COST AND UTILITY.

In a recent review of "The Theory of Dynamic Economics,"* Professor Clark has called attention to what seemed to him the peculiar use made of the terms cost and utility. If the reader has in mind merely the recent development of economic theory I admit that he will probably find that his conception of cost and utility differs from mine. When, however, the whole economic literature is considered, the nomenclature I use has as much if not more authority on its side than has that to which the reader is now more accustomed.

I have no desire, however, to rest the case upon such evidence. Wherever words are used in different senses there is usually some good reason for the conflicting usage, and in this instance a glance over the history of economic theory will make clear the cause of confusion. Political economy has thus far been thought of and worked out in two distinct forms ; either as a theory of prosperity or as a theory of distribution and value. With the earlier writers, including Adam Smith and even Ricardo, the problem of national prosperity occupied a dominant place. They were more interested in the general welfare of the nation, in its gross and net revenue, and in the criteria of national progress, than in the shares which the different classes in society secured. Beginning with Senior the latter class of problems came to the front; laws were formulated which fixed the share of each class of producers, and the justice of this distribution was questioned and defended. Still later, the centre of discussion shifted from the problems of distribution to those of value. It was now recognized that the distribution of wealth was determined by changes in objective values,

* Patten's Dynamic Economics. ANNALS OF THE AMERICAN ACADEMY. July, 1892.

and hence a solution of the problems of value carried with it a solution of those of distribution.

I do not mean to assert that the distinction I have drawn between theories of prosperity and those of distribution and value was consciously made by the writers in question. This attitude would imply a more advanced state of discussion than was then possible. They often confuse two distinct concepts of economic science and pass without warning from one to the other; yet a careful reader can separate the two parts and will notice the gradual change of emphasis from the first to the second class of problems.

The use of the terms "cost" and "utility" depends upon the class of problems each writer has in mind. One use of "cost," and a corresponding use of "utility," is employed when a theory of prosperity is to be developed; but when the same or other writers begin to consider distribution and value, they naturally use these terms in a way more fitting to the treatment of these problems. It is the purpose of this paper to make the reader more conscious of the contrasts involved in the development of these radically different ways of viewing economic phenomena. Cost in a theory of prosperity means the disagreeable exertion needed to produce commodities. It is the toil and trouble which every one must undergo when he undertakes to get direct from nature the articles that will supply his wants. His labor may be mental or physical, but no increase of the supply of useful commodities can be drawn from nature without one or both of these kinds of labor. Progress is measured by comparing the labor needed in one age to produce given commodities with that required by some succeeding age. Given, therefore, the primitive condition of men as a basis, and the rate of progress in subsequent periods can be determined by a comparison of costs and utilities. A theory of prosperity assumes not only that pleasures and pains are commensurate, but also that a comparison can be made between the pleasures and pains of individuals living during different periods.

It has been, however, an assumption of all theories of value that value equals the cost of production or depends upon it. It naturally follows from this assumption that any phenomenon which can alter values must be regarded as a cost. In a primitive society, where small use is made of capital, the elements of value correspond so nearly to the pains of production that the definition of cost is of little importance. Each advance in civilization has brought into prominence new elements determining values and changed the emphasis from the older to the newer elements. The history of the theory of value shows a series of efforts to discover the elements of value which were manifest in each age and to represent them as costs. Yet each writer has failed to find the ultimate standard of value, because in the following period new elements of value are discovered arising out of the new industrial conditions.

The confusion between the two uses of the word "cost" probably reached its height in the writings of J. S. Mill. He makes a frequent use of the word in both senses and passes directly from one to the other in a most surprising way. What can be more perplexing than to find these two sentences in juxtaposition: "What the production of a thing costs to its producer, or its series of producers, is the labor expended in producing it. If we consider as the producer the capitalist who makes the advances, the word 'labor' may be replaced by the word 'wages': what the produce costs to him is the wages which he has had to pay."

It is a useless task to show the weakness of Mill's reasoning, as this has already been done so admirably by Cairnes. The latter writer, although doing much to clear up the ambiguities of the word "cost," did not succeed in reducing the term to a simple meaning. A further analysis is needed to free the term from the confusion that has arisen out of past conditions. Cairnes states the issue clearly when he insists that "cost represents what man parts with in the barter between him and nature, which must be kept eternally distinct from the return made by nature to man." In this

statement we have presented the ultimate nature of cost and the contrast which must always be kept in mind between the pains involved in production and the reward which efficient production secures. The pains or costs must be placed on one side of the ledger and the rewards or utilities on the other. Whatever has its source in pain becomes a cost, and whatever depends upon or varies with the return which nature gives in production must not be confused with cost. Does Cairnes in his book-keeping put all the items in their proper place in the ledger?

