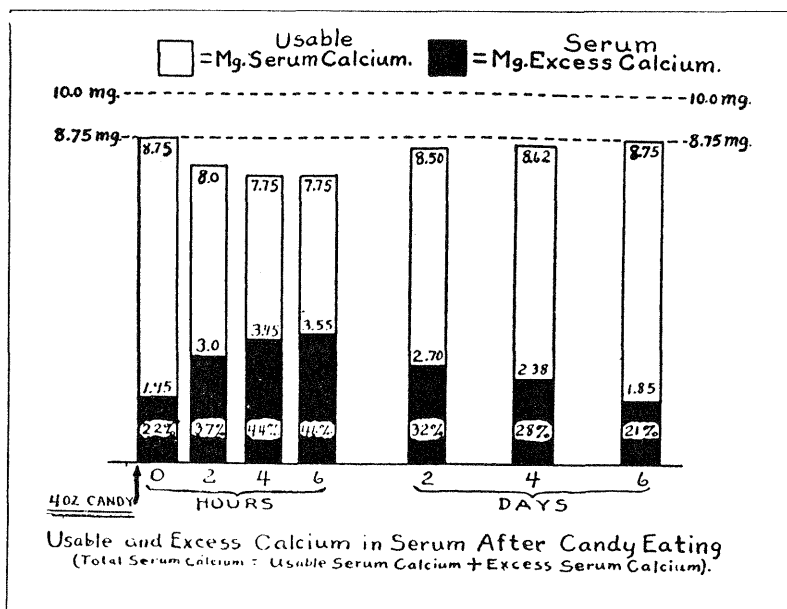
Hygeia, health magazine published by the American Medical Association, suggested in an article that zones be created around schools where candy could not be purchased by children. And yet many national advertisements for candy, chewing gum, and other habit-forming sweets are directed to the eye of childhood.¹³

By the time a child is six years old, he usually develops his first molar teeth. These, the dentists call the "key to occlusion"—a most important factor in creating a good placement of all the permanent teeth. Yet by the time many of these sugar-eating children have reached puberty and long before their permanent teeth have all erupted, their six-year molars are decayed beyond the power to save.^{14 15 24 25 26 27} Their extraction then results in a mouth of badly arranged teeth.

Effects in middle and old age.

Children are by no means the only sufferers from excessive sugar eating. The most common unkind blow to middle age is the development of chronic diseases, including arthritis and its allied rheumatic diseases. These result in more illness than any other disease except insanity.⁴⁰ Sugar eating is a number one predisposing cause of arthritis, neuritis, and rheumatism, as well as many of the other chronic diseases.^{41 42}

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conditions and illnesses, many of which have been thought to be practically incurable.^{24 25}

Sugar drinks are replacing milk in many of our American schools.²³ This not only means less calcium for the child's vital period of bone growth, but also means reduction of the calcium needed for action of

in life. It is now pretty well agreed that sugar and other concentrated sweets have a great deal to do with the cause of sugar diabetes.^{14 15 37}

"Skin diabetes" is a new definition for a series of skin diseases often affecting children, as well as adults.^{11 38 39} It is present in many sugar-eaters who have no signs of

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From childhood to old age the chronic complaint of gas on the stomach and bowel has been widespread.⁴² One of the causes of this condition is the use of refined sugar.^{8 21 23}

Sugar irritates the linings of the stomach and intestine, probably by virtue of its hypertonic effect on the tender mucous membrane.^{2 16 20 21 23} This results in failure of the normal digestive process and delayed emptying time of the stomach.^{14 21} In the meantime the sugar ferments and forms gas which creates pain, and other symptoms of indigestion. This may result in a person's being underweight.⁹

Lowering of the hydrochloric acid content of the stomach is another result of refined sugar eating.²¹ Especially in people who have reached middle age, low acidity of the stomach is now being found to be fairly common.⁹

Sugar and fats in the diet are now not only probably higher than ever before in the history of the race of man, but fats, sugar, and white flour—a bad combination—are now also used widely in pastries, cake, cookies, and many other modern recipes.⁴⁴ This is thought to be a chief cause of low stomach acidity frequently confused with "sour" stomach and is often even by doctors themselves mistaken for too high acidity.⁹ The result is that the patient is given alkaline or aluminum medications to neutralize acidity while the real trouble is insufficient acid in the stomach.

