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If You Would Have Health

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A n orange a day will keep the doctor away, would be a more correct statement than the old adage with which we are all familiar. Knowledge in medicine has reached the point where it is very real and has come to us as a result of research and experimental work with laboratory animals and with children. It is known that five or six oranges a day are beneficial to those who eat them. That perhaps is still a reason for their popularity but at the same time there are other factors to consider.

Some of the first investigations with orange juice were made in 1916 and 1917, considering orange juice a valuable addition to the diet because it is rich in minerals and was recognized as a mild laxative. A little later when investigations were discovering the presence in certain foods of the so-called "food accessory substances" or vitamins and their role in the prevention and cure of deficiency diseases, such as scurrvy, beriberi, and rickets, experiments were again performed with orange juice. These experiments first pointed out the fact that orange juice furnished an antiscorbutic substance.

McCollum and Pitz, in 1917, fed fresh orange juice, orange juice neutralized with 5% sodium carbonate, and orange juice neutralized and heated for one hour, and came to the conclusion that in all cases the animals were benefited by the addition of the orange juice to the diet.

They attributed the efficiency of orange juice as an antiscorbutic, as they say, to its "content of sodium and potash salts". Citrates of both of these possess laxative properties. That these citrates were the antiscorbutic factor was later disproved (1918) by Hess and Unger who found that artificial orange juice made of citrates failed to protect or cure animals of scurvy. However, later, two other scientists, Cohen and Mendel, found quite conclusively that fresh orange juice is a most effective agent in the prevention and cure of scurvy. Guineas pigs which had been developed to scurvy were fed 1.5 c.c. per day of fresh orange juice with the result that there was a marked gain in weight and disappearance of scorbatic signs. When the orange juice was discontinued the weight fell once more and scurvy redeveloped, indicating that fresh orange juice contains enough vitamin C to be a good antiscorbutic.

After this scurry-protecting potency of fresh orange juice had been established the next step was to determine what other, if any, vitamins were present, whether in the juice itself or in the raw fruit from which it was derived. In brief the following facts have been established by different experimenters:

1. Vitamins A, B and C are present in fresh orange juice and conserved in part, but not entirely, during drying. Volume for volume orange juice is as rich in vitamin B as is milk, but it less rich in vitamin A. (Osborne and Mendel)

2. Orange juice allowed to age for more than three months in the refrigerator was found to lose some of its antiscorbutic power.

3. Byfield, Daniels and Loughlin state that orange juice owes its growth stimulating effect to two vitamin c's, vitamin C (thiamin) and vitamin C (riboflavin) and that both are essential for the prevention and cure of scurvy. These two vitamins are not found in the dried juice. (2)

4. Orange juice dried almost instantly by spraying into vacuum chamber at 75-80 degrees C and not allowed to remain in the drying chamber longer than two hours was found to be effective both in the prevention and cure of scurvy. This dried orange juice is still effective after three and one-half months' storage. (Giwens and McCluggage).

5. The fact that orange juice can be dried without destroying its vitamin content, if used commercially should make oranges much more available to the general public. Only a small part of the oranges actually produced each year are placed on the market, due to a large waste of fruit which cannot be packed. For this reason oranges are an expensive food and can be afforded only by a few, comparatively speaking. Since drying preserves not only the antiscorbutic or the antiscorbutic factor, a large percentage of the crop which would otherwise be wasted could be dried and put on the market in a compact form at a reasonable price to the consumer, making this food available to all.

All of these experiments, results and conclusions could have little value if we were not able to make final application of them to the problem of human nutrition. The fact that orange juice has a growth stimulating effect should be significant to us when we consider that more than one-third of our school children are underweight and malnourished. Of course there are supplementary causes of malnourishment—physical defects, lack of parental control, fatigue and ignorance. But again, it is in relation between the kinds and amounts of food eaten and the state of nutrition of the child. Such children are underweight and overweight school children, their diets and now supplementary school lunches, especially of milk or orange or both, may remedy their condition of malnutrition. Such experiments have been carried on in Berkeley, California, by Margaret Chaney, in the Food Lines, by the Public Health Department and in Ames by Frances Newell and Dr. Elizabeth Miller. In Miss Chaney's experiment the underweight children divided into four groups. The first group was given a mid-morning lunch consisting of one-half pint of milk and two crackers; second group, one-fourth pint of milk and two graham crackers; third group, one-half pint of milk and one orange and two graham crackers; fourth group, one-fourth pint bottled fresh fruit orangeade and two graham crackers; fifth group, nothing, to serve as a check on the experiment. A change in the efficiency of these lunches ranged as follows: Orange, first; milk and orange, second; milk, third and orangeade, last. As Miss Chaney says, "The factor is a most efficacious in producing a gain in weight. Milk, while it produced a favorable increase in weight, is not the only food valuable for the mid-morning lunch. The less marked gain in weight which milk produced in this test may be due to its retarding effect on the appetite."

