T H E S I S

ON

Candy Making and the Effects of Heat upon Sugar

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Candy Making and the Effects of Heat Upon Sugar.

Outline.

Confections

- Recognition received
- History
- Manufacture
- Objections to present day candies
- Degrees recognized in boiling sugar.

Sugar

- Definition
- History
- Manufacture
  - Methods
    - Present
    - Past
- Varieties
  - Difference in composition
- Value of sugar in the diet
- The effects of heat upon sugar
  - Changes which take place
    - Barley sugar
    - Caramel

Recipes

- Fondant
- Caramels
- Miscellaneous

Candy Making and the Effects of Heat Upon Sugar.

"I can teach sugar to slip down
your throat in a million ways."
Derker and Ford.

Confections are recognized by every man, woman and child of almost all of the civilized nations of the world as a delicious concoction and there is not a nation in existence today which has not its own particular sweet meat. The ability of the Japanese for mint making and of the French for fondant making is world famous. The time will come and come it should when the American housewife will be able to excell even these in the preparation of pure, delectable candies for the consumption of her family. Few housewives of the present day have the ability, the patience or perseverance to make candy. Is it a lack of knowledge, ignorance or other more pressing household duties that she does not devote more time to it. Practically speaking it is a lack of knowledge, because by many it is regarded merely as a delicacy to be afforded only by the wealthy and to form no article of value to the diet, but the dietitician of the present time has shown that sugar forms a very valuable part of the diet and just what part it takes will be discussed, the facts based upon scientific research.

Candy making until the beginning of the Nineteenth century, or the making of sweet meatsas it was then call-

ed was practiced chiefly by apothecaries and physicans who used sugar and honey to conceal the taste of their medicines. During the early half of the seventeenth century the art of candy making was largely a speciality in England. In 1851 an inter-national exhibition was held in London and a unique collection of candies there exhibited attracted to this industry the attention, especially of Germany and France. The latter soon excelled all other countries in the art of making chocolate bon-bons and still maintains it's supremacy. In the United States as early as 1816 there were twenty candy factories in the city of Philadelphia, and probably as many more in New York. Previous to 1845 each candy de dealer made his own goods by hand the assortment being limited to stick and molasses candy, sugar plums and sometimes a few imported fancy candies were added to the list. In 1845 the first machinery in the form of a revolving steam pan was introduced by Sebastian Chauvean of Philadelphia, The following year a lozenge making machine by Oliver Chase of Boston which he put into use in his own factory. Since this time new forms of machinery have constantly been added to such an extent that the manufacture of candy forms a separate and important industry.

Any one reading this brief account of the history of candy making and its growth, as an industry, until it now forms an independent branch of manufacture, will turn over in his mind, ponder, and think, if such is

the case, and candy is made in such vast quantities by machinery, why should I a struggling individual, confronted by the graver problems of life, in this ever hurrying world stop long enough to even consider the problem of making confections at home? This is easily answered and a rational person will readily grasp the situation. A large proportion of the candy eaten by the masses at present is impure, which results from objection able ingredients, such as starch, paraffin and large amounts of coloring matter. Glueose is not recognized as an objectionable ingredient, as it is one step nearer digestion than cane sugar, but the objection to glueose candies is this: One is paying for more than he gets, because glueose is more easily made by converting starch, than sugar is manufactured. Candies are usually colored with various dyes and pigment. Coal tar dyes are used to a large extent, the use of these however is not prohibited by the United States government. If a "word to the wise is enough", the educated Americaan woman ought to become master of the situation and by practice and constant review as it were, attain this height. It is an art, and since all arts unless a particularly talented person is found, must be acquired through practice and perseverance so also must candy making. Many times even the person who has patience to spare does not get the desired results. Success is inevitable if a correctly registering thermometer is used and this ought always to be used in

candy making.