I think he fails to do this, because in his discussion he extends the meaning of the term "cost" so as to make it include all the sacrifice involved in production. Sacrifice, he affirms, assumes two distinct forms: that involved in physical or mental exertion, and that involved in supplying capital to which the name abstinence is given. He also makes a place for the sacrifice of risk. But if a complete analysis is made of what the producer gives up in production, many other forms of sacrifice must be included.

The sacrifice of confinement, as Professor Clark has happily shown, is now a leading form of sacrifice. The sacrifice of opportunities to labor is involved in any act of production where the margin of production is high enough to leave unused opportunities to labor which will yield a surplus to the workman.* If a laborer can obtain a surplus by making shoes or hats, he must sacrifice one of these surpluses to get the other. The extensive movement of workmen from one country to another, and from country to city, creates another prominent form of sacrifice, which might be called the sacrifice of home.

Yet another sacrifice is that of changing the form of consumption. Almost every change in production requires a corresponding change in consumption. In going from the country to the city, the workman gives up pure air for better amusements, the emigrant must change his diet, and whoever acquires regular habits of industry gives up

* "Theory of Dynamic Economics," p. 60.

a large part of the free goods he might enjoy—hunting, fishing, etc.

Do these forms of sacrifice indicate an increase of cost or of prosperity? In answering this question, we determine whether they belong on the cost or on the utility side of the ledger. These sacrifices, I hold, are not true costs, but only indications of a surplus. The sacrifice of abstinence results from the increased productivity of capital. With capital we can produce with less cost, and hence the abstinence from its use is a sacrifice. The sacrifice of confinement does not involve an increase of pain, but merely a change or delay of the pleasure to which we are entitled, because of the increase of productive power. Each one feels the burden of this sacrifice in proportion to the efficiency of his production and the quantity of the surplus he has to enjoy. The sacrifice of home also becomes a reality by the decrease of the cost of production in some other locality below the cost at home. These forms of sacrifice are only felt when the surplus of society is increasing and its real costs decreasing. Sacrifices have the same effect on the expenses of production as costs, but they do not reduce the surplus of society. In the theory of value they belong on one side of the ledger, while in the theory of prosperity they belong on the other. Sacrifices are expense and not profit; yet, at the same time, they are surplus and not cost.*

Whether sacrifices are to be regarded as cost or surplus depends upon the standpoint of the observer. The value theorist views men in their primitive condition before the physical adjustment to industrial conditions has begun, and hence all sacrifices are costs. The prosperity theorist views society in an advanced state, adjusted to its new conditions, and to him sacrifice has ceased to be a cost and has become surplus. The value theorist naturally seeks a primitive society, because his premise that value equals cost

* Profit is the difference between the value of goods and the expenses of production. Surplus is the difference between the total utility of goods and the subjective cost of producing them. The latter, therefore, is much greater than the former.

leads him to make the costs as high as possible. The prosperity theorist as naturally seeks an advanced society, because there the evidence of social progress is most manifest. The one overlooks or underrates the psychical changes of social progress, while the other emphasizes them.

Each change in a dynamic society which involves sacrifice is followed by a psychical change in the race by which the act ceases to be disagreeable and becomes a pleasure. When we give up any accustomed pleasure to secure another which we deem on the whole to be better, the loss of the first pleasure is at first severe and cuts in heavily on the surplus of the new pleasure. In time, however, the new pleasure becomes the customary one, and then the loss of the old pleasure is not felt. A child would cry bitterly if it must give up an apple to-day, even if he were promised two to-morrow, but when he became a man, with the saving instinct well developed, he would view with great pleasure any exchange of one dollar to-day for two dollars to-morrow. The emigrant leaves his native village with sad feelings concerning the pleasures he is to lose, but when he returns after a few years, he pities his old neighbors and wonders how people can enjoy such crude pleasures.

