SCIENCE

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THE COST OF COAL[1]

THE price of coal is a matter of vital concern to the average citizen. No less important, however, is the question what our coal actually costs to produce and the interest in this subject is typical of the popular interest in the large productive enterprises of the country. As citizens we recognize the consumer's dependence upon the producer and are taking advanced ground as to their relative rights. In few industries does this dependence seem more vital or the consumer's equity appear larger than in that of producing and selling coal. The per capita annual expenditure for the useful metals is roughly equivalent to that for coal, but few citizens purchase pig iron or bar copper, whereas of the urban population only the dwellers in apartments, boarding-houses and hotels are spared the necessity of buying coal. The consumption of coal in the United States for heating and cooking is between 1 and 1½ tons per capita. A careful estimate for 1915 is 1.1 tons, which happens to be identical with the figure determined for similar consumption in Great Britain in 1898. This non-industrial consumption is greatest in cities and in this city of Chicago in 1912 it was nearly 2 tons. Of course every citizen indirectly pays for his share of the total consumption, which last year amounted to 4.6 tons per capita.

Again it may be that because to a larger degree the cost of metals is charged to capital outlay rather than to the operating expense of life, we appreciate less keenly the unit price of these materials that are

1 Read before the American Mining Congress, Chicago, November 14.

not immediately consumed with the using. At any rate, public opinion is more easily brought to a high temperature by considering the price of coal than by considering the price of any other product unless we except gasoline, recent discussion of which has been almost explosive.

Looking backward as well as forward, one need not be an alarmist to suggest that in the whole field of productive business the coal industry seems the one most likely to be threatened with government operation. The foodstuffs are produced on land owned and operated by the millions, and so far as the production of the raw material for them is concerned, "monopoly" is an unknown word, but when we think of coal, terms like "barons" and "trusts" instinctively come to mind. For these reasons the determination of certain facts connected with coal production and the analysis of the cost elements that enter into the price of coal constitute a timely subject for discussion.

In discussing costs, however, we do not overlook the too evident fact that at times price may far outstrip cost. The price of coal depends upon the balance between necessity for fuel, on the one hand, and ability to produce and to deliver, on the other; the ability to produce is in turn controlled by the labor available and the ability to deliver is dependent upon car supply. Increased foreign demand for American coal, large industrial consumption, unusual weather—all may have great influence on the current price of coal, but none of these is to be considered a factor in the actual cost of production except so far as it causes irregularity in operating expenses and promotes a decrease in efficiency of mine labor. To-day high prices are being received for coal by those who are able to produce and deliver more than their outstanding contracts require. In other words, a few traders may be able and willing to capitalize the urgent necessity of the consumer and their own ability to deliver. The premium for fuel now being paid generally by the consumers of the country and by such traders as have been caught short in their contracts is in reality not properly chargeable to cost of coal, but to cost of car and labor shortage, just as in the times of stress accompanying labor troubles the premium paid by their consumers is a part of the price the country pays for strikes.

Four general items of cost must be considered as normally controlling the price of coal to the consumer—resource cost, mining cost, transportation cost and marketing cost. Under usual conditions each of these items includes a margin of profit which may seem either excessive or inadequate, according to your point of view. Yet an unbiased consideration of these cost items is absolutely essential as a preliminary to the decision by the public whether we are buying coal at a fair price, and if not why not. As long as it is the popular view that the price of coal is made up of one part each of mining costs and freight costs to two parts each of operator's profits and railroad dividends, with the cost of a certain amount of needless waste on the side, the demand for investigation will continue, and in so far as there is any element of truth in this view, legislative action is justified, even though the prescribed reform may approach the extreme of public ownership and operation of mines and railroads.

As the initial item of cost, the amount charged against the marketed product as the value of the coal in the ground, which for brevity may be termed the resource cost, is perhaps the item most often overlooked by the coal consumer, and for this reason that phase of the subject will be fully considered after the other items are

treated. These other items need less discussion in this paper for several reasons: the item of marketing cost is one that can be brought directly under observation by the consumer if he will but study the matter intelligently, the transportation cost can be learned by simple inquiry and its control lies within the province of the Interstate Commerce Commission, and the details of mining cost can best be set forth by the mine operators themselves, for they have now adopted the policy of free discussion of these matters, which they once regarded as sacred from public view. The purpose of this paper, then, is simply to give a summary statement of all these elements in the cost of coal, and some special discussion of the resource cost. In presenting the subject, the senior author assumes responsibility for whatever may be regarded as mere expressions of opinion and the junior author stands behind the statements of fact.

The item of cost first to be considered represents that part of the value given to the ton of coal by the mine operator and the mine worker. This may be termed mining cost, but it must include the operator's selling costs and other overhead expenses as well as the mining costs proper, which include the larger expenditures for wages, supplies and power. This cost plus the resource cost—the royalty or depletion charge—and the profit or loss on the sale make up the value at the mine mouth. The mining cost varies not only between mines of different companies in separated fields, but even between adjacent mines of the same company in the same field. Both nature and man contribute to such variation.

