

Cereal Products are Still our Cheapest Foods

The Fact That the Essential Food Constituents While of Approximately Equal Value, Cost More in one Food Material Than in Another is an Important Point for the Housekeeper.

By R. HARCOURT, of the Ontario Agricultural College.

The cost of living is rapidly increasing. All of the staple articles of food have advanced in price, some of them are more than one hundred percent. It is not the cost of those foods which may be called luxuries that is bothering the consumer; but it is the fact that the cost of the plain necessities of life have advanced so much that providing for the wants of the family has become a serious problem. Furthermore, the prospects are that the cost of food materials will increase. This being true it is important that we should know what materials will furnish the greatest amount of actual food for the least money. It is true that palatability and agreeableness enter largely into the problem, and that the cheapness of a nutritious food is not the only point to be considered; for few people, even to effect economy, will eat a food they do not like unless driven to it by necessity. However, people differ in their likes, and we shall discuss the foods which furnish the most nourishment for a given sum of money, leaving the question of palatability to be decided by the individual.

It is not necessary to discuss the cause for this advance in the price of foods, for we are all ready to admit that the withdrawal of so many men from productive occupations and transferring them to positions in which it is necessary to supply them with compact substantial food, has much to do with the present prices of our common food materials.

Aside from the question of flavor, we value foods in proportion to their ability to warm the body, supply energy for work, materials for growth, etc. To supply these wants the foods must contain protein, fat, carbohydrates and ash, or mineral matter. All these constituents may be derived from one food substance, as for instance from bread, but we rarely find any one food that can supply these in the right proportion to give the best results, and, furthermore,

a mixture of the foods provides a much needed variety to our diet. However, an important factor is that the digestible protein, fat and carbohydrates derived from one food are approximately equal in value to those derived from any other food. This fact allows us a good deal of latitude in the selection of our foods, which, considering the importance we ascribe to flavor and agreeableness, is an important factor. It is important, too, from another standpoint namely, that of insuring a sufficiency of each of the necessary food constituents. It is true that comparatively recent investigations in the problem of nutrition indicate that there are probably very small quantities of certain unidentified compounds in our foods which have a very marked influence on their nutritive value. However, very little is known about these vitamins or so-called accessory compounds, and we are not in a position to ascribe values to them.

The fact that the essential food constituents while of approximately equal value, cost more in one food material than in another is an important point for the housekeeper who must study economy. To bring out this fact, we have calculated the amount of protein, fat, and carbohydrates supplied by one dollar's worth of a number of the common foods. As one of the main objects of food is to produce heat and energy, it is generally considered that if there is sufficient protein in the diet to do the work which it alone is able to perform, the amount of heat a food is capable of producing is the best basis upon which to make the comparison. With this idea in view we have also figured the number of calories of heat and include the results in the following table. The foods are continually changing in price and some of them have advanced greatly since these calculations were made; but they will still serve to show the comparative value of the foods.

TABLE SHOWING THE POUNDS OF PROTEIN, FAT, CARBOHYDRATES AND FUEL VALUE OF ONE DOLLAR'S WORTH OF EACH FOOD.

Food	Price	Protein			Carbo- hydrates	Fuel Values	Compar- ative Values.
		Lbs.	Lbs.	Lbs.			
Roller Oats	.05 per lb.	2.5	1.36	14.3	36,950	100.	
Fall Wheat Flour	4.75 per cwt.	2.5	.20	16.0	34,307	92.3	
Spring Wheat Flour	5.00 per cwt.	3.0	.20	14.3	33,780	91.4	
Corn Meal	.05 per lb.	1.31	.25	16.26	33,735	91.3	
Farinas	.05 per lb.	1.9	.20	15.6	33,394	90.4	
Roller Oats (Package)	.25 for 4 lbs.	2.00	1.09	11.5	28,560	80.0	
Sugar	8.00 per cwt.	12.5	23,250	62.9	
Rice	.07 per lb.	1.06	.05	11.3	23,210	62.8	
Peas	.07 per lb.	3.00	.19	9.0	23,121	62.6	
Farinas (package)	.15 for 2 lbs.	1.26	.14	10.3	22,207	60.1	
White Bread	.16 for 3 lbs.	1.58	.38	9.1	21,650	58.6	
Buttermilk	.10 per gallon.	3.0	.50	4.8	17,362	47.0	
Skim Milk	.10 per gallon.	3.4	.30	5.1	17,070	46.2	
Barley, Pearl	.10 per lb.	.84	.10	7.8	16,492	44.6	
Beans	.10 per lb.	1.95	.27	6.0	15,500	42.0	
Potatoes	2.25 per bag.	.87	.04	6.24	13,397	36.2	
Malta Vita	.10 per 12 oz.	.74	.10	5.87	12,716	34.4	
Toasted Corn Flakes	.10 per 12 oz.	.42	.11	6.06	12,517	34.0	
Grape Nuts	.15 per 17 oz.	.81	.07	5.56	12,143	33.0	
Milk	.08 per qt.	1.04	1.27	1.66	10,402	28.2	
Shredded Wheat	.13 per 12 oz.	.64	.05	4.42	9,659	26.1	
Beef, flank	.14 per lb.	1.21	1.36	...	7,970	21.6	
Butter	.45 per lb.	...	1.88	...	7,933	21.5	
Cheese	.30 per lb.	.93	1.22	1.4	7,138	19.3	
Mutton Chops	.24 per lb.	.56	1.20	...	6,108	16.5	
Ham, smoked	.28 per lb.	.51	1.19	...	5,963	16.1	
Beef, sirloin	.25 per lb.	.66	.65	...	4,000	10.8	
Beef, round steak	.24 per lb.	.79	.53	...	3,718	10.6	
Lamb, hind quarter	.27 per lb.	.61	.60	...	3,672	10.0	
Hams, smoked and cooked	.45 per lb.	.44	.50	...	2,730	8.0	
Salmon, canned	.25 per lb.	.78	.30	...	2,716	7.0	
Salmon Trout (fresh)	.15 per lb.	.61	.34	...	2,569	7.0	
Cod (salted)	.18 per lb.	1.05	.02	...	2,307	6.2	
Eggs	.48 per doz.	.37	.29	...	1,912	5.2	
Halibut (fresh)	.25 per lb.	.61	.18	...	1,894	5.1	