To an individual unaccustomed to postponing pleasure, few acts are more trying to the will. He has no vision of future happiness, and no pain in not having his future wants provided for. The mind of a thrifty man pictures definitely the pleasures of the distant future, and feels a vivid present pain in not having future wants supplied. As soon as this psychical change takes place the man has a surplus of pleasure in supplying future wants instead of a surplus of pain. This surplus of pleasure will not be so large as in supplying present wants of the same kind and character, yet to such a man the act of giving up less urgent present wants for the more urgent future wants will not be painful as it is in the case of a primitive man. The reward he gets for the act is a return for superior intelligence, and hence, like profits, it is a part of his surplus. It is an element in

the expenses of production, but is not an increase of the true costs of society.

The mind as affected by hunger affords another instance of the difference between men in primitive and in advanced societies. To the primitive man hunger is an unqualified pain. It brings up in his mind only the memory of past suffering, long periods of famine and the loss, perhaps, of many of his best friends. To the civilized man, however, having his wants regularly supplied in a complex modern society, the same sensation creates in the mind, not a feeling of pain, but of pleasure. Instead of a picture of famine and disease, the mind now creates an image of the expected dinner and its many pleasures, to which a good appetite is essential. Hunger adds to the pleasure of the meal more than it takes from it. We pity the man who is not hungry and not him who is hungry. The primitive man would regard the state of not being hungry as ideal : we regard such a state as evidence of disease. Can we at the same time say, "Hunger is the best sauce," and also call it a pain? The sensation may continue disagreeable, but we enjoy the feelings it creates. In computing the surplus of a meal we should therefore reckon the anticipated feelings which hunger produces, and the resulting advantages, as a net gain rather than an uncompensated loss.

It may, however, be asked why the act of abstinence requires a reward for its regular exercise, if it yields a surplus of pleasure. The reason is that the reward would be less than other acts would afford if there were no difference in the value of present and future goods, and hence there would be no motive for the psychical change which the act of saving promotes. For example, in California, during the gold discoveries, why were so many farm products imported? It was not for lack of fertile lands near the mines, because this region has proved itself very productive. It was solely because of the relative return from the mines and farms. The laborer could get, say, three dollars a day on the farm and four dollars in the mines. The three dollars

would yield him a surplus above his costs, but not so much as the mines would yield. The farms were left idle therefore, not for a lack of a surplus, but because the surplus was less than other forms of labor would yield. So in the case of saving. The production of future goods would give the producer, with saving instincts well developed, a surplus even without a reward for the act, but this surplus would be less than the surplus the production of present goods would yield if there was no difference in the value of present and future goods. Interest is a factor in distribution, because the reward of labor is more than sufficient to repay the real cost of production, and not because the act of abstinence is necessarily painful. It is therefore not a cost, but a means of equalizing the distribution of the surplus between the producers of present and future goods.

Viewing interest in this way as the means of equalizing the distribution of the surplus, it might be inferred that the rate of interest would rise with the increase of surplus. The tendency of normal progress is, I think, in this direction, yet powerful social forces more than counterbalance this tendency. The rise of the margin of consumption increases the utility of each increment of present goods, and this strengthens the tendency to spend. A society of individuals with the same subjective qualities would feel the delay of consumption more keenly with each rise in the marginal utility of the articles they consume. Society, therefore, would be compelled to offer a higher rate of interest to offset the greater urgency of present wants.

In our present society this rise is prevented by the unequal distribution of wealth resulting from the unequal development of the saving instinct. Where large sums of capital are accumulated by single individuals, their marginal wants are so well supplied that a low rate of interest creates sufficient inducement for them to delay further present consumption. The average individual saves less, relatively at least, and enjoys the higher marginal utility of present goods which comes with social progress. The normal development

of the race is checked and interest falls when it would otherwise tend to rise.

Whether interest is a real cost or not, that is, whether the act by itself affords more pain than pleasure, is a problem that must be kept distinct from that of the cost of capital. In any progressive society there is a constant demand for new accumulations of capital to supply the needs of an increasing production. In addition, therefore, to supplying present wants, a portion of the time of the laborer must be used in producing new capital. The increased length of the working day makes the marginal increment of production more painful than normal conditions would otherwise demand. In this way the cost to society of the new capital is considerably increased, and if the growth of capital were rapid the rate of interest would be raised. Professor Giddings has brought out this point so admirably that it does not demand a full demonstration here, yet the discussion would not be complete if it were omitted.*

It is this cost of producing new capital that gives much of the basis to the claim that abstinence is a cost to society. If producers who have no capital should cease to borrow and try to produce it themselves, a lengthening of their working day would result, with an accompanying higher marginal cost. They have a real cost to face when they attempt to forego the use of borrowed capital, which they are not willing to undergo so long as the rate of interest is low enough to make borrowing the easier way out of present difficulties. The man who borrows does so to avoid a real cost, but this does not show that the act of abstinence is painful to members of an advanced society having the saving instinct well developed. Society must measure its surplus from the method in which production is actually carried on under normal conditions, and not from a method that would be temporarily substituted for it if we were deprived of the accumulated results of past industry.