In boiling sugar some fourteen degrees of density are recognized by the confectioner, six of these are required in home candy making. These are designated as blow, soft ball, hard ball, soft crack, hard crack and caramel. The blow degree is indicated by the thermometer at from 230° to 236° Fahrenheit. To determine the degree without a thermometer put a small skimmer into the boiling syrup, withdraw, hold up and blow thru it. If small air bubbles appear on the opposite side reached. The soft ball stage is
the degree is from 238° to 242° F. This is indicated by the thermometer at this degree. To determine this stage without a thermometer, have ready a wire skewer standing in a dish of cold water, remove this from the water plunge into the syrup and then back again into the water. Let remain about ten minutes, then push off the sugar between the thumb and forefinger and if it can be worked below the water into a soft ball that does not stick to the fingers it has boiled enough. Another way of testing is to dip a fork into the syrup and let the syrup drop from the fork back into the dish, if after all the syrup has run off a long thread like hair remains the syrup is boiled enough. This appearance is always seen in any stage above the soft ball. The hard ball degree is reached at 290°F. This is tested in the same manner as the soft ball. If the cooked sugar forms a hard solid ball between the thumb and forefinger the degree is reached. The soft crack

degree is reached at 290°F. After the sugar is pushed from skewer, drop into water, remove and press between the teeth, if it clings, but does not stick to the teeth the stage is reached. Hard crack degree is reached at 310°F. At this stage when pressed between the teeth the candy leaves them clear and free. Any of the above degrees may be mastered by the amateur, a and it is only through his mastery that difficulties in the art of candy making may be mastered. Since we mean by candy or confection making the blending of various saccharine products, and sucrose(cane and beet sugar) being used as a basis, it is well to know something of sugar and its manufacture.

Sugar is recognized by the chemist as a compound of carbon, hydrogen and oxygen. As all other things, sugar and its manufacture has its place in the annals of history. It dates back to the remotest antiquity, in fact it was known at such an early time that the date of its introduction is lost, it has however been traced to India as its home. In the eighteenth century sugar cane was extensively cultivated in the Nile Delta and in this century the Arabs introduced it into Sicily and from there it was transported to Spain. It appears that sugar cane was carried to Siam, Ceylon and Japan from China. A sugar trade existed between Syria and France in the twelveth century. From France it was transported to Holland, from Holland to Italy, and

thence to Germany. Sugar cane was first introduced in to Santo Domingo soon after the discovery of America, from thence it spread to Cuba and adjacent islands and we find it first on the American continent in 1800.

It was first noted as a curiosity when it came in to use, then it was employed as a medicine, and we find Greek physicians several centuries before the Christian era speak of sugar under the name of "Indian salt". It was called "honey made from reeds" and said to be "like gum, white and brittle". As it was not well understood it was regarded by the physicians as having an injurious effect upon the health,"causing lung trouble and even apoplexy". We find the price of sugar quoted at forty-five cents per pound, when it was first introduced.

The manufacture in ancient times was very difficult and crude, it was for this reason that it commanded such an enormous price. Inefficient mills operated by wind, water and oxen were used for extraction,lime, clay and ashes as purifying agents, the evaporation was effected in open copper or iron pans placed directly over the fire and the refining consisted in melting, boiling and recrystallizing.

But it is the modern way of manufacture which is the most interesting and instructive. The making of sugar from sugar cane is perhaps the most widely practiced. Sugar cane belongs to family of grasses. It is

cultivated successfully mainly in Cuba, the West Indies, Louisiana, The Phillipines, Java, Brazil and the Hawaiian Islands. It flourishes where the mean temperature is from 75 to 77°F. but it grows fairly will where the mean temperature is not below 66°F. There are two processes of extracting the juice from the sugar bearing materials. The first is by crushing in roller mills, the second by diffussion. The former process has been used for making sugar from cane and the latter from the sugar beet. The average analysis of the ripe cane shows it to contain sugar 18%, filre 9.5%, water 71% but the juice contains of sucrose 18%, glucose .30%, gums 1.4%, mineral salts.30%, water 80%. By the best practice it has been shown that about 84% of the juice is extracted.

The cane is cut in the fall and after being stripped and topped is passed through a "shredder", to tear it to pieces and the juice is then extracted by rollers eight in number in sets of three, through which the cane passes successively. First the two corrugated rolls which break and prepare the cane for the heavier pressures applied by the succeeding sets of three rolls each. Between the second and third set the crushed cane is sprayed with water to facilitate the removal of sugar by the last set. This process removes from fifty to eighty five percent of the sugar. The crushed cane is called "bagasses" and is used for fuel to furnish steam for the engines and pumps for the evaporation of the

juice.