Low stomach acidity, resulting at least in part from the use of refined sugar,²¹ leads to a long list of other degenerative diseases that are seen especially among the middle-aged and elderly people in America, where the people have been called the "sugar gluttons of the world."¹¹ Because of low stomach acidity, iron is not easily absorbed from one's food.^{45 46} Thus it is difficult for the body to make up for its iron losses. This is manifest in various forms of anemia.⁴⁷

Calcium also is not absorbed normally by patients with low acidity⁴⁸ of the stomach. Deficiency of calcium even when plenty of milk is taken in the diet is then the patients' sad plight. Low calcium causes another long list of chronic illnesses,

among which are rickets, tetany, heart disease, muscular twitching, nervousness, tiredness, and numerous nervous and bone diseases including fractures.⁴⁹

Another condition due to this lowered acidity of the stomach is poor digestion of proteins. The incompletely digested proteins absorbed into the blood are thought to be an important cause of certain types of allergy.⁵⁰

Low stomach acidity also causes unabsorbed calcium to combine with the fatty acids, to form calcium soaps which are wastefully excreted in the stool. This fatty stool carries out with it much of the body's valuable fat soluble vitamins such as vitamins A, D, E, and K.⁴⁸



Obesity is another unpleasant condition justly earned by "sugar gluttons." Sugar and other refined carbohydrates lead to a waterlogging of the body tissues.^{52 53} Some people who are fat should actually be declared underweight. This could be seen if their excess water were removed from the body tissues, by substituting a nutritious normal diet for their diet of excess refined carbohydrates.⁴⁸

Thiamine (Vitamin B₁) deficiencies are found in many sugar eaters.²³ This causes abnormally slow oxidation of body cells leaving incompletely oxidized toxic products in the blood.^{8 22 23}

The growth of cancer is accelerated by refined sugar eating.⁵¹ Cancer in America is also on the increase right now when sugar consumption is greatly increasing.⁵² This further suggests to some of us a possible relationship of the two.

Colds, tonsillitis, sinus infections, and other catarrhal diseases are

worse in eaters of refined sugar.^{8 30} When a patient goes on a normal nutritious dietary regime, these infections are much more easily cured.^{9 33}

Tuberculosis is another disease which strikes harder at the "sugar glutton" when he is exposed to its germs.⁴⁴ His resistance is lowered to tuberculosis, and the bacillus grows more rapidly in his body. It has long been known that a good nutritious diet goes far in helping the patient recover from this disease.⁴⁶

Patients do not become allergic to refined sugar. But through sugar eating they have changes take place in their body biochemistry that puts them in a position in which their glands are unable to cope satisfactorily with their allergic state.³⁶ Many allergic patients are greatly benefited when they make no other change except to eliminate refined sugar from their diets.⁹

Among the conditions included under this heading of allergy are asthma, hay fever, eczema, hives, migraine or nervous headache, and various food allergies, many of which cause stomach and bowel disorders.

Heart disease—today's number one killer⁵⁴—is another condition made worse by vitamin deficiencies.⁵⁴ Especially bad for the heart is deficiency of Vitamin B₁ or thiamine which a person develops from excessive eating of refined sugar as explained earlier in this article.

Hardening of the arteries and high blood pressure result from the use of refined sugar in the diet.⁹ It also causes calcium deposits in the vessels. When much refined sugar is eaten, the blood serum phosphorus drops and continues to drop for several hours.⁹ (See Figure 1.) During this time calcium, apparently being absorbed from the bones, rises in the blood serum to a high level. Thus at a time about six hours after a few ounces of candy or ice cream have been eaten, the serum phosphorus is very low, and the serum calcium is undesirably high. Recovery from this condition takes from hours to days. (See Figures 1 and 2.)

This excess calcium in the blood serum of patients who frequently eat refined sugar, may be an important

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factor in the cause of calcification of arteries, as well as other diseases associated with abnormal calcium deposits such as cataracts, arthritis, kidney stones, dental calculus, and even bone formation in the lungs and heart.⁹

Sugar eating should be avoided by athletes and all those engaged in important physical activities, because of refined sugar's ability to lower physical efficiency.¹⁰ Thus instead of furnishing candy to the servicemen and war workers, they should have been given good nourishing food and should have been discouraged from eating refined sugar foods.