*Giddings. "The Cost of Production of Capital." *Quarterly Journal of Economics*, July, 1889.

The borrowers by themselves would be in a position similar to a nation after a devastating war. Production would be carried on by the aid of extra hours of labor, having a higher marginal cost, instead of with capital, involving only a change or delay of consumption. The increase of cost in this case is real, and this higher cost of production must continue until the acts of abstinence again displace those extra hours of labor which the lack of capital demanded. Costs are reduced when an act of the will, made habitual through exercise, can be substituted for mental or physical labor.

By thus viewing social progress from a psychological standpoint, the differences between cost and sacrifice become clear. Changes in race psychology—by which I mean the subjective qualities, desires and feelings created in men by society—as well as improvements in the mechanism of production, reduce the cost of production. Low costs increase the *amount* of sacrifice involved in production, but decrease its *intensity*. The amount of sacrifice is determined by the character of the environment. The better the opportunities for labor at the margin of production the more choice in production does the producer have. The free gifts of nature and other goods which have their utility reduced by prolonging production are more abundant. The producer gives up more under these conditions when he engages in any particular act of production, and hence, his sacrifices are greater than if his environment were less favorable. Low costs, therefore, mean many sacrifices, and to employers of labor the growth of the one element counteracts the reduction of the other. The intensity of this sacrifice, however, is reduced through social progress. The changes in race psychology which we have described alter the attitude of producers towards the acts of sacrifice involved in production. New feelings arise which gradually reduce the disagreeable effects of sacrifice, and at length create a surplus of pleasure in acts where the primitive man would find only acute pains.

Turning from a discussion of cost to that of utility, we also find a difference between the meaning of the latter term as used in a theory of prosperity and in a theory of value. The older writers, who regarded political economy as a theory of prosperity, took it for granted that the pleasures and pains of the different members of a society were commensurate. Bentham has given us a complete system worked out on this hypothesis. Each individual has a sum of pleasures and pains, and when these sums of individual pleasures are added and the pains subtracted, we can decide upon the welfare of society. No one can accept the maxim, "the greatest good to the greatest number," without assuming that the prosperity of a society can be determined by such a calculation, and giving to the word "utility" a meaning that will allow such a calculation to be made. Bentham did not use the term "positive utility," as I have done, because he knew of no other use of the term. Had he lived after Jevons and Menger have given a meaning to the word needed for their theory of value, he would have been forced to distinguish his use of the word from theirs, or to give up the method of calculating utilities which lies at the basis of his system.

Jevons claims to use Bentham's theory of utility as the basis of his theory, and yet he changes the meaning of the terms so radically that the two theories are quite distinct. When Bentham uses the term "utility," he means the gross utility of an object, that is, the whole pleasure derived from an object without any reduction. Fruit, for example, will yield a given pleasure in consumption, but this pleasure is often followed by certain pains, colic, etc. Bentham in estimating the utility of this fruit would call the total pleasure of consumption its utility. The pains of consumption would be classed with the pains of production as negative pleasure. They are both put on the same side of the ledger and contrasted with the gross utility of consumption. Jevons, however, when he uses the term "utility," means the net utility of any object, that is, the pleasure of consumption less the pains of consumption.

