THE TRUTH ABOUT

ALCOHOL.

1. A certain quantity will produce a certain effect at first, but it requires more and more to produce the same effect when the drug is used habitually.

2. When used habitually, it is likely to induce an uncontrollable desire for more, in ever increasing amounts.

3. After its habitual use a sudden total abstinence is likely to cause a serious derangement of the central nervous system.

4. Alcohol is oxidized rapidly in the body.

5. Alcohol, not being useful, is not stored in the body.

6. Alcohol is a product of decomposition of food in the presence of a scarcity of oxygen.

7. Alcohol is an excretion and, in common with all excretions, is poisonous. It may be beneficial in certain phases of disease, but it is never beneficial to the healthy body.

8. The use of alcohol, in common with narcotics in general, is followed by a reaction.

9. The use of alcohol is followed by a decrease in the activity of the muscle-cells and the brain-cells.

10. The use of alcohol is followed by a decrease in the secretion of CO_2 .

11. The use of alcohol is followed by an accumulation of fat through decreased activity.

12. The use of alcohol is followed by a fall in body-temperature.

13. The use of alcohol weakens and unsteadies the muscles.

14. The use of alcohol makes the brain less active and accurate.

FOOD.

1. A certain quantity will produce a certain effect at first, and the same quantity will always produce the same effect in the healthy body.

2. The habitual use of food never induces an uncontrollable desire for it, in ever increasing amounts.

3. After its habitual use a sudden total abstinence never causes any derangement of the central nervous system.

4. All foods are oxidized slowly in the body.

5. All foods, being useful, are stored in the body.

6. All foods are the products of constructive activity of protoplasm in the presence of abundant oxygen.

7. All foods are formed by nature for nourishment and are by nature wholesome and always beneficial to the healthy body, though they may injure the body in certain phases of disease.

8. The use of foods is followed by no reaction.

9. The use of food is followed by an increased activity of the muscle-cells and brain-cells.

10. The use of food is followed by an increase in the excretion of CO_2 .

11. The use of food may be followed by accumulation of fat, notwithstanding increased activity.

12. The use of food is followed by a rise in body-temperature.

13. The use of food strengthens and steadies the muscles.

14. The use of food makes the brain more active and accurate.

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SUBSTITUTE INFANT-FEEDING.

HENRY DWIGHT CHAPIN, M.D.

Professor of Diseases of Children at the New York Post-Graduate Medical School and Hospital.

NEW YORK CITY.

The question of the home preparation of an infant's food is one that occasions more or less difficulty to the average practitioner. Very little disturbance of digestion is caused by average breast milk but when it comes to bottle-feeding, trouble often appears, and here the physician has abundant opportunity to show his knowledge of dietetics. There is no end to the number of the so-called "perfect substitute for mother's milk" that are widely advertised, but the mainstay of successful bottle-feeding is good cow's milk. Anything else must be only a temporary substitute. The infants who can not take properly prepared cow's milk are very rare. The trouble often comes from the inability of the physician to properly modify the milk, so as to make it suitable for the case in hand. It is impossible to lay down fixed rules for infant-feeding, as each case must be treated by itself, but there are certain underlying principles involved which, if understood, will greatly simplify the problem.

The important things to know are, first, how to secure good cow's milk, and, second, how to change or modify it so that it shall be as near as possible an approach to mother's milk in composition and digestibility. The first problem before the physician is to secure a supply of good fresh milk. This can be had anywhere, by the exercise of a little care. Let the cows be cleaned as thoroughly as horses, and the udders and sides wiped off with a damp cloth just before milking. Let the milking be done with clean, dry hands, into a clean pail, held close to the udder. The first stream or two from each teat should be thrown away, and not allowed to get into the pail, for during intervals between milking, bacteria from the air get into the cow's teats, and grow with wonderful rapidity. By throwing away the first few streams, at the beginning of the milking, these are disposed of. If the sides of the cow are plastered with dirt and manure, as is often the case, a certain amount is sure to fall into the pail of milk. This is where the trouble really begins, for this dirt and manure abounds in bacteria. Over two hundred species of bacteria have been found in milk, about twenty of which produce lactic acid. Other species produceropy, slimy, blue and red milk, also alkaline products. These bacteria themselves are practically harmless, but the products of their growth may seriously affect the healthfulness of milk. Pathogenic bacteria are occasionally found in milk, but they get there almost invariably through the water used in washing the milk cans or bottles, or from the skin of some infected attendant. Tubercle bacilli are found in milk from cows with tuberculous udders, but the danger of infecting human beings is thought to be greatly overrated. Tubercle bacilli do not grow in milk.