Some families are much greater consumers of refined sugar than others, and while no direct comparison of such families can easily be made, a recently published report shows that something that influences people by families (like nutrition habits) is operating to cause similar diseases to occur in husband and wife after they have lived together many years.¹¹ In our study of refined sugar, we thought the above report was especially significant because the three diseases found to be associated in husband and wife past the age of 45, were arthritis, vascular disease, and high blood pressure.^{12, 13, 14} Doesn't it seem likely that the husbands and wives sharing these diseases may be some of America's "sugar gluttons"?

Additional conditions said by various authors to result from the use of refined sugar are: vasomotor instability,¹⁵ peptic ulcer, angina pectoris,¹⁶ acne,¹⁷ redness of the eyes,¹⁸ hyperinsulinism, acidosis and edema of the retina.¹⁹

To Summarize:

1. Refined sugar is not really needed by the body.

2. Wholesome foods supply through starch, ample glucose, as an end-product to satisfy the body needs for this energy in our daily food. These foods include fresh fruits, vegetables, dairy products, meat, fish, eggs, and whole grains, unprocessed.

3. Refined sugar is a drug or chemical which appears to be responsible for many diseases of infancy, childhood, middle, and old age.

4. Refined sugar, like alcohol, is habit-forming, and is also in many other ways much like alcohol.

5. Even honey, molasses, raw sugar, and dried fruits should be eaten in small quantities and with "prudence."

6. Vitamin and mineral deficiencies result indirectly from the use of refined sugar. These are not satisfactorily replaced by taking vitamin pills.

7. Refined sugar eating often results in decay of the teeth, diabetes, indigestion, gas, skin diseases, anemia, obesity, infections, colds, and sinusitis; and the use of refined sugar is said to predispose to arthritis, tuberculosis, cancer, high blood pressure, allergy, lowered physical efficiency, chronic tiredness, and a long list of other ailments that lead to sickness, misery, and death.

8. Refined sugar is difficult to avoid because it is found in a high percentage of today's packaged, canned, and other modern processed foods.

CONCLUSION:

IF one can avoid eating refined sugar, one can expect more vibrant health, and a longer life with greater freedom from some of the acute and chronic diseases and complaints which many modern doctors are unable to diagnose or to treat successfully.

At the same time it must be said that sugar as a cheap organic chemical has a vast industrial future. The following list shows some of the many uses to which sugar may be put. There was wisdom in the establishment of sugar factories by the Church. Our mistake, if it may be so-called, has been that we considered only one, and the less important, use of sugar.

What is refined sugar good for? Here are nearly one hundred of its industrial uses:

Acetone, adhesives, alcohol, animal medicines, ant bait, bacterial cultures, bait traps for moths and insects, boiler-cleaning flux, butanol, cadmium plating, calcium gluconate, carbon (clear), carbon brushes (for electric motors), cement manufacturing, ceramics, chalk manufacturing, chemical and coloring, citric acid,

Drugs, electrodes, elixirs, embalming fluids, emulsifier, explosives, foundry operations fumaric acid, glass, glue for bookbinding glycerin, gold plating, golf balls, hair preparations, hectographs (transfers), hog feeding (hydrates the meat), indium plating, insecticides, insulating materials.

Kojic acid, leather, liquid soap, lubricating preparations, medical preparations, metallurgy (for introduction of molybdenum into steel), methanol, mirror manufacturing, motor fuel, mortar, nicotine poisons, non-sparking preparation (steamship use), oxalic acid, packing for automotive housings, paint manufacturing, paper manufacturing (sizing), pastes, pharmaceuticals, plastic manufacture (as lubricant), polishes (shoe polish, furniture polish, floor polish), phonograph records, photographic fluids, plaster-removing agent, plasticizing agent.

