

PECUNIARY ECONOMY OF FOOD.

THE CHEMISTRY OF FOODS AND NUTRITION. V.

"No one can say that I do not give my family the best of flour, the finest sugar, the very best quality of meat."



HE above is the boast of a coal laborer earning seven dollars a week. It illustrates a phenomenon which I would commend to the consideration of either psychologists or students of social science, or both. I refer to the conceit, let us call it, that there is some mysterious virtue in those kinds of foods that have the most delicate appearance and flavor and the highest price; that whatever else one has or does not have he must, if possible, have this sort of food; and that to economize by using anything inferior would be a sacrifice of both dignity and principle.

The quotation, from a description of the life of factory operatives in New England, in an article by Mr. Lee Meriwether, in "Harper's Magazine" for April, 1887, illustrates what I mean.

The cheapest food is that which supplies the most nutriment for the least money. The most economical food is that which is cheapest and best adapted to the wants of the user. But the maxim that "the best is the cheapest" does not apply to food. The best food, in the sense of that which has the finest appearance and flavor and is sold at the highest price, is not generally the cheapest nor the most economical, nor is it always the most healthful. The coal laborer who made it so much an article of faith to give his family "the best of flour, the finest sugar, the very best quality of meat"; who, as Mr. Meri-

wether tells us, at a time when excellent butter was selling at 25 cents a pound paid 29 cents for an extra quality; who spent \$156 a year for the nicest cuts of meat, which his wife had to cook before six in the morning or after half-past six at night because she worked all day in the factory; who spent only \$108 for clothing for his family of nine, and only \$72 a year for rent in a crowded tenement-house where they slept in rooms without windows or closets; who indulged in this extravagance in food when much cheaper meat and in all probability much less of it, cheaper butter, cheaper flour, and other less costly materials such as come regularly upon the table of many a man of wealth would have been just as wholesome, just as nutritious, and in every way just as good save in its gratification to pride and palate,—this man was innocently committing an immense economical and hygienic blunder. He was doing this because, like the very large class of people of whom he is a type, he was laboring under this conceit of which I speak.

One great difficulty here is the lack of information. Even those who wish and try to economize in the purchase and use of food very often do not understand how. They consult carefully the prices they pay, but have in general very vague ideas about the nutritive values. It is an interesting fact that although the cost of food is the principal item of the living expenses of the large majority of people,—of all, indeed, but a few of the especially well-to-do,*—and although the health and strength of all are so intimately dependent

* In his Report of the Bureau of Statistics of Labor of Massachusetts for 1884, Mr. Carroll D. Wright summarizes the results of investigations into the cost of living of people with different incomes, especially of workingmen's families, in Massachusetts and in Great Britain, and quotes similar results obtained by Dr. Engel in Germany. Dividing expenses into those for subsistence (food), clothing, rent, fuel, and sundries, the percentage of the whole income expended for subsistence averages as in the tabular statement herewith. As incomes increase the relative percentage of outlay for food becomes less and that for "sundries" greater. In the Massachusetts and Great Britain figures (I do not know how it is with the German, but presume that the case is the same) no outlay for intoxicating liquors is included in the allowance for subsistence.

PERCENTAGE OF INCOME EXPENDED FOR SUBSISTENCE.

Families of	Annual Income.	Per cent. expended for food.
GERMANY.		
Workingmen	\$225 to \$300	62
Intermediate class, "Mittelstand" ..	450 to 600	55
In easy circumstances, "Wohlstand"	750 to 1100	50
GREAT BRITAIN.		
Workingmen	500	51
MASSACHUSETTS.		
Workingmen	350 to 400	64
"	450 to 600	63
"	600 to 750	60
"	750 to 1200	56
"	above 1200	51

upon their diet, yet even the most intelligent know less of the actual uses and value of their food for fulfilling its purposes than of those of almost any other of the staple necessities of life.

RATIOS OF NUTRITIVE VALUES TO COST.

THE large majority of the families in this country have, I understand, not over \$500 a year to live upon. More than half of this goes, and must go, for food. Rent, clothing, the cost of preparing the food for the table, and all other expenses must be provided from the rest. Perhaps these statements apply less accurately to farmers, but of wage-workers in towns statisticians tell me they are correct.

To the man with an income of \$5000 a year, it may seem to make little difference whether he pays 20 cents or \$2 a pound for the protein of his food; but to the one who can earn only \$500 or less a year for the support of his family, the difference is an important one. His wife goes to the dry-goods store to buy a dress for her daughter, and hesitates between a piece of cloth at 40 cents a yard that would please her better and one at 35 that is not so pretty but just as durable, and is very apt to take the cheaper one because she feels that she must. She does not fall into the error of getting more cloth than is needed and using part of the excess for lining and throwing the rest away, nor, if she is wise, does she try to economize by getting poor trimmings and cheap thread. But when she goes to the grocer or to the butcher or to the fish-market for food to build up her children's bodies and give her husband and herself strength to work, she often pays one or two dollars a pound for protein to make muscle when she might obtain it in forms equally wholesome and nutritious for from 15 to 50 cents. The food she buys is apt to supply some of the nutrients in excessive amount as well as at needlessly high cost, while it furnishes others in insufficient quantity or in unfitting forms and in uneconomical ways; and only too often a part of it finds its way into the drain or the garbage barrel instead of being utilized for nourishment.