As soon as each cow is milked, the milk should be run through an aerator and cooler, in a room free from bad odor or tobacco smoke, and then kept as cool as possible until used. It is obvious that cows should be stabled in clean, well-ventilated barns. These conditions should be possible everywhere, and if the physician will insist upon their observance on the part of dairymen, the problem of a proper milk-supply will be largely solved.

The prompt and rapid aeration and the cooling of milk are matters of importance. The temperatures at which bacteria in milk grow most rapidly are those near

body heat. There is practically no growth when the temperature is below 50 degrees F. It has been proved that bacteria which increased two hundred fold in four hours, at 93 degrees F., increased only eight fold at 55 degrees F., so the necessity of cooling the milk immediately after milking will be apparent.

Combined aerators, strainers and coolers, suitable for use with well-water or ice-water, can be had at any dairy-supply house, at a small cost. By using one of these, the cow odor, the animal heat, and most of the dirt can be removed from milk in a few minutes. The milk of a herd of cows can then be mixed and bottled, or canned and packed in ice, or, as is often done, lowered into a well or set in a cool spring. Such milk will keep well, while milk "warm from the cow" soon spoils.

Sometimes dairymen add preservatives to their milk, to keep it sweet. The articles most commonly used are boric acid, borax and formaldehyde. Formaldehyde is particularly objectionable, as it renders the curds exceedingly tough. It can be detected by adding to a small quantity of slightly diluted milk an equal quantity of commercial sulphuric acid. Pour the milk into a test-tube or flask, and then allow the acid to run in, so as not to mix with the milk. A violet color will appear at the junction of the two liquids, if formaldehyde is present, and the curd of the milk will dissolve slowly when the tube is shaken.

In selecting cow's milk for infant-feeding, that which is clean, aerated, cooled and bottled immediately after milking, and kept below 60 degrees F., until delivered, is the article to be chosen by the physician. The richness of milk and cream depends upon the breed of cattle supplying the milk. In most of the states that have dairy laws, the minimum amount of butter fat allowed in the milk is 3 per cent. In actual practice milk varying between 3 and 5 per cent. butter fat will be met.

In reference to the production of butter fat, cows may be roughly divided into three classes: 1. Fancy, full-blooded Guernseys and Jerseys, giving milk containing 5 per cent. and over; 2, ordinary Jerseys and Guernseys, known as "butter cows," giving milk containing 4 per cent. and over; 3, Ayrshires, Holsteins and common stock, known as "milk cows," giving milk containing 3 per cent. and a little over.

A physician in a given neighborhood should find out what breeds of cattle supply the milk to the vicinity, in order to know about the proportion of butter fat contained in the milk. The milk of one dairyman will run quite uniform from day to day, as the variations in the milk of individual cows will compensate each other.

In mother's milk the fat is usually between 3 and 5 per cent., or nearly three times the proteids, which vary from 1 to 2 per cent.; while the sugar is between 6 and 7 per cent. As noted above, cows' milk will contain from 3 to 5 per cent. butter fat, while the proteids average about 4 per cent., and the sugar from 4 to 5 per cent. It is pretty well settled that in mixed cows' milk, the proteids about equal the fat, when the fat does not exceed 4.5 per cent. When the fat in the whole milk is above 4.5 per cent. the proteids are a little less than the fat.

While in most cases, a medium grade of milk will be supplied, especially in towns and cities, still, we must be prepared to properly modify either very rich or poor milk. An easy way of calculating percentages, is to take advantage of the process known in the dairy industry as the "deep setting process of creaming." This consists in putting milk into tall, narrow vessels and cooling to about 40 degrees F. After twelve to twenty-four hours practically all the fat of the milk will be found in

the creamy layer, the remaining milk often containing no more than .2 to .5 per cent. Milk that has been bottled and kept cool for twelve to twenty-four hours, is subjected to the conditions necessary for successful "deep setting" creaming, and usually contains a layer of cream in the neck of a quart bottle, between three and four inches deep, measuring from the top, or about six fluidounces. The line separating the cream from the remaining milk is distinct. Unless the creamy layer is distinct when the milk is delivered, it is probable that bottling has not been done at the dairy, but in the town or place of delivery. Not only is the proper creaming thus interfered with, but the chances of contamination are increased.

By taking all of the cream and part of the remaining milk from the quart bottle of milk and mixing in certain proportions, top milks, rich or poor in fat, can be had, that may be utilized in feeding the infant. Top milks can be prepared in which the fat is one and one-half to five times the proteids.