Radio tube silvering materials, rat poison, road-surfacing material, rhodium plating, rubber, sealing use on containers, silvering solutions, smoke signals, smokeless powder, soaps, stabilizing agent in cloth manufacture, synthetic rubber (experimental), for mirrors, radio tubes, metals, tanning, textile sizing, thripps control, tire patches, tobacco products, tungsten wire drawing, varicose vein treatment, varnishes, vulcanizing of rubber, waterproofing materials, water softeners, welding rods, wood (seasoning chemical process).

BIBLIOGRAPHY REFERENCES USED

1. Widtsoe, John A. and Widtsoe, Leah D., *The Word of Wisdom, A Modern Interpretation*.
2. Hamidge, Gove, (Principal Research Writer, Office of Information) *Food and Life—A Summary*, p. 153.
3. *Science News Letter*, June 15, 1940, v. 37:377, "Faulty Sugar Chemistry May Cause Mental Disease."
4. Holt, L. Emmett, M.D., Sc.D., LL.D., *Diseases of Infancy and Childhood*
5. "The Sugar Molecule," July 1947, *Quarterly Review* published by The Sugar Research Foundation, Inc.
6. Funk and Wagnall *Standard Dictionary*.
7. Cori and Cori, Department of Pharmacology, Washington University, School of Medicine, "Carbohydrate Metabolism," *Annual Review of Biochemistry*, V. XV, 1946, p. 211.
8. Patton, J. H. P., M.D., "Relation of Excessive Carbohydrate Ingestion to Catarrhs and other Diseases," *British Medical Journal*, April 29, 1933.

9. Snow, Harold L., M.D., "Refined Sugar and Chronic Disease," (Paper delivered before the Harbor Branch of the Los Angeles County Medical Society, September, 1946.

10. Macy, Icie G., "Effects of Nutrition Upon the Health of Mother and Child," *The Interne*, 13:19, 1947.

11. Urbach, Erich, M.D., Philadelphia, "Skin Diabetes," *J. A. M. A.*, October 6, 1945, v. 129-438-440.

12. Rorty, James, and Norman, N. Philip, M.D. *Tomorrow's Food; The Coming Revolution of Nutrition*. 1947, Prentice Hall, Inc., p. 84-97.

13. Roberts, Lydia J., "Cutting Down on Candy," *Hygeia*, July 1942.

14. Macy, Icie G., Ph.D., and Williams, Harold H., Ph.D., *Hidden Hunger*, 1945, p. 187.

15. Mottram, M. A., and Graham, George, M.D., F.R.C.P., *Food and the Principles of Dietetics*, revised ninth edition, 1943, p. 391.

16. Bogert, L. J., Ph.D. *Nutrition and Physical Fitness*, fourth edition, Philadelphia, Saunders, 1943, p. 23.

17. Sherman, Henry C., Ph.D., Sc.D. (Mitchell Professor of Chemistry, Columbia University) *Food Products*, third edition, 1933, p. 501-508.

18. MacLeod, Grace, Ph.D., and Taylor, Clara Mae, Ph. D., *Rose's Foundations of Nutrition*, fourth edition, 1944, p. 402.

19. Moose, Ray M., M.D., "Sugar a Diluting Agent," *J.A.M.A.*, July 8, 1944, v. 125: 738-739.

20. Schlink, F. J., and Phillips, M. C., *Meat Three Times a Day*, 1946.

21. Tuft, Louis, M.D., and Tumen, Henry J., M.D., Philadelphia, "Fat and Sugar Intolerance as Cause of Gastrointestinal Symptoms," *J.A.M.A.*, March 9, 1946, v. 130: 624-627.

22. Council on Foods and Nutrition of the A.M.A. "Some Nutritional Aspects of Sugar, Candy, and Sweetened Carbonated Beverages," *Journal of A.M.A.*, November 7, 1942, 120:763-765.

23. American Medical Association, "Council on Foods and Nutrition," *J.A. M.A.*, November 7, 1942, v. 120:763-765.

24. McCollum, E. V., *The Newer Knowledge of Nutrition*, fifth edition, 1939.

25. Price, Weston A., M.S., D.D.S., F.A.C.D. *Nutrition and Physical Degeneration*, fourth printing, enlarged, 1945, p 275.

26. Becks, Herman, M.D., D.D.S., Jensen, Arthur L., D.D.S., and Millarr, Compton B., D.D.S., "Rampant Dental Caries," *Journal of American Dental Association*, September 1, 1944, v. 31, No. 17.

