

The primary motive of each householder is to raise enough to keep the family alive. For **THIS STORY OF FOOD AND FOOD PRODUCTS** the big majority of cases do not rise very far beyond this level. The possibility of an excess above this bare requirement is not often realized. It is logical then to find that the usual income is not so readily expressed in dollars, but is indicated by the amount of the family group has approached this goal of just securing enough to eat.

**Supplementary Reading for Food Study
Classes**

The Story of Chinese Food

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The statement that the Chinese lives and thrives on but a few cents a day has become proverbial. By some, this remarkable ability is regarded as a myth; by others as a statement of well selected and isolated cases of low dietary habits. A food chemist in the Far East soon realizes that not only are the most extreme reports absolutely true, but that they are the everyday rule of life among millions of people in China. America, land of superabundance, has no way of visualizing such a condition of basal metabolism in actual practice. One's imagination too often conjures up thoughts of poverty and of the ill-developed resources that have caused these so-called lower standards of living. But there is need to suggest that this is possibly nothing but the genuine economic level at which China has sanely settled down after several milleniums of experiment with dietary problems. The Chinese people are not to be so much pitied as admired for their solution of a food problem. It is a solution which is worthy of profound study. Here are fundamental principles which the spendthrift and inexperienced Occident should emulate.

China is essentially an agricultural country! Only about 10 per cent of the population are to be found in the large cities, and a large part of these are engaged in trade or business involving agricultural products. Four thousand years ago Shen Nung, the first of a line of agriculturalist statesmen, ruled as emperor of China. The farmer in China is not found at the bottom of the social scale, but he occupies a very honored station. In spite of an apparent overcrowding, the millions of China still flock to the soil as if by instinct. The great delta of the Yellow River, comprising most of the province of Shantung, is one of the areas which is said to be "overpopulated." Practically this means that every available bit of land is used. The writer has seen complete farms which were no more than a few feet square, and has seen small plots which consisted of but a furrow or two hanging on the side of steep mountains and cultivated with all the grim seriousness which an American farmer would devote to his hundred acres.

Outside of a few modern industrial centers, wealth is expressed in terms of land. A man's wealth in Shantung is reckoned in acres instead of in silver dollars. The background and very thought of the population is agricultural. The majority of the people eat what they raise. Feeding Shantung is, economically speaking, a hand-to-mouth proposition.

The primary motive of each householder is to raise enough to keep the family alive for another six months. Ambitions in the big majority of cases do not rise very far beyond this level. The possibility of an excess above the bare requirement is not often realized. It is logical then to find that the annual income is not so readily expressed in dollars, but is indicated by the degree to which the family group has approached this goal of just securing enough to eat.

This tremendous pressure of population means that Shantung has been early driven, and driven unconsciously, to solve the questions of supply and demand, and the problem of the economical conversion of raw materials into available energy. The existence of this high population pressure is not a phenomenon of recent years, but is a condition which goes back four thousand years or more. There is no reason for us of the Occident believing that the subject of national food economics is a 20th century fad! The nations of the East must have faced the dangers of food shortage long ago, and China's dietary experiment has had the advantage of an unusually long experimental period--about 40 centuries. It is important to note that the conclusions which Shantung has reached after this long experiment are not based on theory, but that they are purely empirical ones. Nor is there much reason to believe that the dietary habits of Shantung, or of China for that matter, are the result of racial prejudice or racial characteristics.

Chinese Diet

In the first place, the diet of China is a cereal diet. This includes: wheat, rice, millet, kao-liang, and the all important soy bean. The cereal of the southern two-thirds of China is rice; the northern third of the country replaces the rice by wheat, millet, and kao-liang. Both sections of the country make use of the soy bean to supplement the staple diet. It is a mistake to assert that the Chinese are a rice-eating people. This statement is only two-thirds true! In the north, kao-liang (*Sorghum vulgare*) is of especial interest. Kao-liang, sometimes called barbadoes millet, is the world's great dry-weather crop, particularly suited to the parched plains of north China where it would seem to have maintained itself in the agricultural repertoire as a kind of survival of the fittest. While the grain of the kao-liang is not so attractive as other cereals as a food material, this particular crop gives a very large return. The grain itself, the chaff, and the leaves all have their market value, and in addition, the sorghum stalk fills an exceptionally important place in this treeless region as the chief substitute for wood both as fuel and as building material.

Data recently secured in the Shantung Christian University laboratories indicates that on an average 87 per cent of the calories consumed by the individual in north China is derived from cereals, while only 2 per cent of the calories per day is supplied by meat. The following table² indicates the manner in which the average Shantung family divides its expenditure for food. For comparison, a column is added showing the daily expenditure of the typical American family.

Food Expenditure of the Typical Family in Shantung and in America.

	Shantung Percentage	America Percentage
Meat and Fish	6	33
Milk	0	10
Eggs	2	5
Bread, Cereals, Beans	72	15
Butter, Fats, Sugar	4	16
Fruit and Vegetables	14	16
Other Foods	2	7

It is evident that Shantung is not addicted to the meat eating evil! It should also be explained that in China meat is a relatively an even more expensive item of diet than in the Occident. It is probable that the Chinese approach as near to being a truly vegetarian people as is to be found in the world.

Much has been written of recent years to show the insufficiency of the various vegetable proteins. Wheat protein is recognized as an incomplete protein. Recent patents in America have striven to meet this shortcoming by supplementing wheat flour with a certain percentage of soy bean flour. North China, the wheat area, has been supplementing wheat with soy bean for centuries. Another common combination in the vicinity of Peking is a mixed flour made of corn meal and soy bean meal. The farmers in this region regard this as a more nourishing food than wheat alone. Science has classed these and similar discoveries in China as cases of blind experimentation. Shantung in particular has produced fine specimens of physical development. Having been reduced to a vegetarian basis, it is truly remarkable that China has succeeded in arriving at that combination of cereals and other simple foodstuffs which would make this vegetable diet most effective.