For white sugar the juice is blended with the fumes of burning sulphur. Lime is next added to neutralize it or to leave it faintly acid. In the subsequent heating the insoluble compounds of lime formed with organic acids, the albuminous bodies and other impurities rise to the surface and are removed by skimming, or percipitation. Since the quality of the sugar produced depends upon this process of clarification, considerable skill and care are bestowed upon it. The skimmings and stillings which were formerly thrown away are now filtered and saved, and in many factories even the clear juice is filtered and in this manner all traces of insoluble matter are removed.

The clarified juice contains from ten to eighteen percent sugar. It is evaporated in multiple vacuum evaporators, so called because the heating effect is utilized in vacuo as many times as there are pans in the series, steam being applied to the first pan and the and the vapor from the boiling juice to the second pan and so on. From the last pan the vapor passes to a condenser kept in a constant vacuum by a continuously acting pump from which it flows away.

The syrup is then admitted to cylindrical cast iron vessel provided with a vacuum pump and several coils of copper tubing to which the steam may be submitted as desired. When about one fourth full of thick

liquors fresh charge of cool syrup is admitted to cause the formation of minute sugar crystals. The pan is emptied when it becomes filled with a dense mass of sugar crystals and syrup, "massecuite", which is conveyed to cylindrical metal vessels with perforated walls and supported upon vertical shafts, making from one thousand to one thousand and five hundred revolutions per minute, the force throwing the syrup out through the walls. The syrup is then sprayed with water to which a little ultra-marine blue or other harmless coloring matter is added to correct the yellow tint. Although this coloring matter is not injurious, yet in some manufacturing processes it will be found to give a disagreeable odor to the syrup on account of the decomposition of the ultra-marine by acids. In the case of granulated sugar it is dryed in revolving drums, through which a current of warm air passes. Statistics show that the total production of sugar in the United States alone in 1905 was 766,680,000 pounds.

It was in 1747 that Marggraf, a German chemist, announced that it was possible to obtain a sugar from beet juice which was identical with that obtained from the sugar cane. Achard, a pupil of his, actually erected a factory and made some beet sugar, but, as only two or three percent of sugar could be extracted from the juice, it was not a commercial success. Napoleon I in 1806 caused a bounty to be offered for beet sugar and

thus the manufacture was greatly stimulated. At first the sugar beet contained only six percent of sugar but it was improved so much by cultivation that it now contains as high as fifteen percent. The other constituents of the beet juice hindered the sugar boiler for some time, but the process of manufacture has been so much improved that now these very impurities have been made a source of profit.

Several methods have been used for the extraction of the sugar from the beet, but the "diffusion" process has been found to be the most successful. The roots already trimmed of leaves are conveyed by water in little channels which extend through the bottoms of V shaped storage sheds to the washing machine where every particle of soil is removed by revolving brushes, the roots constantly progressing against a current of water toward the automatic weighing machines. After the weight has been recorded the roots go to the slicer. Here they are cut by corrugated knives into little V shaped slices which are called cossettes. They drop into large iron tanks a series of which constitute a "diffusion battery", so called because the sugar is removed from the cossettes by water into which the sugar diffuses, and which passes by a complicated system of pipes and valves through all the charged cells of the series and from the longest filled cells containing nearly exhausted cossettes to the most recently filled, thus removing the largest possible quantity of sugar

with the smallest quantity of water.

Although considerable water is used in this process and the juice must be concentrated somewhat more than when extracted by crushing, yet the juice is so much more free from foreign nitrogenous substances that the diffusion process can be used with greater economy and success. All but five tenths percent of the sugar is extracted.

The crude juice which contains about as much sugar as the original beet juice is heated to coagulate the albuminoids, and then the lime is added to saturate the free acids and assist in throwing down organic matter. Carbon dioxide is made to pass through the solution and the latter is then forced through the filter press. The juice then goes to the bone black filters. Special care and treatment is required to make from the sugar beet a fine crystalline sugar which has no unpleasant taste or odor. In 1905, 635,526,080 pounds of beet sugar were made in the United States.