Of course the good wife and mother does not understand about protein and potential energy and the connection between the nutritive value of food and the price she pays for it, and doubtless she never will. But if the knowledge is obtained and put in print, and diffused among those who have the time and training to get hold of it, the main facts will gradually work their way to the masses, who most need its benefit.

A subject that has received but little attention in this country, though it is one of the

many special problems that are being carefully considered by students of social economy in Europe, is the relation of the nutritive value of food to its cost. We purchase our food by gross weight or measure. Part of it consists of nutritive substances, the rest is made up of water and various materials which serve only as ballast. In comparing different food-materials with respect to their cheapness or dearness we are apt to judge them by the prices per pound, quart, or bushel, without much regard to the amounts or kinds of actual nutrients which they contain. Of the different food-materials which the market affords and which are palatable, nutritious, and otherwise fit for nourishment, what ones are pecuniarily the most economical?

In a series of studies, undertaken at the instance of the Smithsonian Institution, I have had occasion to examine into some of these problems. A few of the results of the inquiry are summarized in Diagrams VI. and VII.

There are various ways of comparing food-materials with respect to the relative cheapness or dearness of their nutritive ingredients. The best, perhaps, consists in simply comparing the quantities of nutrients obtained for a given sum, 25 cents for instance, in the food when purchased at market prices. Diagram VI. gives a series of such comparisons. They are based upon the analyses of materials, obtained mostly in markets in New York City and in Middletown, Conn., and upon the retail prices paid for them. Along with the quantities of nutrients which 25 cents will buy are shown the quantities estimated to be appropriate for a day's diet for an ordinary man doing a moderate amount of muscular labor. Two such standards are given,—one proposed by Professor Voit in Germany, and based mainly upon experiments and observations in that country; the other proposed by myself. The diagram shows the quantities of different food-materials which one would get for a quarter of a dollar; the quantities of protein and fats and carbohydrates contained in them; and how these amounts of nutrients compare with what an average man, engaged in moderately hard muscular work, might be expected to need to maintain his body in vigorous condition and supply strength for the work he has to do. Another way of comparing the nutritive value of the food-materials with the cost is by the quantities of potential energy they contain. Diagram VII. shows the estimated quantities of energy in the nutritive ingredients of the materials in Diagram VI.,—that is, the amount which 25 cents would pay for. Still another method of comparing the actual expensiveness of different foods at the prices at which people buy them consists in comparing the cost of

the same nutrient in different food-materials. Of the different nutrients, protein is physiologically the most important, as it is pecuniarily the most expensive. For these reasons the cost of protein in different food-materials may be used as a means of comparing their relative cheapness or dearness, as is done in Diagram VII. The figures represent the ordinary prices per pound and the corresponding costs of protein, due allowance being made for the carbohydrates and fats, the estimated costs of which are, for the sake of brevity, omitted from the table.*

EXPENSIVE VS. ECONOMICAL FOODS.

TAKING the diagrams and tabular statements together, the first thing that strikes one is the cheapness of the vegetable as compared with the animal foods. Note, for instance, Diagram VI. and the accompanying figures, which show how much actually nutritive material one may have for 25 cents in different foods at ordinary prices. The quarter of a dollar invested in flour, meal, or potatoes brings several times the quantity of nutrients that it does if spent for meats, fish, or milk. But it is to be remembered that the animal foods contain more of the protein and fats, which are the most valuable food constituents, while the excess of material obtained in the vegetable foods consists mainly or entirely of sugar, starch, and other carbohydrates, which, though very important for nourishment, are far less valuable, weight for weight, than the protein and fats. Furthermore, the protein of the animal foods is more easily and completely digestible than that of the vegetable foods.

The greater expensiveness of animal foods is brought out with even greater clearness in Diagram VII. and in the accompanying figures. The quantities of potential energy in the nutritive material obtained for 25 cents range, in

the animal foods, from 160 calories, in the salmon at a dollar a pound, to 6800, in salt pork at 13 cents a pound; while in the vegetable foods in the tables the range is from about 500, in rice at 8 cents a pound, to 1200, in corn meal at 2 cents a pound. The standards for the diet of an ordinary workingman call for from 3000 to 3600 calories in one day's food.

Estimating the expensiveness by the cost of the protein, we find this to range from 8 to 34 cents a pound in the vegetable and from 18 cents to a little over one dollar in ordinary animal foods,—meats, fish, milk, eggs, etc.,—while in some it is much higher, thus showing the greater expensiveness of animal foods in another way. The reason for this higher cost is, of course, simple enough. Animal foods are made from vegetable, and by a more or less expensive process. The manufacture of beef or milk from grass and grain involves considerable outlay for labor and incidental expenses, and the product is, of course, much less in quantity than the raw material.

If the reader is interested in such statistics he will find considerable food for reflection in the diagrams and figures. He will observe that among animal foods those which rank as delicacies are the costliest. If he uses the protein of oysters to make blood, muscle, and brain, it will cost him from two to three dollars a pound. In salmon, if he is enough of a gourmand to buy it at the beginning of the season at one dollar a pound, he will pay at the rate of five dollars a pound for his protein. In beef, mutton, and pork the cost of the protein ranges from a little over a dollar to about 40 cents a pound. (Salt pork, in which its cost is estimated at 25 cents, contains extremely little protein.) In such fish as shad, blue-fish, and halibut (which are not mentioned in the diagrams), when they are cheap, say from 8 to 12 cents a pound, the protein costs about the same as in

* As explained in previous articles, the actually nutritive ingredients of food may be divided into four classes: Protein, Fats, Carbohydrates, and Mineral matters. Leaving water out of account, lean meat, white of eggs, casein (curd) of milk, and gluten of wheat consist mainly of protein compounds. Butter and lard are mostly fats. Sugar and starch are carbohydrates. The nutrients of meat, fish, and other animal foods consist mainly of protein and fats; those of the vegetable foods are largely carbohydrates.