In the home modification of milk, by means of this bottled milk, the cream is readily and accurately separated from the remaining milk by means of a dipper measuring exactly one fluidounce. The first dipperful, or ounce, is taken off with a teaspoon, otherwise, the milk would spill over when the dipper is let down. The

successive ounces of cream are then easily removed, by even an unskillful hand, without jarring, siphoning or other manipulation.

The following assays, made by the Babcock method, show the percentages of fat in different top milks, taken from quart milk bottles, and represent low, medium and high grade milk, which was bottled in the country:

Fat in whole milk	3.1	4.3	5
Fat in Top 9 ounces	9.2	12.4	14.6
Fat in Top 10 ounces	8.37	11.2	13.2
Fat in Top 11 ounces	7.7	10.4	12.1
Fat in Top 12 ounces	7.0	9.6	11.1
Fat in Top 13 ounces	6.6	9.0	10.4
Fat in Top 14 ounces	6.2	8.4	9.7
Fat in Top 15 ounces	5.8	7.9	9.0
Fat in Top 16 ounces	5.5	7.5	8.6

Proteids and sugar are assumed to be 4 per cent. each.

It will be noticed that the first nine ounces or dipperfuls contain about three times as much fat as the whole milk in all three grades. This rule held good in thirty quarts of bottled milk on which the cream had risen, obtained of different dealers.

For matter of easy calculation, it is assumed that the proteids and sugar are 4 per cent. each. In practice, all that is necessary is to dip off top milk of any desired richness, and dilute it, two, three, four, five, six or eight

times. If about 3 per cent. of fat and 1 per cent. of proteids is desired, nine ounces will be dipped out of the bottle of milk on which the cream has risen. If it is poor, bluish-colored milk, it will be diluted three times, that is, one-third of the desired mixture will be top milk. If the milk is of a fair degree of richness, it will be diluted four times—one-quarter of the desired mixture will be top milk. If the milk is very rich, it will be diluted five times—one-fifth of the desired mixture will be top milk. By dividing the figures in the table by the dilution, average percentages will be obtained. This is as near to accuracy as percentage feeding can be brought at home, and is sufficient for the vast majority of cases. The proper percentages for each child are obtained by increasing or decreasing the richness and the dilution of the top milk. What is needed in a given case is a dilution of cow's milk that will agree with the baby we are trying to feed, rather than the procuring of figured percentages. By this method every physician can vary the strength of the milk in a sliding scale by directing the number of ounces to be dipped out of the bottle of milk, and thus tentatively reach the strength that is suitable for the infant's digestion.

For every twenty or twenty-five ounces of food, add one ounce of sugar, in order to bring this element up to the proper proportion. One part of sugar to 20 parts of food yields 5 per cent; to 25 parts, 4; to 33 parts, 3; to 50 parts, 2 per cent. An even tablespoonful of granulated sugar equals half an ounce approximately, and one scant teaspoonful equals a dram. Half again as much milk sugar equals the same weights.

The next important step is to get the cow's milk as nearly as possible in the same physical condition as mother's milk. The diluent I prefer to use is a wheat, barley or oatmeal gruel, the starch of which has been digested or dextrinized by the action of diastase. A heaping tablespoonful of flour, made from a cereal, is boiled with about a pint and a half of water for fifteen minutes. It is then removed from the stove and set in cold water for about three minutes to cool it. When it is sufficiently cool to taste, a teaspoonful of a preparation of diastase is added, which renders the gruel thin and watery. This makes about a pint of gruel, containing the starches in soluble form, while the cellulose or skeleton of the cereal acts as a most effective attenuant of the curd. These digested gruels render the milk curds porous, and also provoke the secretion of the digestive juices. As diluents, they are a great improvement on water. Most of the thick malt extracts are sufficiently active in diastase to produce the desired effect. The writer, however, prefers the employment of diastase itself, without any of the other malt ingredients, as being both speedy and efficient. It can either be produced cheaply at home, or purchased at the nearest drug store. A simple decoction of diastase may be made as follows: A tablespoonful of malted barley grains is put in a cup, and enough cold water added to cover it, usually two tablespoonfuls, as the malt quickly absorbs some of the water. This is prepared in the evening and placed in the refrigerator over night. In the morning the water, looking like thin tea, is removed by a spoon or strained off, and is ready for use. About a tablespoonful of this solution can be thus secured, and is very active in diastase. It is sufficient to dextrinize a pint of gruel in ten to fifteen minutes. Preparations of diastase are made by a number of chemists—Forbes, Parke Davis & Co., Horlick and others. There is now obtainable an active glycerite of diastase known as Cereo, which is specially made for the purpose of dextrinizing gruels.