On the other hand, the term "cost," which Jevons substitutes for "pains" in his formula, includes more than Bentham's "pains," because Jevons includes in it the sacrifices of production as well as its pains. And these sacrifices are estimated by their gross amount, and not by the product of their amount by their intensity, as the theory of Bentham's demands. The ledger of Jevons, therefore, differs radically from that of Bentham; the use of the same terms is the only sign of similarity. Bentham also assumed that every pleasure is distinct, and that the pleasures and pains accompanying each act can be readily separated from the consequences of every other act. Recent economists, either consciously or unconsciously, deny this assumption. Goods, they have shown, are consumed in groups, and the utility of individual articles must be measured in the group of which they are a part. Utility is no longer defined in the positive manner of Bentham, but in a negative way. It is measured by the difference in the utility of the group with and without the article. When, however, utility is defined in this way, it is no longer possible to add together the utilities of single articles to determine the prosperity of an individual, and still less that of a society. Suppose articles A, B and C form a complement in consumption. The absence of any one article will not only cause a loss of the utility of that article, but also a part of that of the other two articles. If the utility of the group was thirty units, the absence of A might reduce the utility of the group by, say twelve units, the absence of B by thirteen units, and that of C by fifteen units. Reckoned in this way, the sum of the utility of the three would be forty units, or ten units more than they really possess. It is evident that the calculations of Bentham cannot be carried through, if utility is given a meaning of this kind.

Having in mind these facts, overlooked by Bentham, I have made the distinction between positive and absolute utilities. All articles would be estimated at their positive utility, if the formation of complements in consumption did

not add to the utility of an aggregate of goods. When, however, an article is a part of a complement of goods, the consumer can be forced to impute a utility to it that really belongs to other members of the group. Articles which have no utility in themselves acquire utility through their relation to articles having utility. Sugar, for example, has a high utility, but causes the teeth to decay. Toothache results and the dentist's forceps thus acquire utility. But this utility of the forceps is not a real addition to the welfare of the individual; it is merely a part of the utility of the sugar transferred to the forceps. In any complement of goods in which sugar holds a prominent place, forceps acquire an absolute utility from their relation to the sugar. A patched coat adds nothing to the happiness of the wearer; it prevents, however, the loss of the happiness derived from articles which can be enjoyed only when a coat is worn. Cabbage and onions, though disagreeable to the consumer, may drive away hunger, and thus enable him to enjoy any pleasures that his environment affords. They thus acquire a utility which must be subtracted from that of articles really giving pleasure in consumption.

To the value theorist this distinction between positive and absolute utility is of no consequence. He merely seeks to find what degree of importance the consumer attaches to a given article at a given time. The market value of an article is the same, whether its utility is original or acquired.

In the theory of prosperity, however, different periods of a nation's development are compared. During this period of progress, the formation of new and larger complements of goods causes many of the absolute utilities to be displaced by articles having positive utility. Hunger is stilled; but it is done by meat and bread instead of cabbage and onions; tooth-brushes reduce the need of dentist's forceps; and a new garment displaces the patched coat. In this way the gross and net utilities of the articles consumed would be brought more nearly together, and thus, without any change of objective values, a greater prosperity would be enjoyed at

the end of the period than at its beginning. The psychical development of the race would also reduce the intensity of the sacrifices involved in production, and thus increase the surplus of society without reducing the expenses of consumers. If economic nomenclature does not recognize the distinctions on which the changes depend, it is not possible to develop a theory of prosperity.

The two methods of measuring utility can be illustrated by comparing Professor Marshall's view of consumer's surplus with mine. He takes as the utility of the first increment of a good what a consumer would give if he possessed only one increment; the utility of the second increment is what the consumer would give for it if he had but two increments and so on. In this way he gets the consumer's surplus of each article. Nowhere does he try to add together the consumer's surplus of all the articles consumed by an individual to get the whole consumer's surplus as I have done. If he did he would see an error, for the parts will not add. Subjective utilities are units of one class and, when correctly estimated, must add so that the consumer can determine the surplus of his whole consumption.

Suppose I am in a desert with three loaves of bread. To the first I might attribute 200 units of pleasure, as it would keep me alive; to the second, say 50 units, as it would make me comfortable; to the third, say five units. If instead of bread I had three pounds of meat, I might attribute to the first pound 300 units of pleasure; to the second 75 units; and to the third, say 10 units. If, as a third hypothesis, I had both articles to the amount named, could I add the two surpluses (255–385) and say I had 640 units of pleasure? Certainly not. I cannot at the same time have the first pound of meat worth 300 units, and the first loaf worth 200 units. Either the first pound of meat or the first loaf of bread become an essential part of the group of goods needed to secure life. A large part of its value is created by its position in this group. When I estimate the first pound of meat as worth 300 units, and the first loaf of bread as worth 200

units, one important element—the absolute utility of living—is counted twice, and if all articles have their consumer's surplus estimated in this manner, there are innumerable duplications.