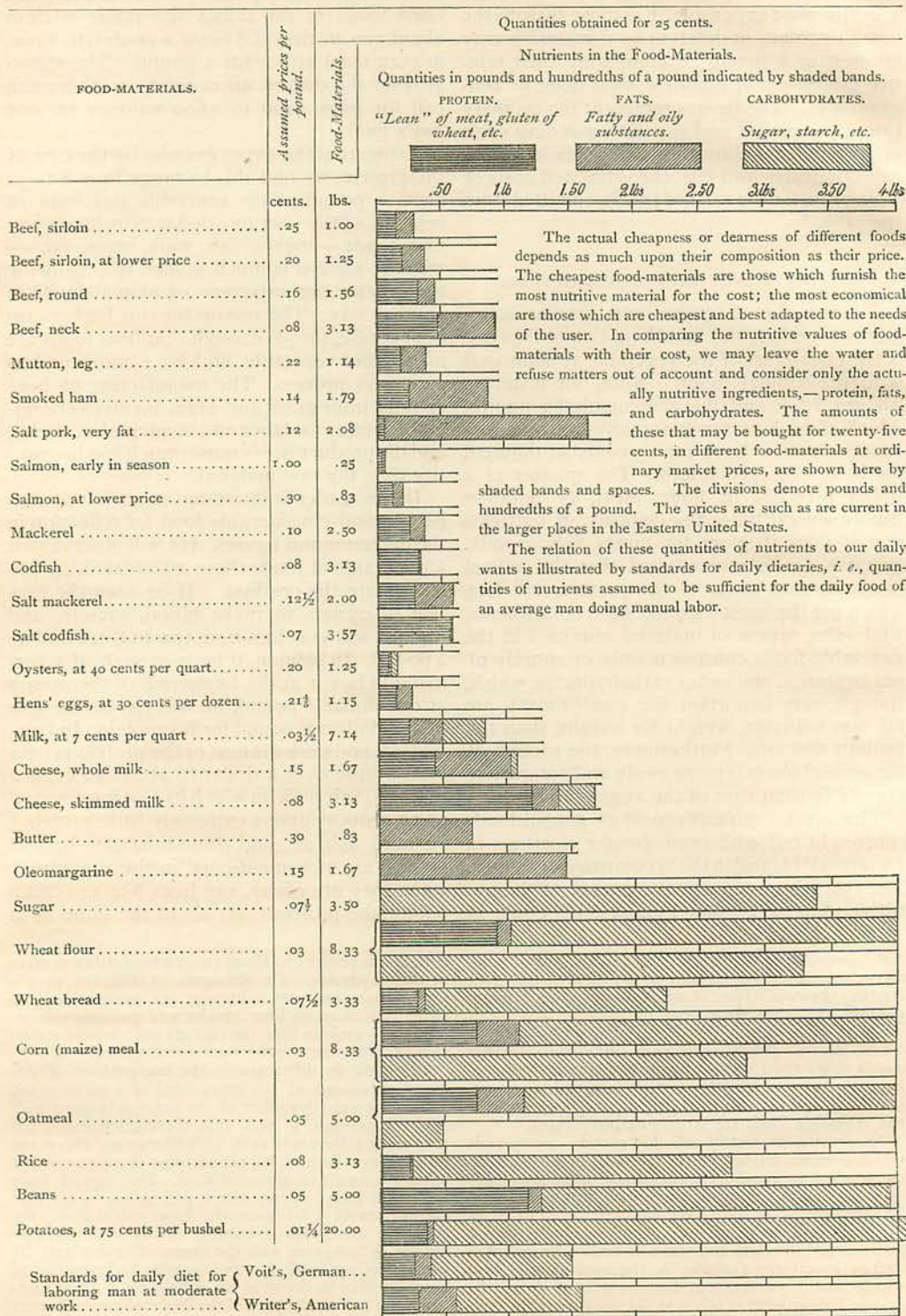
In serving as nutriment, the protein compounds which contain nitrogen form the basis of blood, muscle, tendon, etc., and are transformed into fat, and also serve as fuel to supply the body with heat and muscular strength. The fats of the food are stored as fat in the body and serve as fuel. The carbohydrates are transformed into fats and serve as fuel. The potential energy in calories (calorie is the equivalent of heat which would warm about four pounds of water one degree Fahrenheit) is taken as the measure of the fuel-value of the food. One part by weight of fat is equiva-

lent, in this respect, to about two parts of either protein or carbohydrates. The demands of different people for nourishment vary with age, sex, occupation, and other conditions of life. Health and pecuniary economy alike require that the diet should contain nutrients proportionate to the wants of the user.