Agricultural Background

China is monotonously agricultural in its background and habits; the diet of the individual is bent to a hard and fast rule in consequence, and the variety is limited. The food repertoire is monotonous to a degree which would be unendurable to an Occidental, but to a degree which is demanded by economic conditions. South China consumes rice; probably 90 per cent of every meal is rice. North China eats steamed wheat bread, or bread made from the cheaper substitutes, millet and kae-liang, and eats it with an equal degree of monotony. The resident of Canton moving to Shantung brings his rice dietary habits with him, and he continued to eat rice the rest of his life. Many of the schools and colleges in the north which draw students from all parts of China maintain two dining halls, the one caters to the wheat-eaters, the other to the rice-eaters.

In Shantung, of the meager amount of protein consumed per day, it appears that only about one-tenth of the total is of animal origin.² Some consumption of eggs is reported. Meat if eaten at all is largely in the form of pork, or fish. Practically no use is made of milk.

Modern studies of the cow as a converter have shown that energy in the form of grain when consumed by the cow returns only a limited percentage of the original energy as milk; a still smaller percentage return could be obtained in the form of beef. In short, the transformation of cereal to milk or to meat is always attended by considerable loss. China has decided that it can ill afford any of the loss involved in either of these conversions; the cereal grains therefore have been used directly as human food. The Chinese, relying solely on experimental knowledge, know that they can secure far greater food values from one acre of land by growing soy bean and extracting the bean oil, than by pasturing a cow on the land and making butter from the milk. And of the various animal foods, they also early discovered, what modern science later demonstrated, that an acre of ground will produce two pounds of pork for every one pound of beef or mutton. When meat is used in China, it is pork. Beef has almost no place in Chinese dietary. A similar case of blind experimentation explains why a dairy industry is non-existent. Cows' milk is but an innovation introduced by foreigners.

The systematic manner in which all nitrogen is returned to the soil is one of the Occident has often with keen satisfaction pointed out that the more aggressive peoples of the world are those who consume large quantities of animal food. There may or may not be a connection between this racial character and this element in the diet. Campbell³ has attributed the Orient's lack of aggressiveness to heat, dry climate, etc. Road and Wang⁴ attribute it to diet solely. Whatever one's doctrine on the consumption of animal protein, it is possible to assert that the Chinese, a people of tremendous virility, with remarkable resistance to infection and disease, have actually been able to maintain themselves over a period of many hundreds of years on what is essentially a vegetarian diet.

In short, all China is a study of the consequences of the Oriental table. Estimates² of the amount of food energy consumed per day would indicate that in normal times the consumption of energy as food in Shantung averages about 3,000 calories per day. This is the very minimum to be expected for the average man of medium work. Reports from different parts of China would indicate that this basal amount shrinks to an even lower figure occasionally. The important point to note is that this figure does not even in prosperous times materially increase. The Chinese has accustomed himself to living on this starvation fringe. There is absolutely no margin or reserve. Crop failures and other agricultural calamities have an immediate effect. Poor facilities for communication isolate entire areas and crop failure means immediate famine. There is no reserve to bolster up a failing food supply.

The considerable bulk of the Oriental diet is more than of passing interest. McCay⁵ in India has called attention to the low coefficient of digestibility that goes with the bulky cereal diet Chinese who leave China to sojourn in the Occident often become painfully aware of the fact that the western meat diet is of comparatively smaller bulk. While a large bulk may decrease somewhat the coefficient of digestibility, it is hardly to be fancied that this factor is a very serious one in food economy, but it is important to note that the inclusion of a liberal amount of roughage in the diet does insure a greater freedom from digestive lassitude and serious digestive disorders.

The daily life of China is a constant application of habits of economy. Common salt is subject to a heavy government tax and is therefore a luxury. Read and Wang⁴ suggest that this explains the small amount of chlorides excreted by the Chinese. Nothing goes to waste. The reduction of waste is an inherited virtue. Our students making dietary investigations in the homes were cautioned to report carefully all food materials wasted. The reports without exception showed that this item was nil. There is no garbage pail in Shantung; there is simply no waste material. Grass on the hillsides is plucked by hand to be used as fuel. Millet and wheat are harvested not by cutting the stalk, but by pulling up root and all. The Occident's wasteful process of sewage disposal is not to be found in China. Nitrogen compounds are too precious. Every small bit of nitrogen must be conserved. Informal sewage farms for the drying and collection of sewage dot the landscape. It is estimated⁶ that the Chinese economical process of handling all nitrogen waste succeeds in returning 90 per cent of nitrogen back again to the soil.

The systematic manner in which all nitrogen is returned to the soil is one of the outstanding points in China's agricultural economy. To enrich his soil, it is observed that the Chinese farmer has for centuries employed legumes--nitrifying crops. The farmer guards his compost heap as carefully as he guards his farm crops and locates it in a position of safety in the court-yard. The Chinese farmer does not know what it means not to fertilize. Nitrogen occupies such a fundamental place in the economic scale that it becomes almost a standard of value. It has a very definite value at least in terms of every-day existence and maintenance of human life.

In short, all China is a study of the economics of the dinner table. It is commonly stated that of the daily conversation to be heard on the streets of the average Chinese city one-half deals with the realm of foods and the other half with the realm of clothing. It is evident that a country which has been experimenting in the simplest possible terms with the one or two basic economic questions of life existence has an outlook and a fund of experience which is worthy of our study.

References

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