To make granulated sugar directly the mixture of sugar and syrup, frequently thirty five hundred pounds in a charge is drawn off from the vacuum pan into a mixer where it is stirred while cooling to prevent the grains from sticking together. The sugar and syrup is separated in the centifrugal and the former is washed with fresh water. It is then conveyed to the "granulator" which is a rotating cyclinder set at a slight incline and heated by steam. Here the sugar which ent-

ters the upper end is dryed and the grains are separated from each other, and then pass through a series of sieves, and are finally run into barrels for shipments. To make granulated sugar from loaf sugar the cones are crushed and sifted and the crystals passed over a heated table into a packing barrel.

Powdered or pulverized sugar is made from the same stock as granulated sugar, but it is ground and bolted in a mill similar to that used for making flour. Cut sugar is made from sugar loaves by sawing them in slices and then cutting the slices into rectangular blocks by the use of a gang of small circular saws.

On account of the cheapness of sugar and the great difficulty in doing so, there is little danger of adulteration, but lower grades are more readily adulterated than the best grade of granulated sugar.

The sugar, which is in common use may be divided into two general classes: the sucrose or cane sugar group having the formula $C_{12}H_{22}O_{11}$. and glucose $C_6H_{12}O_6$ Sugar of both these classes are found under various names in a large number of food substances. These two groups are also very intimately related so that by "inversion" with heat and dilute acids, some of the members of the first group may be changed to those of the second group.

The most important members of the sucrose group are sucrose, maltose and lactose, the two latter being respectively sugar of malt and sugar of milk. Sucrose

or cane sugar occurs abundantly in stems of many plants, roots and grasses. Sugar obtained from either sugar cane, the beet, or any other of the sources mentioned has the same composition, and the chemist cannot recognize any difference between the products other than in physical properties.

Glucose which is often used in cheap candies and for making a specific kind of candy is made from starch. The starch is converted to glucose by adding to it a small quantity of hydrochloric acid and heating some time under considerable pressure. The acid which acts as a catilizer is afterwards neutralized by sodium carbonate and the small quantity of salt left in the product is said to improve rather than hinder it. Some sodium sulphite is used, so far as possible to prevent caramelization. We find under the classification of glucoses, grape sugar, dextrose, maltose.

Sugar is thought by many people to be injurious and to have no acknowledged place in the diet. This is not correct. If not used in excess it is directly capable of sustaining life as it contains no absorbed by the body. Alone it is not nitrogen. It has been shown from experimental work that four ounces per day can be advantageously consumed by an invividual. Why then condemn the habit of candy eating? It must of course be admitted that it may be eaten in excess, thus causing fermentation in the stomach and if such is the case it is easily seen how much more dangerous it

is to eat impure candy. The fact must also be taken into consideration that since so many people do recognize sugar as a food, candy is generally taken without discretion between meals, thus keeping the digestion constantly at work. It is advisable to take candy immediately at the end of a meal.

Statistics show that about eight million tons of sugar are consumed annually in the world, and English speaking nations consume the most per capita. In 1905 the per capita consumption in England was eighty six pounds in the United States sixty-six pounds and again in our country in 1903 was seventy one and one tenths pounds, in Germany, France and Holland thirty pounds, and in Italy, Greece and Turkey only seven pounds.

The food value of sugar has been summarized as follows: 1.When the organism is adapted to the digestion of starch and there is sufficient time for its utilization, sugar has no advantage over starch as a food in muscular work except as a preventitive of fatigue. 2.In small quantities and in not too concentrated form, sugar will take the place, practically speaking, weight for weight of starch as a food for muscular work, barring the difference in energy and in time required to digest them, sugar having here the advantage. 3.It furnishes the needed carbohydrate material to organisms that have as yet little or no power to digest starch. Thus milk sugar is part of

the natural food of the infant. 4. In times ofgreat exhertion or exhausting labor, the rapidity with which it is assimilated gives it certain advantages over starch.

The above conclusions are taken from Farmer's Bulletin ninety three, United States Department of Agriculture, written by Mary Hinman Abel.

Now that it has been so conclusively proved that sugar forms such an important article of the diet, it would not be exaggerated or incorrect to state that sugar is taken the best way in the form of good, pure confections, and the only way to insure their purity is to prepare them at home.

The various recipes given with this article are all with the exception of a few old, tried receipes, and anyone who will practice is bound to have success with them, they are not too time consuming nor elaborate for the person of ordinary circumstances to make or afford. They are stated in the simplest form possible, and are so chosen as to be in the realm of the expenditure of the many, and for this reason they are the more delicious.