The same results are not always obtained in these experiments with school children, probably because their diet has not been adequately controlled. The only part of their diet which can be controlled is the mid-morning lunch. For example, we have the results and conclusions of the Fort Dodge experiment which are quite different from those obtained in Miss Chaney's experiment. On a lunch of milk and oranges, the Fort Dodge children showed an average gain per pupil of 22 ounces; on milk alone, 15 ounces, and on oranges alone, only one ounce. In one school the results were not so decidedly in favor of the double diet and the principal was rather nonplussed as to the reason. She finally discovered that the children to whom milk alone was being given were bringing their own oranges in the afternoon and eating them at recess. If it was a good thing they were not going to lose out on this. This would indicate that these experiments are not conclusive but merely suggestive in a general way of the benefits of orange juice to underweight children.

The conclusions drawn from the Fort Dodge experiment were:

1. That orange or its equivalent is a necessary part of every child's diet; oranges are not a substitute for milk.

2. Milk is not always effective by itself. Many children who had been generously supplied with milk at home and had failed to gain, gained when oranges were added to the diet.

3. "Orange juice or its equivalent is a necessary element in the child's nutrition and is a valuable supplement to milk, especially when milk is pasteurized." The experiments which intrigued Miss Chaney's and the Fort Dodge studies are intended to test to us that these children are carried out in Ames by Miss Newell under Dr. Miller's direction. Underweight children in Ames school were selected and given physical examinations. "Each mother was requested to reserve portions of food during an entire day at the beginning and at the close of the experimental period, which were duplicates of the amounts eaten by the child. This food was then weighed. The diets of these underweight children were found to be exceptionally deficient in calories. Other deficiencies were in vitamin B and C, and iron. It had not been for the milk furnished at the school the vitamin A and calcium content would have been low. Protein intake was adequate in nearly all cases. Following are two diets given for illustration:

- Breakfast (lunch is Dinner)
  - Cocoa 1 cup
  - Beefsteak Cocoa
  - Bread 3 slices
  - Potatoe Bread 2 slices
  - Gravy
  - Omelet
  - Cranberry Sauce
  - Cinnamon
  - Potatoe
  - Rolls 2
  - Cinnamon

The medical examinations disclosed many defects among these underweight children. "The high percentage of absenteeism (Continued on page 15)"
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...cess from school as compared with the average for all the children confirmed the statement of the school nurse that underweight children were especially susceptible to colds, tonsillitis and any disease epidemic in the school.

"Beginning February first, 45 c. c. or orange juice were given each child daily at 11 a. m. Friday the children received two oranges to eat Saturday and Sunday at noon." This program was continued until April 25th except for one week of spring vacation in March. During this period the percentage of expected gain was 106 or a 5 per cent increase over the previous period when no oranges were given. On April 25th the orange juice was discontinued for three weeks, and the result that there was an average loss of 0.35 pounds per child. The orange juice was resumed again May 16th for the two remaining weeks of school with the resulting average gain of 0.5 pounds per child. All children received a pint of milk daily with the exception of the last three weeks when delivery at school was discontinued.

"That over-activity and fatigue are important factors preventing gain in underweight children is indicated by the rapid rise in the weight curve during the spring vacation followed by an equally sudden drop in the first week following the return to school."

Miss Newell and Dr. Miller conclude their article by saying, "Experimental work where conditions of laboratory control prevail is essential to a definite knowledge of the effect of dietary additions on stimulation of growth in underweight children. This work has demonstrated, however, an unmistakable rise in the weight curve of such children, produced by the daily administration of 45 c. c. of orange juice. This result may be the effect of added vitamin A, B, and C, or of inorganic substances or produce something such as a shift in the acid-base equilibrium."

From these experiments we may draw the following conclusions:

First:—Oranges are a valuable source of vitamins, A, B, and C, especially of vitamin C, which is the antiscorbutic vitamin. For reasons already given an excellent supplement in the diet of children in protecting against scurvy.

Second:—The antiscorbutic potency of orange juice is not destroyed by drying. This fact is important in that it points the way to a possible means of making oranges more available.

Third:—Oranges are especially valuable in supplementing milk in the mid-morning school lunches. They do not take the place of milk but since they provide the antiscorbutic vitamin are of special value when pasteurized milk is used.

Fourth:—Feeding oranges may be effective in correcting malnutrition in underweight children. When we are confronted with the fact that during the war 32 per cent of the men examined for military service were found to be defective due to malnutrition at some time of life and that of a million school children of New York City examined recently only 178,000, or one out of every five, were normal as regards nutrition, then it would seem that this point would bear further investigation and research. If future experiments show even more conclusively that these first experiments suggest, then the antiscorbutic vitamin is the means of making oranges more available.

Real Lace

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connected by bars of thread covered over with buttonhole stitch; the last step is to cut away the fabric outside the outline and underneath the bars or "bridges" as they are called.

We finally come to Machine-made laces. The Nottingham looms of England were the first lace-making machines, and it is said they were evolved out of the stocking loom. Improvements have been made on this loom, until now an imitation lace almost defies detection. Frequently it is said that unless one can afford real lace, one should not use lace at all. I think this is an incorrect