Of course the difference in the composition of different specimens of the same kind of food-material, and in the nutritive effect of the same substance with different persons, is such that these calculations are not correct for every case. Furthermore, there are other things besides the proportions of nutrients that affect the nutritive action of food. This topic I hope to discuss later. Meanwhile it will suffice to say that for the staple food-materials these calculations are probably close approximations to the real nutritive values as compared with the costs. The methods by which they are made are too complex to be explained here, but may be found in an article on "Food Consumption" in the Report of the Massachusetts Bureau of Statistics of Labor for 1886, p. 251.

440 DIAGRAM VI.—COMPARATIVE EXPENSIVENESS OF FOODS.

AMOUNTS OF ACTUAL NUTRIENTS (NUTRITIVE INGREDIENTS) OBTAINED FOR TWENTY-FIVE CENTS IN DIFFERENT FOOD-MATERIALS AT ORDINARY PRICES, WITH AMOUNTS APPROPRIATE FOR A DAY'S RATION.

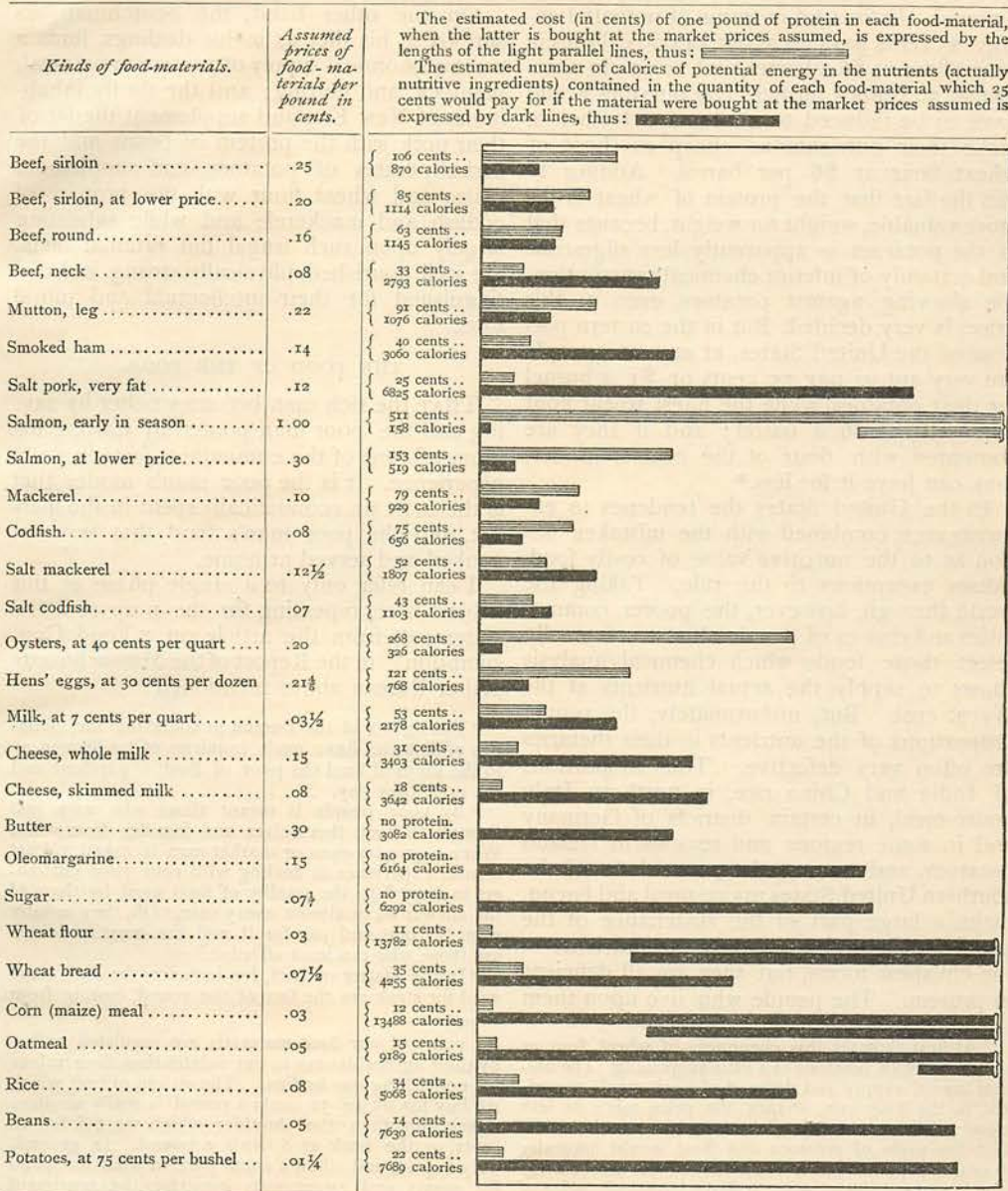


The actual cheapness or dearness of different foods depends as much upon their composition as their price. The cheapest food-materials are those which furnish the most nutritive material for the cost; the most economical are those which are cheapest and best adapted to the needs of the user. In comparing the nutritive values of food-materials with their cost, we may leave the water and refuse matters out of account and consider only the actually nutritive ingredients,—protein, fats, and carbohydrates. The amounts of these that may be bought for twenty-five cents, in different food-materials at ordinary market prices, are shown here by shaded bands and spaces. The divisions denote pounds and hundredths of a pound. The prices are such as are current in the larger places in the Eastern United States.