To the candy maker it is an interesting fact and a point of value to know and understand the effect of heat upon sugar. Ordinarily cane sugar dissolves readily in cold water in the proportion by weight of three of sugar to one of water. Hot water dissolves much larger

quantities. If a sugar solution be heated until the temperature rises to 170° or 180° Centigrade or 365° Fahrenheit, a molecular change takes place, the substance loses its crystalline character and forms on cooling a yellowish, glassy mass called barley sugar. Sugar is thus allotropic that is, capable of assuming different forms, crystalline and colloid while retaining the same chemical composition. Then at about 216°C or 420° F the sugar appears to loose more water and it becomes burnt sugar or caramel, while by a still stronger heat it is completely carbonized. Caramel has a dark brown color, a peculiar odor and bitterish sweet. It further differs from ordinary sugar in that it is not fermentable. Although thus changed in form and composition it is just as nutritous as sugar itself, but its sweet taste is lacking making it necessary to use more for sweetening purposes.

In the light of the fact that diety has made such an extended study of sugar and its compounds and since it is classed with starch and cellulose as one the three great carbohydrate foods, it should be looked upon and considered as a valuable and very agreeable portion of the diet. It has been shown that it is quickly absorbed by the body, furnishes energy and relieves fatigue. Since its introduction even before the Christian era, it has gradually risen in the favor of dieticians and even yet is ascending the scale in

scientific knowledge. and it is being very conclusively proved that with limitations it is forming an important part of the diet.

Abbreviations.

lb.--Pound

qt.--Quart

pt.--Pint

t --Teaspoon

T --tablespoon

C --Cup

Fondant.

2 C sugar 1 C water

Use the best granulated sugar.

Use concentrated color and flavor.

Boil the sugar and water, stirring only to mix. When it has boiled ten minutes dip a fork into it taking care not to stir the syrup after it has boiled. Hold up the fork probably after the liquid has run off, it will form only a thickish drop on the end, if so you can wait a few minutes before trying again. Then dip the fork, let the greater part run back into the sauce pan and if a long silk like hair hangs from the fork when you hold it in the air, take up a little in a spoon and drop it into ice cold water. If it can be gathered from the bottom in a very soft ball, it may be taken from the fire and set to cool quickly in a dry spot or it may be turned out into a large platter or marble slab. You must be very quick while you try the candy, for you must remember that it passes rapidly from one degree to another and while you are trying it the heat of the sauce pan is dooking it more. Take care no spoon is dipped into it while cooling, no stirring or shaking after it is removed from fire or it will granulate. When cool, that is cool enough for the finger to bear the heat stir with a wooden spoon or paddle. It will soon look like cream and then get stiffer, until it is necessary to use the hands, and then work it like b bread dough. If it has been boiled beyond the right

point it will be crumbly, but persevere work quickly, pressing it hard between the hands and it will soon become a smooth mass. When properly worked leave it until the next day. It will keep for weeks in a dry place, pressed into a jar and covered with oiled or waxed paper.

Fondant is the basisoof all French Cream candies. The varieties which may be made from it are almost limitless. This is produced first of all by the kind of sugar used in the fondant itself. As white, or maple, then the white may be varied by tinting and flavoring to correspond. The flavors used in general are vanilla, almond, rose, lemon, orange, peppermint and wine. The centres may be of fondant, nuts, French fruits, either alone or in combination. To make fondant successfully experience is needed, but as all sugar provided it be not absolutely burned may be used over again for the same or other purposes, time would seem to be the only item of which an outlay is required.

Using the Fondant.

Dipping the Centres.

Meet a portion of the fondant over hot water adding a few drops of water and such flavoring as desired. Stir constantly while the fondant is melting also while the centres are being dipped to avoid the formation of a crust. A fondant may be tinted very delicately at this time. Drop in the centres one by one and when

well covered remove with fork to a sheet of confectioners paper, bringing the fork or dipper up over the top of each piece to show that it has been hand dipped.

Candies Made from Fondant.

Peppermints.

Fondant Oil of Peppermint or Essence of Peppermint.

Melt the fondant over hot water.
Flavor to taste with oil or essence of peppermint.
Drop with tip of spoon unto oiled paper.

Chocolate Mints.

When mints are cold drop them one by one into fondant to which melted chocolate and vanilla have been added.
Remove with fork to oiled paper.