Now the question of Pasteurization—heating to 167 degrees F.—or sterilization—heating to 212 degrees F.—arises. It should be remembered that the object of Pasteurizing and sterilizing milk is to kill the bacteria, and in that way make the milk suitable for infant-feeding. If the milk was originally clean, cooled immediately after being drawn, and kept cool, there would be no need of heating the milk to kill bacteria. In the summer time, where it is impossible to keep the milk below 60 degrees F., it is best to have it Pasteurized as soon as it is received.

It is often recommended that lime-water or bicarbonate of soda be added to milk, when it is slightly acid. The acidity of milk is caused by bacteria that produce lactic acid. If the acid is neutralized, the bacteria will produce more acid, unless the milk is either kept cool or heated to destroy the bacteria.

There are cases constantly arising where milk must be withheld for a time, or given only in small quantities. Here is where the judgment of the physician may be put to a severe test. The symptoms that call for a modification or a change of diet, are vomiting, colic, and unnatural stools. A brief glance at these conditions may be helpful to some in applying dietetic remedies.

Vomiting.—When vomiting occurs immediately after feeding, it is probably caused by a simple distension of the stomach, and less bulk of food is accordingly indicated. The vomiting that occurs some time after feeding is apt to be caused by undigested food, the rejections are frequently highly acid, and there may be curds and mucus present. Projectile vomiting, where food is rejected with force, is an indication of brain irritation.

Colic.—Colic may be caused by cold, but is more frequently induced by the fermentation of indigestible food.

Condition of the Stools.—Much may be learned by a careful inspection of the stools, with reference to increasing or diminishing the various kinds of food. The normal infant stool is smooth, yellow, homogeneous, and about the consistency of thin mush. The following may be considered abnormal types:

1. *Green Stools.*—Stools can only be considered green when that condition is evident immediately upon their passage. They are due to a fermentation, which is doubtless the result of bacterial action. All stools become green a certain time after passage, caused by oxidation of the air.

2. *Curdy Stools.*—Curdy lumps may be produced by undigested casein or fat. The former are hard and yellowish, while the latter are soft and smooth, like butter.

3. *Slimy Stools.*—These are the result of catarrhal inflammation. When the mucus is mixed with the fecal matter, the irritation is high up in the bowel, but when flakes or masses of mucus are passed, the trouble is near the outlet.

4. *Yellow, Watery Stools.*—These are seen in depressed nervous conditions, especially in the hot days of summer, when the bowel is relaxed, and the inhibitory fibers of the splanchnic nerve do not act to advantage.

5. *Very Foul Stools.*—These are caused by decomposition of the albuminoid principles of the food.

6. *Profuse, colorless, watery stools, with little fecal matter,* are doubtless caused by an infective germ, akin to that of Asiatic cholera. This is known as *cholera infantum*.

It is rare to see one of these types by itself. With the exception of the last, they may be seen in all combinations.

In slight forms of unnatural stools, increase the dilution of the top milk, and reduce the quantity of sugar slightly. If large lumps of fat are in the stools, use milk containing less fat for diluting; this can be obtained by taking more top milk out of the quart bottle. Where lumps of casein are apparent, the diluent must be increased. If increasing the dilution and reducing the fat and sugar does not overcome the trouble, stop the milk and feed dextrinized gruel for a day, gradually adding a little milk, which is increased in amount as fast as the infant can digest it.

There are times when infants can not digest milk in any form, no matter how much it may be diluted, nor what diluent is employed. They may then be given mutton broth, from which the fat has been removed, extracted beef-blood and water, dextrinized wheat or barley gruel, or dextrinized gruel, to which either the white or yolk of an egg has been added.

The following will show the food principles obtained by such egg mixtures:

Dextrinized gruel and white of egg.—Dextrinized wheat-flour gruel, 8 fluidounces, white of one egg—581 grains (large egg).

About 2 per cent. proteids (egg 1.25, gruel .75), 4 per cent. soluble carbohydrates.

Putting two even spoonfuls of granulated sugar into this mixture, 3 per cent. of sugar is added, which, with the 4 per cent. of digested starch, makes 7 per cent. total soluble carbohydrates.