The relation of these quantities of nutrients to our daily wants is illustrated by standards for daily dietaries, *i. e.*, quantities of nutrients assumed to be sufficient for the daily food of an average man doing manual labor.

DIAGRAM VII.—COMPARATIVE EXPENSIVENESS OF FOODS. 441

COSTS OF A POUND OF PROTEIN AND AMOUNTS OF POTENTIAL ENERGY OBTAINED FOR TWENTY-FIVE CENTS IN DIFFERENT FOOD-MATERIALS AT CURRENT MARKET PRICES.



beef and mutton; but when the price is from 15 to 25 cents, the cost of the protein is from one to two dollars a pound. In cod and mackerel, fresh and salted, the protein varies from 30 to 80 cents a pound. Salt cod and salt mackerel are generally, fresh cod and fresh mackerel often, and even the choice fish, as blue-fish and shad, when abundant, cheaper sources of protein than any but the cheapest kinds of meat. Among meats, pork is the cheapest; but salt pork or bacon has but very little protein and consists mostly of fat, which, though rich in

potential energy, and very useful for people who have hard work to do or are exposed to severe cold, is not so appropriate in warm weather or for those whose time is spent within doors and whose muscular labor is light. The comparative cheapness of cheese is well worth noting, and the great economy of oleomargarine as compared with butter deserves of more than a passing remark.

The comparison between wheat flour and potatoes is especially interesting. The protein in the wheat flour, at \$6 a barrel or 3

cents a pound comes to 11 cents, while in potatoes at 50 cents a bushel it costs 15 cents a pound. Estimated in terms of potential energy, 25 cents pays for about 14,000 calories in wheat flour at \$6 a barrel, and 12,000 in potatoes at 50 cents a bushel. The potatoes would have to be reduced to 40 cents a bushel to make their nutrients as cheap as those of wheat flour at \$6 per barrel. Adding to this the fact that the protein of wheat is the more valuable, weight for weight, because that in the potatoes is apparently less digestible and certainly of inferior chemical constitution, the showing against potatoes, even at this price, is very decided. But in the eastern portions of the United States, at any rate, people are very apt to pay 75 cents or \$1 a bushel for their potatoes, while the finest wheat flour now sells at \$6 a barrel; and if they are contented with flour of the coarser grades, they can have it for less.*

In the United States the tendency to extravagance, combined with the mistaken notion as to the nutritive value of costly food, causes exceptions to the rule. Taking the world through, however, the poorer communities and classes of people almost universally select those foods which chemical analysis shows to supply the actual nutrients at the lowest cost. But, unfortunately, the proper proportions of the nutrients in their dietaries are often very defective. Thus in portions of India and China rice, in northern Italy maize-meal, in certain districts of Germany and in some regions and seasons in Ireland potatoes, and among the poor whites of the southern United States maize-meal and bacon, make a large part of the sustenance of the people. These foods supply the nutrients in the cheapest forms, but they are all deficient in protein. The people who live upon them

are ill-nourished, and suffer physically, intellectually, and morally thereby.

On the other hand, the Scotchman, as shrewd in his diet as in his dealings, finds a most economical supply of protein in oatmeal, haddock, and herring; and the thrifty inhabitants of New England supplement the fat of their pork with the protein of beans and the carbohydrates of potatoes, and supplement maize and wheat flour with the protein of codfish and mackerel; and while subsisting largely upon such frugal but rational diets, are well nourished, physically strong, and distinguished for their intellectual and moral force.

THE FOOD OF THE POOR.

THAT the rich man becomes richer by saving and the poor man poorer by wasting his money is one of the commonest facts in daily experience. It is the poor man's money that is the most un-economically spent in the market, and the poor man's food that is worst cooked and served at home.

I can refer only to a single phase of this subject here, repeating for the purpose a few statements from the article on "Food Consumption" in the Report of the Massachusetts Labor Bureau above mentioned:

"The agents of the Bureau in collecting the statistics of dietaries have made inquiries of tradesmen as to the kinds of food the poor of Boston purchase and the price they pay. . . .

"By poor people is meant those who earn just enough to keep themselves and families from want. When a grocery-man or market-man is asked, 'What is your experience in dealing with your poor customers in regard to the quality of food used by them?' the answer is, in almost every case, 'Oh, they usually want the best and pay for it, and the most fastidious are those who can least afford it.'

"In the matter of beef, for instance, the cuts most used for steak are the face of the round, costing from

* At first thought this cheapness of wheat flour as compared with potatoes is a little surprising. The natural law of supply and demand of such staple materials, in the long run, shapes the price more or less closely to the actual value for use, and we should expect that the price of potatoes and flour would naturally gravitate to points which would make them more nearly equal in actual cheapness. At \$10 a barrel, the price of wheat flour a few years ago, its protein would cost not far from 13 cents a pound, which would correspond to potatoes at about 60 cents a bushel. If the price of flour should remain where it now is, we may perhaps expect that of potatoes to come down gradually to a point where the actual expensiveness of the two will be more nearly the same. Of course this is a matter outside of chemistry, but the little study I have given it leaves me with the decided impression that the prices of such staple food-materials tend to adjust themselves to the nutritive values.