Tutti Frutti Fondant.

Soften two pounds of fondant over hot water. Beat into it the whites of an egg beaten until very frothy and not to still. Add two ounces each of chopped citron, almonds, candied cherries and pineapples and one teaspoon vanilla.
Turn into an agate pan lined throughout with oiled paper, cover with paper and place a second tin upon the fondant to press it with a light weight.
Let stand twenty four hours and the slice through the paper.

Cocoanut Bars.

Fondant Cocoanut

Roll fondant into little rolls or oblongs.

Roll in cocoanut until thickly covered.

Almond or Walnut Creams.

Fondant Almonds or Walnuts.

Make into little squares or round blocks. Place on top of each half a walnut or almond meat.

Maple Fondant

1 C maple sugar ¼ t cream tartar

1 C granulated sugar ½ C hot water

Prepare as ordinary fondant.

CARAMELS.

Glucose is used in some of the best caramels. The boiling should be continued to about 290°F. During the last of the cooking the candy must be stirred constantly to avoid burning. When firm but not quite cold cut into small sq. . The pans must be well buttered.

Chocolate Caramels.

1 C molasses
½ C granulated sugar
2 T butter
¼ C water
2 squares chocolate
1 t vanilla.

Stir together over the fire the molasses, sugar and water, until the sugar is dissolved.

Add the butter and the chocolate.

Stir until the chocolate melts, then cook without stirring until a little tried in cold water may be formed into a solt ball. Flavor.

The fire must be quite low for the last cooking.

Vanilla Caramels.

2 C granulated sugar
½ cup cream
¼ C molasses
¼ C butter.
1 t vanilla

Let cook without stirring from 15-18 minutes or until a firm ball is formed in cold water.

Flavor and beat until creamy.

One fourth pound choclate may be substituted for the molasses.

Coffee Cream Caramels.

2 lb. sugar — 2 Oz. fresh butter

1 C thick cream — Extract from 2 oz. coffee

Melt the sugar with as little water as possible in a sauce pan over the fire (take care to use a sauce pan that will allow for all the ingredients and the bubling up). When the sugar bubbles pour in the cream very slowly stirring gently the while.

As soon as the syrup thus prepared is brittle and has the slight odor of caramel pour half an inch thick into pans well oiled. When nearly cold cut into squares. Chocolate may be used instead of coffee making chocolate cream carmels

Vanilla Caramels.

2 cups granulated sugar — 1 C cream

1½ C glucose — 1 C butter

2 t vanilla

Put ingredients in a sauce pan and cook over a quick fire, stirring, until the mixture boils vigorously. Add gradually a second C of cream. Do not allow the mixture to stop boiling while the cream is being added. Cook to 250° F stirring gently meanwhile. Occasionally move the thermometer ~~to move~~ beneath it.

Remove from fire and after cooling a few minutes beat in the vanilla. Turn into a pan nicely oiled pan ¾ inches thick. Cut in cubes when nearly cold.

MISCELLANEOUS.

Maple Chocolate Nougatines.

1 lb. maple sugar — 1 C glucose

1 C brown or granulated sugar — 1 C water

Mix all ingredients, set on back of stove cover and let stand, stir occasionally until sugar is dissolved. Stir until cooked to soft ball degree or about 235°F. Beat whites of 2 eggs until dry pour half of syrup in fine stream upon eggs beating constantly.

Return the rest of the syrup to fire and cook to crack degree. During last of cooking the mixture must be stirred constantly. Pour this syrup upon the egg mixture in the same manner as first, add 2 cups blanched almonds chopped and browned in oven, and 2 teaspoon's vanilla. Mix thoroughly turn into tins. When cold cut in strips about 1 inch long and inch wide. Dip in chocolate.

Nougat.

2 C granulated sugar — 1 C cold water

½ C syrup — 1 C walnuts

2 egg whites — 1 t vanilla

Boil sugar, syrup and water until it reaches the hard crack degree.

Beat the egg whites until very stiff, pour the hot mixture over them.

Then beat thoroughly until mixtures begins to thicken. Add vanilla and nuts, turn out into buttered tins, cut in squares.

Peanut Brittle.