White of egg contains 85 to 88 per cent. water; .07 per cent. salts; 10 to 13 per cent. proteid bodies, made up of albumin, globulin and mucoid substance and traces of fats, lecithin and cholesterin.

Dextrinized gruel and yolk of egg.—Dextrinized wheat-flour gruel, 8 fluidounces, yolk of one egg—288 grains (large egg.)

About fat 1.7, proteids 1.7, (egg 1., gruel .70) and 4 per cent. soluble carbohydrates.

By putting two even spoonfuls of granulated sugar into this mixture, 3 per cent. of sugar is added, which with the 4 per cent. of digested starch, makes 7 per cent. total soluble carbohydrates.

Yolk of egg contains about 47.19 per cent. water and 52.81 per cent. solids, made up of 15.63 per cent. proteids, .96 per cent. salts, 22.84 per cent. fat, 10.7 per cent. lecithin and 1.75 per cent. cholesterin. Proteids of yolk contain phosphorus and iron, which is of great importance in the formation of blood, and a pseudonuclein which is also found in casein of milk. These are not present in the proteids of the white of egg. Lecithin, which also contains phosphorus, is undoubtedly "a very important material for building up of the complicated phosphorized nuclein substance of the cell and cell nucleins." Lecithin is also found in milk, especially woman's milk.

THE SPECIFIC TREATMENT OF CROUPOUS PNEUMONIA.*

WILLSON O. BRIDGES, M.D.

OMAHA, NEB.

The mortality of croupous pneumonia is greater than that of any other acute disease; higher than that of diphtheria, and next below that of tuberculosis. The mortality statistics in private and hospital practice show a percentage of from twenty to forty. The census of 1890 indicated that 76,496 persons died of pneumonia

in the United States during the preceding year, a death-rate of 186.94 per 100,000 of population. The census reports of 1870, 1880 and 1890 show that the deaths from this disease have slightly increased. It is the most wide-spread of all acute diseases.

It is nearly twenty years since Fränkel discovered the diplococcus lanceolatus and established its causative relation to croupous pneumonia, since which time renewed efforts have been, and are being, made for the discovery of a specific prophylactic and curative agent. Some years ago the Klemperers demonstrated that the injection of blood-serum, obtained from one who had recently recovered from pneumonia, conferred immunity in some of the lower animals, and it was hoped that an antitoxic serum would be obtained which would be prophylactic and curative in man. While some favorable results from the injection of 20-c.c. doses have been reported by a number of observers, the treatment has not as yet gained a foothold. Various drugs have been from time to time advocated as specifics; long before the antimicrobial theory of treatment was suggested, calomel in large doses—20 to 40 grains—quinin in amounts of from 30 to 50 grains daily, veratrum viride in doses sufficient to bring and maintain the pulse below sixty, had the endorsement of many competent observers whose reports were certainly commendatory. The same may be said of venesection, which at one time was supposed to be the treatment *par excellence*. To-day the teaching is that the expectant plan with the meeting of indications by appropriate symptomatic remedies yields as good results as have heretofore been obtained; and there is much less probability of doing harm. Osler states in his 1899 edition that "Pneumonia is a self-limited disease which can neither be aborted nor cut short by any known means at our command. Even under the most unfavorable circumstances it may terminate abruptly and naturally without a dose of medicine having been administered. There is no specific treatment for pneumonia. The young practitioners may bear in mind that patients are more often damaged than helped by the promiscuous drugging which is still only too prevalent." The remedies advocated as specifics before the expectant plan was adopted were selected because of their antiplastic, antiphlogistic and antipyretic properties. Pneumonia was then supposed to be an inflammatory disease and was to be combated like any other inflammation. Calomel acquired its adherents because of its supposedly antiplastic effects, veratrum viride, on account of its antiphlogistic properties, and quinin because of its power over fever.

Flint made a long step in advance, when he announced his conviction that pneumonia was not simply an inflammatory disease of the lungs, but an essential infectious fever with pulmonic inflammatory manifestations. He it was who advocated large doses of quinin on this hypothesis. He writes, "As long ago as 1861 I was led, by the results of the analysis of a considerable number of cases in which sulphate of quinin was given to the extent of only 15 grains daily, to the conclusion that this remedy exerted a marked causative influence on the disease. I can now (1881) bear testimony to the fact that given in large doses, namely 20 to 30 grains daily, this remedy in a certain proportion of cases renders the disease abortive, and that when this does not follow, the disease is often modified to a greater degree than by smaller doses. Now, whatever efficacy belongs to the remedy proceeds evidently not from any direct effect upon the pul-

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