This statement is apparently in direct contradiction with a fact which these computations bring out most forcibly, to wit, the wide difference between the prices of foods and their values. But these differences have, really, a very simple explanation. The prices we pay

for many of our food-materials are regulated rather by their agreeableness to our palates than their values for nourishing our bodies. The sirloin of beef which we buy for 25 or 30 cents a pound is really no more nourishing than the shoulder which we get for 10 cents, or the neck at 8 cents a pound. In general, only a part, and often a small part, of what we spend for meats and sweetmeats goes for the nutriment they contain. The rest is the price of flavor, tenderness, and other things that make them toothsome. Nor does the disparity between animal and vegetable foods conflict with the principle I have ventured to lay down. Meats, fish, and the like gratify the palate in ways which most vegetable foods do not, and, what is perhaps of still greater weight in regulating the actual usage of communities by whose demand the prices are regulated, they satisfy a real need by supplying protein and fats, which vegetable foods lack. People who can afford it, the world over, will have animal foods and will compete with one another in the prices they give for them. These facts put the choicer animal foods outside the action of the law, if it be a law, that price and nutritive value tend to run parallel.

eighteen to twenty cents per pound; the tip of the sirloin, at from twenty to twenty-five cents; and rib-roast, at from eighteen to twenty cents. They do not use the flank-piece for steak and would feel insulted if it were offered them. The flour they use is the best. For butter they pay from twenty-eight to thirty cents per pound at present prices. All their other groceries are such as are sold to first-class customers."

I took occasion to make some inquiries myself among the Boston market-men, and one very intelligent butcher, in Boylston Market, said:

"Across the street over there is an establishment which employs a good many seamstresses. One of them comes to my place to buy meat, and very frequently gets tenderloin steak. I asked her one time why she did not take round or sirloin, which is a great deal cheaper, and she replied, very indignantly, 'Do you suppose because I don't come here in my carriage I don't want just as good meat as rich folks have?' And when I tried to explain to her that the cheaper meat was just as nutritious, she would not believe me. Now Mr. — and Mrs. —, who are among the wealthy and sensible people of this city, buy the cheaper cuts of meat of me. Mr. — very often comes and gets a soup bone, but I have got through trying to sell these economical meats to that woman and others of her class."

I am told that the people in the poorer parts of New York City buy the highest priced groceries, and that the meat-men say they can sell the coarser cuts of meat to the rich, but that people of moderate means refuse them. I hear the same thing from Washington and other cities. A friend of mine, a man of wealth, who, like his father before him, had long been noted as one of the most generous benefactors of the poor in the city where he lives, and with whom I happened to be talking about these matters, remarked, "For my family I get the cheaper cuts of meat because they are cheaper. My children are satisfied with round steak and shoulder, even if they are not quite as tender and toothsome as sirloin. They are strong and healthy, and understand that such food is good enough for their parents and is good enough for them." I question whether his gardener or his coachman would be so entirely ready to accept such doctrine; and if the poor people to whom in times of stress his money is given without stint are like many others of their class, not a few of them would be ill content with some of the food-materials that appear regularly on his table.

WASTE OF FOOD.

BUT our popular food-economy is at fault in other ways as well as in the purchasing of needlessly expensive kinds of food. Results

of examinations of dietaries, to be given in a subsequent article, will show that, unless the inferences from a very large amount of experimenting are entirely at fault, many people buy a great deal more food than they need. The excess is generally of the most expensive kinds of foods, meats, and sweetmeats. In a number of dietaries that have come to my notice, including those of sensible people who really desired to economize, if half the meat, dairy products, and sugar had been left out, and the rest of the food economically used, it would have supplied considerably more nutriment than accepted standards call for. We buy needless quantities of these things because they taste good, and we have got in the way of thinking we must have them. Part of the excess is eaten, to the great detriment of the health, and the rest simply thrown away.

In the course of some studies in physiological chemistry, Mr. C. S. Videon, a student in this laboratory (Wesleyan University), took occasion to examine the dietary of a students' boarding-club, for which purpose accurate determinations of the quantities of meat consumed were necessary. In a piece of roast beef weighing 16 pounds, the "trimmings," which consisted of the bone and the meat cut out with it, and which were left for the butcher to sell to the soap-man or get rid of as he might otherwise choose, weighed $4\frac{1}{2}$ pounds, so that $11\frac{1}{2}$ pounds of meat went to the customer, who, of course, paid for the whole. The butcher said that he sold this sort of beef largely to the ordinary people of the city,—mechanics, small tradesmen, and laborers; that many of his customers preferred not to take the "trimmings"; and that they were not exceptionally great in this case, either in amount or in proportion of meat and bone, for that "cut" of beef, which was the "rib-roast." Inquiries of other meat-men brought similar information. The $4\frac{1}{2}$ pounds of "trimmings" consisted of (approximately) $2\frac{1}{4}$ pounds of bone and $\frac{1}{2}$ pound of tendon ("gristle"), which would make a most palatable and nutritious soup, and $1\frac{3}{4}$ pounds of meat, of which 1 pound was lean and $\frac{3}{4}$ pounds fat. Mr. Videon estimates that the nutritive materials of meat thus left unused, saying nothing of the bone and tendon, contained some 15 per cent. of the protein and 10 per cent. of the potential energy of the whole. The price of the beef was \$2.24. Assuming the nutritive value of the ingredients of the "trimmings" to be $12\frac{1}{2}$ per cent. of the whole, 28 cents' worth of the nutriment, besides the bone and tendon, was left at the butcher's.