3 C brown sugar — 1 pt. peanuts

1 C N.O. Molasses — ¼ lb. butter

1½ cream of tartar. — 1 C water

2 t soda

Boil all ingredients except butter and soda. Add the peanuts boil to a crack degree. Add the butter, when this is incorporated remove from the fire and add the soda dissolved in a T of water, stir vigorously. When mixture begins to rise spread thin.

Break when cold.

Peanut Brittle.

2 C granulated sugar — 1 C peanuts

Put sugar over slow fire; it melts very slowly. After it has melted a little it turns into very hard lumps, then melts again. When it is free from lumps remove from fire. Pour melted sugar over the peanuts. Crack when cold. Very nice.

Ice Cream Candy.

2 C granulated sugar — 2 T of butter

½ cup cold water — ½ t cream of tartar

1 t vanilla

Boil until it cracks when dropped into water. Do not stir.

Pour into buttered tins when done.

When cool pull until white.

Butter Scotch

1 cup brown sugar — 1 T butter

½ C of hot water — 1 T vinegar

1 t vanilla

Boil ingredients about twenty minutes.

When it begins to thicken, add flavoring.

Pour on buttered plates, mark in squares.

English Toffee

1 C brown sugar — 2 T vinegar

2½ T butter — ½ C walnuts

Cook to snap stage without stirring.

Pour over nuts in a buttered pan.

When cool mark in 1" squares.

Molasses Candy

1 qt. Molasses — 1 C sugar

½ C vinegar — 2 T butter.

1 t soda

Boil molasses, sugar and vinegar until it hardens when it is dropped in cold water. Add butter, and soda dissolved in hot water. Flavor to taste, pour into dishes, pull until white.

Marshmallow Candy.

2 C granulated sugar
½ C water.
½ package Knox's gelatine
6 T cold water
2 t vanilla

Soak the gelatine in the 6 T water. Boil sugar and water until they hair, add to gelatine, and flavor.
Beat continuously for 30 minutes.
Spread on squarespans dusted with powdered sugar. Let candy set over night, then cut in squares and roll in sugar
Do not beat longer than 30 minutes.

Time required, one hour

Cost

sugar 6.5 ¢
gelatine 15.¢
21.5¢ total cost

amount made is 1¼ lbs.
when purchased per lb.

Smith College Fudge.

½ C butter
½ C molasses
½ C grated chocolate
1 C brown sugar
1 C cream
1 t vanilla
1 C chopped nuts

Melt the butter, add to it the sugar, molasses and cream. After it has come to a boil continue to boil for 2½ min. stirring rapidly. Then add the chocolate, boil 5 min., after taking from fire add vanilla and chopped nuts.
Set in a cool place.

Vassar Fudge.

3 C granulated sugar — 2 T butter

1 C sweet milk — ½ C choculate

Mix ingredients and let boil ten minutes. Take from stove, add vanilla, stir. Pour into pans to cool.

Fudge.

2 C sugar — 3 t butter

1 C milk — 2 squares chocolate

Mix all the ingredients. Boil to soft ball stage. Cool, beat until creamy. Pour on buttered platter.

Time for preparing 30 minutes

Cost of ingredients

sugar	6.5 ¢
milk	1.25¢
butter	1.00¢
chocolate	6.25¢
	14. 95¢ total cost

Amount made / lb. 5 oz.

Panouchi

2 C brown sugar — 1 T butter

1 C milk — ½ C chopped nuts

Mix all ingredients and cook over a moderate fire stirring frequently, until a little dropped into cold water forms a soft ball. Set aside to cool.

Beat until creamy, add nuts, pour out into well buttered tins.

Turkish Delight.

4 C granulated sugar — 1 C water hot

1 box gelatine — juice of 1 lemon

½ C cold water — juice and rind of 1 orange

½ lb. chopped walnuts

Dissolve the gelatine in the ~~hot~~ cold water. Let ½ C cold water and sugar come to boil. Add the gelatine and let boil 10 minutes. Add juice of the lemon and orange and let boil again 10 minutes.

Remove from fire and add nuts. Wet shallow pans with cold water, pour mixture into them. Cut in cubes, roll in powdered sugar. This is a most delicious candy.

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Janet Hill.

Food and Its Functions.

Knight.

Food and Dietetics.

Thompson.

Organic Chemistry.

Bailey.

Food and Dietetics.

Hutchison.