In my way of estimating utilities it is assumed that the consumer is in a normal state, surrounded by a variety of goods. Then to each increment is given the utility derived from it under these conditions. It is quite different to ask what a man would give for a single roll of bread in a desert, or for two rolls, etc., than it is to ask what pleasure will he get from the first roll at a meal when he eats four rolls, from the second roll, etc.? Estimating in the first way, he cannot add the separate utilities to find the total utility from a variety of articles; but in the second way he can. By positive utility I mean the pleasure derived from the different portions of an article or a group of articles when they are consumed together under normal conditions. The pleasure of mere living may depend upon these articles, but it should be estimated by itself so as not to confuse the calculation of economic utilities.

Professor Marshall's consumer's surplus would be much larger than mine, because he estimates the surplus not from a given situation of the consumer, but from a series of situations representing different stages of supply. It seems to me misleading to add together the surplus under a variety of abnormal situations and call the sum the consumer's surplus, because it implies that the given surplus is really obtained by the consumer. This is not true, as no consumer can be in all these situations at the same time, nor do any number of consumers find themselves in the variety of situations which would make the consumer's surplus from the whole commodity correspond to the supposition which Professor Marshall makes.

The high utility which articles acquire under abnormal conditions does not indicate an addition to consumer's surplus either of the individual or of society, but merely a transfer of utility from one article to another. Suppose a man in a

desert with a loaf of bread, some cloth, and other articles of merchandise. The abnormal position would greatly increase the utility of the bread, but the other articles would correspondingly fall in value. The consumer's surplus of the man would not be increased, because the effect of the rise in the utility of the one article would be counteracted by the fall of the others. There is merely a change in objective values and not an increase of subjective utilities. Usually the abnormally high utility of the first increments of one article or of a few articles accompanies a reduction in the consumer's surplus of the individual.

While Professor Marshall's method affords a good illustration of how utility is measured from the standpoint of a value theorist, Professor Clark's illustration is equally good for a similar measurement of cost. It is assumed in the illustration used by Professor Clark that the articles A, B and C can be made in nine hours' work, and that the article D can be made in the tenth hour with an effort less than the pleasure of its consumption.* This tenth hour of work, however, will reduce the leisure of the workman, and thus reduce the subjective utility of A, B and C. There is, then, a gain of utility in working the extra hour, and a loss of utility in consumption. How shall this gain and loss be represented? To make the problem definite, I shall use some tables representing the utility and cost of the various articles:

	I.		II.		III.	
	Utility.	Cost.	Utility.	Cost.	Utility.	Cost.
A . . .	8	1	8	1	8	1
B . . .	7	2	7	2	7	2
C . . .	6	3	6	3	6	3
D . . .	5	4	5	7	2	4

In the first table, let the utility and cost be represented as they would be if there was no loss in consumption resulting from the extra hour's work. We will also suppose that the utility derived from the consumption of the first three articles will be reduced three units if the work is extended

* ANNALS OF THE AMERICAN ACADEMY, July, 1892, p. 40.

through the tenth hour. Then, if I understand Professor Clark correctly, he would estimate the utility and cost of the articles as in the second table. The diminution of the utility of the first three articles is a cost, he says, and this cost added to the pain of producing D would make its total cost seven units, thus preventing its production. I would, however, estimate the utility and cost according to the third table. Under the conditions assumed, the joint utility of A, B and C, if D is not produced, is twenty-one units. If D is produced, the joint utility of the four articles is twenty-three units. The utility of D under these conditions is therefore but two units. If the workman works ten hours, the tenth hour adds two units to his stock of utilities and his cost is four units; therefore he will not work the extra hour.

A reduction of the utility of an article should never be represented as a cost. Its effect should always be represented by a lower utility of some other article whose consumption or production reduces the joint utility of the two. In the illustration given, the workman, if he works ten hours, has not twenty-six units of utility to enjoy and thirteen units of pain. The whole utility is but twenty-three units, and the whole pain ten units. Three imaginary units are added to each side of the account in order to save the theorem that costs and value are always equal at the margin of production. I also fail to see how Professor Clark's argument helps his position. It is agreed that under the conditions D will not be produced. C is therefore the marginal increment of production, and there will be a surplus of three units in its production, even if Professor Clark's position is correct.