27. Waugh, Donald B., D.D.S., and Waugh, Leuman M., D.D.S., "Effects of Natural and Refined Sugars on Oral Lactobacilli and Caries Among Primitive Eskimos," *American Journal of Diseases of Children*, March 1940, v. 59:485-489.

28. Mills, C. A., M.D., "Diabetes Mellitus, Sugar Consumption in its Etiology," *Archives of Internal Medicine*, October 1930.

29. Wilder, Russell M., M.D., Mayo Clinic, "Etiology of Diabetes," *Journal of Medicine*, August 1937.

30. Starr, Paul, M.D., "What's New In Endocrinology," *California Medicine*, November, 1947, v. 67, No. 5, p. 289.

31. Hutchinson, Sir Robert, *Food and the Principles of Dietetics*, ninth edition, revised in 1943.

32. The Doctrine and Covenants, Section 89.

33. Stewart, Jean J. (Associate Professor of Home Economics, College of William and Mary) *Foods: Production, Marketing, and Consumption*, Prentice Hall, 1938, p. 76

34. McCollum, E. V., *Food, Nutrition and Health*, 1934, p. 17.

35. Wohl, Michael G., M.D., *Dietotherapy Clinical Application of Modern Nutrition*, W. B. Saunders Co., 1945.

36. *Howell's Textbook of Physiology*, W. B. Saunders Co., 1947.

37. Ricketts, Henry T., M.D., "Hyperglycemia in Diabetes," *Modern Medicine*, August 15, 1947, p. 33.

38. Pillsbury, Donald M., M.D., and Sternberg, Thomas H., M.D., "Relation of Diet to Cutaneous Infection," *Archives of Dermatology and Syphilology*, May, 1937.

39. Urbach, Erich, M.D., F.A.C.A., *Skin Diseases, Nutrition, and Metabolism*, 1946.

40. Comroe, Bernard I., A.B., M.D., F.A.C.P., *Arthritis and Allied Conditions*, October, 1944

41. *Consumers' Research Bulletin*, November 14, 1944, v. 14, No. 5.

42. *The Milbank Memorial Fund Quarterly*, October, 1947, "Chronic Diseases Among Spouses," v. XXV, No. 4.

43. Alvarez, Walter C., M.D., The Mayo Clinic, *An Introduction to Gastroenterology*, third edition.

44. Farmer, Fannie Merritt, *The Boston Cooking School Cook Book*, sixth edition, 1937.

45. Cantarow, Abraham, M.D., and Trumper, Max, Ph.D., *Clinical Biochemistry*, 1939, p. 524.

46. Kleiner, Israel S., Ph.D., *Human Biochemistry*, 1945, p. 381.

47. Kolmer, John A., M.S., M.D., Dr. P.H. Sc.D., LL.D., L.H.D., F.A.C.P., *Clinical Diagnosis by Laboratory Examinations*, first edition, revised 1944.

48. Walsh, Michael J., M.Sc., F.R.I.C., A.I.Ch.E., University of Southern California Dental School, "Nutrition Lectures," 1946.

49. Cecil, Russell, A.B., M.B., Sc.D., *A Textbook of Medicine*, fourth edition, 1937, p. 345.

50. Hansel, Frenck, K., M.D., M.S., *Allergy of the Paranasal Sinuses*, 1936, p. 283.

51. Oberling, Charles, M.D., *The Riddle of Cancer*, Yale University Press, 1944, p. 53.

52. *Vital Statistics of the United States*, 1943, U. S. Department of Commerce, Bureau of the Census.

53. Ullman, Egon V., M.D., *Diet in Sinus Infections and Colds*, 1936.

54. Sandler, Benjamin P., M.D., and Berke, Rudolph, M.D., "Treatment of Tuberculosis With a Low Carbohydrate Diet," *American Review of Tuberculosis*, v. 46:238-246, September 1942.

55. "Electrocardiographic Changes Due to Inanition," *J. A. M. A.*, March 8, 1947, p. 730.

56. Stokes, J. H., Berman, H., and Ingraham, N. R., Jr., *The American Journal of Medical Science*, 1938, 195:562.

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