Dr. S. A. Lattimore, Professor of Chemistry in the University of Rochester, New York, tells me that, while a member of the Board of

Health of that city, he directed the officer in charge of the collection of garbage to note the character of the waste material gathered. It was ascertained that from the streets inhabited by the well-to-do classes, where the culinary affairs were largely left to the servants, the amount of waste thus collected was enormous, and that a considerable proportion of the food purchased was literally thrown away by careless servants. A surprisingly large amount of this waste consisted of good bread. Among the people in moderate circumstances this waste of food was less.

Still, people of moderate means do not save as they might. A gentleman from Pennsylvania, who has for years been in the way of employing hundreds of mechanics and other laborers, tells me that in passing the houses where his employees live he is constantly pained to notice the evidences of waste of food which would not occur in his own household.

Is not the American, of all civilized men, the most wasteful, and is not his worst wastefulness in his food — and drink?

SHALL WE ECONOMIZE?

THIS brings us back to the theme with which we began, — the American indifference or aversion to food-economizing. I have never observed any special development of this notion on the Continent of Europe, but have heard a good deal about it in England, where it is said, for instance, that the "workingmen with small wages buy the most expensive beef." I judge the disorder to be essentially Anglo-Saxon, quite prevalent in England, and epidemic in the United States. Perhaps it is only part of the more general tendency, inherent in human nature, but dependent upon the opportunity which material prosperity brings for its development. It certainly could not prevail under the straitened conditions of living which exist in most countries of Europe; and the comparative opulence which prevails with us, unrestrained by either habits of saving or understanding of the facts, would naturally tend to its wide development. Possibly part of its explanation lies deeper, and is to be sought in the impression which the older philosophy and theology inculcated in men's thinking, and which is not yet entirely gone. The philosophy which dealt chiefly with abstractions, and the theology which regarded the body as only a burden of earthly clay and concerned itself merely for the soul, both considered the material details of life beneath their notice. I believe it was Hegel who, expressing his dissent from the practical ideas current in England in his time, said, "Socrates brought

philosophy from the clouds, but the Englishmen have dragged her into the kitchen." And it is not long since a man in one of our highest educational positions assured me that such studies as those of food and nutrition which have been described in these articles were not in consonance with the intellectual dignity of a university. Is not our impression that attention to the little economies of life is beneath us the natural outgrowth of this same idea, — a weed which the conditions elsewhere have kept down but which here has grown rank?

But whatever may be the genesis of this notion, I am persuaded that, in the form in which we have to deal with it, it represents only a phase of a far more complex problem, the importance of which is coming to be felt in our time as never before, and which the many-sided effort to improve the material condition of the masses is really an effort to work out. We are learning that the best way to help men is to help them to help themselves, and that to help themselves they must be freed from ignorance and prejudice and must understand the principles that underlie the right practice of the arts of life. We are learning that for intellectual and moral elevation improvement of physical condition is necessary; that to improve mind and heart we must look out for the body also; that before people can attain to highest intelligence and righteousness they must be properly clothed and housed and fed. We are learning too that not merely increase of income but husbanding of resources are conditions of better welfare; that people need to save as well as to earn; that wastefulness is the cause of poverty and economy the way to comfort.

While the thoughtful man sees these things and feels their force, the average man does not. In the older countries, with exhausted fertility of soil and overcrowded population, the alternative of partial starvation has made close economizing a necessity. But with us, whom the abundant product of the virgin soil, far in excess of the demand of a still sparse population, and the superadded advantages of wonderful material progress, have placed in comparative affluence, the circumstances of our coal-heaver's family were positively luxurious in comparison with those of the bulk of the population of Europe. With us false pride and wastefulness have far too largely usurped the place of care and saving.

As a people we have not learned the art of getting the most out of what we have. With our larger incomes and better opportunities we often enjoy far less of comfort and contentment than our foreign brethren, who with their limited resources have learned how to husband and to make the best of the little that

falls to their lot. Those who have seen the inside of life in France and Germany know how true this is. I well remember how it impressed me in my first experience in Germany. Living in a private family, my breakfasts, which, though consisting only of the usual rolls and coffee, were nevertheless ample, were always brought to my room. With the coffee there came invariably a little jar of milk and some lumps of sugar. During the whole six months of my stay in that house, the number of lumps was never more nor less than five. An American lady living in another family in the same city was wont to aver her conviction that her landlady counted the grains of coffee for every potful she made. Every scrap of food was utilized. Like economies were manifested everywhere; indeed, they were a part of common education, not only at home but in school, where, for instance, the girls were taught to sew and mend as they were to read and write. And when I went about with the people and saw how they lived; how contentedly and pleasantly they took the affairs of life; how much they made of simple and inexpensive pleasures; how little they were beset with false pride of show and the petty ambition to go ahead of their neighbors, which are such corrosive influences in American and English society; how much of human kindness and home joy and social satisfaction they had with incomes and prices which would make life for average Americans of similar station a torturing struggle with want—I could not avoid the conviction that in their ways was a lesson which it would be a blessing for us to learn.

We waste at the store, at the market, and in the house enough to make us wealthy if we would only save. The fathers and the mothers do not understand the little arts of economizing, and the sons and the daughters do not learn them. We think it incompatible with our dignity as free-born and well-to-do Americans to devote our attention to them.