A study of the above results show that the foods derived from the cereal stand at the top of the list. This is not surprising, as they contain a large amount of carbohydrates, which are the cheapest fuel material among our foods. But it is worthy of note that they also furnish comparatively large quantities of protein and fat, much more than can be purchased

for the same money in the form of meat, fish or eggs. Thus, one dollar's worth of spring wheat flour at five dollars per hundred will furnish three pounds protein and fat, much more than can be purchased on sirloin steak at twenty-five cents per pound will only supply two-thirds of a pound. Consequently the cereal foods not only stand first on the list in

food value but they are also one of the cheapest sources of protein. Skimmed milk and butter milk, at ten cents per gallon, and split peas at seven cents a pound are other cheap sources of protein. Another point in favor of flour and bread is that few foods in themselves furnish so nearly a balanced diet. Eaten with milk, even skimmed milk, they form almost a perfectly balanced diet, and, if we exclude rolled oats and corn meal, at a less cost than any other foods we can select. These two foods, however, belong to the cereals and naturally share in all the good things that may be ascribed to wheat products. It will thus be seen that there is good reason for speaking of bread as the staff of life.

VEGETABLE FOODS.

Among the vegetable foods, the legumes, peas and beans, stand high as sources of proteins. In fact, for this reason they are frequently spoken of as "the poor man's beef"; but owing to the demand for compact concentrated foods for the army, the price of these grains has advanced so that some of the cereal products are cheaper sources of protein, and, in addition, they carry more of the heat and energy producing carbohydrate bodies. It will thus be seen that even at present high prices the cereal grain products are our cheapest food.

It is not our intention to imply that meats should not be used in the diet; but a study of the data before us shows plainly their relative cost, and we could, in many cases at least, do with less of the expensive meats.

Live stock experts state that it takes four and a half pounds of mixed grains to produce one pound of live weight of hog, which means that it takes at least seven pounds of grain to produce one pound of edible pork material. The seven pounds of grain contain more than five times as much protein and will furnish over four times as many calories of heat as the meat produced. The protein, fat, carbohydrates and ash are all formed in the plant. The animal cannot construct these, only transform them into animal tissue, heat and energy. In the process, fully seventy-five percent of the food value is lost, or in other words, we do not recover more than twenty to twenty-five percent of the food fed to the animal in the form of meat. This is one reason meat is expensive. Poultry authorities state it takes four pounds of grain to produce one pound of live chicken. In the case of cattle feeds and to some extent in the case of hog and chicken feeds, materials are fed that are not suitable for human consumption; but having in view the great loss of food material in converting grains into meat it is evident that in a time of food shortage some restriction should be placed on the use of grains suitable for human food.

For various reasons it would not do to convert the whole of the wheat into flour; for much indigestible matter would be retained, that, while beneficial to some people would be harmful to others; but it is evident that the ruling of the British Government demanding that a greater percent of the wheat be converted into flour is in the right direction. This is especially true under present conditions and prices. In the eighty-one percent extraction demanded of the British miller, approximately eleven percent of the materials which was formerly sold as cattle food is now included in the flour and has added this much to the human food supplies. The bread will naturally be darker in color and possibly not as attractive in appearance, but it is doubtful if there will be enough of the outer layers of the grain included to seriously affect the digestibility of the bread.

LENDING A HAND.

The following interesting resolution was adopted at a meeting of the board of directors of the Dominion Commercial Travellers' Association held on Saturday, May 5th, 1917:

Whereas all Europe is on short rations and the world is today facing a general famine, and whereas this Country can produce lots of foodstuffs but owing to a scarcity of farm labor a shortage in the coming crop is expected, and whereas it would relieve to a certain extent the present conditions and enable us to do our bit in the world struggle, it is moved by J. H. Paul Saucier, seconded by Romeo Brosseau that this Board recommends to the members that they each offer to the National Service Cultivation Committee a week or more of their summer holidays to help harvesting in Canada, and that they at once notify the Secretary of the Association of their willingness to do so.