There is, however, another reason for a surplus at the margin of production besides the fact that the time needed for consumption of what has been produced cuts into the time needed for production. In a highly efficient state of industry, the number of hours which a workman may work and yet have a surplus is so great that, if he works until the marginal cost equals marginal utility, his efficiency during

the following days will be reduced, and also his capacity for enjoyment. Suppose marginal cost equals marginal utility only at the end of the sixteenth hour of labor. Then the vitality of the workman will be so reduced after a few working days of this length, that he cannot accomplish as much as if he worked regularly fewer hours each day. The same cause will reduce the utility of the articles he consumes, and hence he would have more cost and less utility than if he worked fewer hours a day. Prudence would therefore dictate that the workman, under these conditions, should reduce the length of his working day, and thus have a surplus at the margin of production.

In the foregoing discussion of the terms "cost" and "utility" I hope to have shown that the different meanings of these terms have arisen out of two radically different ways of investigating economic phenomena. The meaning I give to these terms is in harmony with the meaning attached to them by every economist who views political economy primarily as a theory of prosperity. If my usage differs from that of most of the writers of the present day it is because the theory of value has of recent years absorbed the attention of economists to a degree that causes them to neglect the theory of prosperity. Any one desiring to revive the interest in the latter theory must use these terms with their earlier meanings, drawing some new distinctions needed to adapt the theory to our present knowledge of economic phenomena. That the two concepts should differ in many particulars is inevitable, but if all writers will be as considerate as Professor Clark, there is hope of progress in spite of differences in the use of terms.

It is necessary to recognize that the premises of the theory of value are more simple than those of the theory of prosperity, and that distinctions needed for the latter theory can be overlooked in the former. The value theorist merely seeks to determine the causes that fix the market values of to-day. It makes no difference to him whether utilities are positive or absolute; both will act in the same way on present market

values. Nor does he care whether the expenses of production result from real costs or from the sacrifice of one utility for another, since both will affect values in the same way. These changes, therefore, would not be of importance in the theory of value, having no effect on market values, and yet must be considered in measuring the increase of prosperity.

The vital differences between the two concepts lie in the relation of the marginal increments of production and of consumption. If there is a surplus in the last increment of a normal day's labor, the theory of distribution will be different from what it will be if there is no such surplus. In the latter case the whole distribution depends upon the cost of the marginal increment of production. The law of differential cost or rent will then determine the distribution of the surplus. But if there is a surplus at the margin of production, a part of the surplus is distributed, not by a law of cost, but by the law of monopoly. The most slowly increasing factors of production become monopolies and secure the greater part of the surplus. Producers who have the power of raising the objective value of their commodities do so at the expense of other producers and not of consumers.

I have called this part of the surplus not distributed by the law of cost, surplus value, but it might be called the monopoly fund. There would then be in the new theory of prosperity a monopoly-fund theory corresponding in importance to the wage-fund theory in the old theory of prosperity. The law of the monopoly fund might be stated as follows: *The fund which is distributed according to the law of monopoly increases with the growth in the variety of consumption and with the reduction of cost.* This law, however, would not necessarily mean that the great monopolies, of which we hear so much, grow with the increase of prosperity. There is a necessary connection between the increase of the monopoly fund and the improvement of the standard of life, since they both depend upon the increase in the variety of consumption and the consequent rise of

the margin of consumption. But producers adjust themselves to new conditions much more easily than do consumers, and, therefore, they will at first gain the advantage due to an increase of the monopoly fund. The steady rise of the standard of life should in time check the increase of population and make labor a more slowly increasing factor in production, thus securing for the laborers a greater share in the monopoly fund. They would secure this reward, however, not because of any cost they bear, but because of their slower rate of increase.

The practical results of the acceptance of this theory are apparent. According to the older theory, where costs determine distribution, the surplus is either consumer's surplus or rent. Theories of taxation try, therefore, to reach one or both these funds by taxes. Theories of progressive taxation seek to tax the consumer's surplus, while other theories, like the single tax theory, try to tax rent. But if the increasing differences in the marginal increments of production and of consumption due to social progress enlarge the monopoly fund at the expense of consumer's surplus and rent, both these latter funds (consumer's surplus and rent) are decreasing funds or, at least, lose their relative importance in an advanced society. Therefore, taxes should be placed so that they will fall upon the monopoly fund, thus becoming burdenless to society.

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