This is especially true as regards our food. The common saying that "the average American family wastes as much food as a French family would live upon" is a great exaggeration, but I hope to cite statistics in a succeeding article to show that there is a deal of truth in it. We endeavor to make our diet suit our palates by paying high prices in the market rather than by skillful cooking and tasteful serving at home. We buy much more than we need, use part of the excess to the detriment of our health, and throw the rest away. And, what makes the matter worse, it is generally those who most need to save that are the most wasteful.

Things cannot always go on thus. International competition is becoming sharper, our

population denser, and the virgin fertility of our soil gradually exhausted. We must reform or retrograde. Unless we mend our ways the future will bring loss instead of gain in material prosperity, and fearful falling away rather than improvement in our morals.

The remedy for the evil, so far as it applies to the chief item of our living expenses, our food, must be sought in two things,—popular understanding of the elementary facts regarding food and nutrition, and the acceptance of the doctrine that economy is respectable. Here, I believe, is an opportunity for a two-fold propagandism of incalculable usefulness.

A very large body of people in this country say practically, though not in words, for such principles are not formulated by those who follow them: "To economize closely is beneath us. We do not want to live cheaply; we want to live well."

The true Anti-poverty Society is the Society of "Toil, Thrift, and Temperance." One of the articles of its constitution demands that the principles of intelligent economy shall be learned by patient study and followed in daily life.

Of the many worthy ways in which the charity that we call Christian is being exercised none seems to me more worthy of that appellation than the movement in industrial education, of which teaching the daughters of working-people how to do housework and how to select food and cook it forms a part.

If Christianity is to defend society against socialism must it not make such homely, non-theological teachings as these part of its gospel? If the old dispensation with its somber doctrine makes the earning of man's bread in the sweat of his face part of the primeval curse, does not the newer dispensation of religion and science make the gaining of support by earnest toil, and the economizing of resources by careful study, a substantial joy of life?

It is a happy phase of modern intellectual progress that much of its best work is being done along these lines of material usefulness. The place of the scholar, as of the saint, was once that of the recluse; now they are both busy among their fellow-men and doing their best to help them. The reason why so many of the Hegels of to-day are devoting themselves to the study of the practical problems of ordinary life is not simply nor chiefly for the material recompense it brings, but because they find in it the keenest intellectual stimulus, the opportunity for the profoundest thought, and the deep satisfaction that comes from rendering to their day and generation the best service of which their endowments make them capable. At the fountain-heads of knowledge, the great universities, speculative philosophy

and technology, Sanscrit and sanitation, are studied side by side with equal intellect and ardor. At the University of Cambridge, England, where not only the laboratories but the machine-shop have become parts of the paraphernalia of instruction, Professor Stuart, who works with his students at the forge, told me that his associates in the management of the university affairs showed most cordial sympathy in his department. The French Academy is felt to honor itself in electing Pasteur to its membership. Such a philosopher as Lotze makes the study of the practical details of life a part of his *Microcosmus*.

Nor is this materialism at all. It is the corollary, or rather the concomitant, of the metaphysics and theology which make matter and energy one, and that a manifestation of Deity. It is the nineteenth-century application of the ancient motto, "*Humani nihil alienum.*" It is the following of the precept and the example of the great Teacher, who made his doctrine

dear to men by his deeds of love, and a part of whose work on earth was to feed the hungry and to heal the sick.

It is important that people be taught about their food, but the first requisite is the information to give them. The subject is, however, new. In its investigation we stand upon the borders of a continent of which but a small part has yet been explored. In the great European universities investigation is active. In our own country extremely little is being done, and that little is dependent almost entirely upon private munificence for its support. The opportunity for useful research is a rare one, and the demand for it great and increasing. If the cost of a yacht were invested in appliances for research in this direction, and the annual expense of maintaining it were devoted to carrying on such researches, they would bring fruit of untold value to the world, and, to the donor, the richest reward that a lover of his fellow-men could have.

W. O. Atwater.

A LOVE SONG.

LOVE, the last late snows are failing,
 Failing;
 Hear'st thou? Spring is nigh;
 Love, the banished birds are sailing,
 Sailing,
 Back along the sky.

Love, O love! — my heart is calling,
 Calling;
 Haply, it may be,
 Thou may'st hear and answer me.
 Love, the purple shades are falling,
 Falling,
 On the greening lea.

Love, O love! — and shall I ever,
 Ever,
 In the days unknown,
 Rest upon thy heart, that never,
 Never,
 Rested on my own?

Love, my heart is ever saying,
 Saying,
 Softly, in a dream:
 "Hist! — she cometh by yon stream."
 Death! — 'Tis but my fancy playing,
 Playing,
 With the swift sun-beam.

Haply, when the May is turning,
 Turning,
 Earth from all her woes;
 Haply, when the blush is burning,
 Burning,
 On the summer rose

Then, O love! if thou canst hear me,
 Hear me,
 When my spirit cries,
 Come, before the summer dies;
 Come but once, O love, to cheer me,
 Cheer me,
 Ere my spirit flies.

Love, my love; or dead or waking,
 Waking,
 Here, or on that shore,
 Where the unknown seas are breaking,
 Breaking,
 Now and evermore;

Here, or there; — alas! — God knoweth,
 Knoweth:
 He alone, not I.
 Love, the days are passing by;
 Fast, oh, fast, the river floweth,
 Floweth! —
 Love me, ere I die.

Robert Burns Wilson.