It is not practicable to assign a very exact figure to the mining cost—the census of 1909 indicated an average of $1 a ton for bituminous coal and $1.86 for anthracite, but these figures are believed by some operators to be too low. It is possible, however, to show in a general way the distribution of this item; the cost of mining is divided between labor, 70 to 75 per cent.; materials, 16 to 20 per cent.; general expense at mine and office and insurance, 2 to 4 per cent.; taxes, less than 1 per cent. to 3 per cent. for bituminous coal, and 3 to 7 per cent. for anthracite; selling expenses, nothing to 5 per cent., and recently to these items has been added the direct and indirect cost of workman's compensation, which may reach 5 per cent. for bituminous coal. The charges for labor, material and general office expenses are easily understood, as is also a charge for depreciation of plant and machinery; but taxes and selling expenses are important items that may be overlooked by the casual observer. Some figures recently published show that the taxes levied in West Virginia last year on coal lands and coal-mine improvements—that is, on the industry as a whole—were equivalent to nearly 3 cents per net ton of coal produced, which is doubtless fully as much as the profit made by many of the operators in that state.

The cost of selling coal is nothing for the companies that use their own product, including the steel corporation and a large number of others, and is little or nothing for the producers who sell nearly all their coal to such large consumers as the railroads. Companies that produce coal for domestic use and the general run of steam trade must figure on a selling cost as high as 10 cents or more per ton, the cost depending on the extent of their business. The average selling cost for bituminous coal is probably 5 to 10 cents a ton, and for anthracite the usual charge of sales agencies is reported as 10 cents a ton for steam sizes and 15 cents for the prepared sizes.

The producers of coal and the transportation companies are concerned not so much with the actual rates charged for carrying coal as with the adjustment of rates between different coal fields and between different markets. In the many years in which our coal industry has been developing, rate structures have been built up that give to this and that producing district differentials over other districts—"handicaps," as it were—that may be based on comparative lengths of haul or on the ability of the coals to compete by reason of difference in quality or in cost of mining or perhaps may be merely the survival of past practise, for which no reason now exists. The consumer of coal, however, is interested in the actual rather than the relative freight rate.

To help toward a realization of the magnitude of this transportation item, it may be pointed out, first, that all but 14 per cent. of the output of the country's coal mines, aggregating 532 million tons, is moved to market by rail or water, and second, that nearly half of the bituminous coal (47 per cent. in 1915) and more than two thirds of the anthracite (71 per cent. in 1915) is shipped outside of the states in which it is produced.

Add to this statement of the extent to which coal enters interstate commerce a glance at the distribution of centers of maximum production and maximum consumption—the New York–Baltimore industrial zone, which has a total per capita consumption of nearly 10 tons and lies 100 to 400 miles from the tributary coal fields; New England, consuming about 7 tons to the unit of population and lying 400 to 800 miles from its coal supply; or the populous industrial district of which Chicago is the commercial center, consuming 8 to 9 tons per capita of coal in part hauled more than 400 miles from the fields of West Virginia and eastern Kentucky and in part 200 miles or less from the Illinois mines. With these facts in mind we must realize that the transportation cost is necessarily a large part of the country's fuel bill.

As has already been suggested, the transportation rate in force from any coal field to any market can readily be learned by the consumer who wishes to figure this item in the cost of the coal he buys. Therefore in the present general consideration of the subject it is sufficient to state the average value of this item. In the interstate traffic, both rail and water, bituminous coal probably pays an average freight of nearly $2 per ton. In other words, the transportation costs more than the product and, as some parts of the country are just now learning, is sometimes more difficult to obtain. The value of coal, like the value of so many other commodities, is a place value.

The average freight charge on anthracite is higher than that on bituminous coal, first because the rates are higher and second because, according to the reports of the Interstate Commerce Commission, *all* movement considered, the coal is carried a greater distance.

The cost of handling the coal, exclusive of freight, from the time it leaves the producer until it is in the consumer's fuel bin, may be termed the marketing cost. It can readily be seen that a large part of the coal produced is not subject to this cost, for most large users of steam coal, such as the railroads and the coke manufacturers, place contracts directly with the producing companies or their selling agencies and buy in the open market only when their needs exceed the deliveries under their contracts. Much of the coal, however, both anthracite and bituminous, passes through the hands of a wholesale dealer or jobber before it is received by the retail dealer who puts it in

our cellars or in the bins of a power plant. Coal that gets a long way from the mine may pass through many hands before it reaches the consumer, and it not only pays commissions all along the line, but is subject to shrinkage and deterioration, both of which enter into the final selling price to the consumer. Brokers are usually satisfied to make a gross profit of perhaps 10 cents a ton, but as several brokers may make a "turn over" on the same car before it is unloaded this element of cost may be several times that amount.

About half of the anthracite and around 15 per cent. of the bituminous coal is retailed in less than carload lots, and the greatest number of individuals are directly concerned in the marketing of this portion, regarding the profits on which there is the widest divergence of opinion. The margin in the retail business between cost on cars and price delivered is between $1.25 and $2.00 a ton and is not more than enough to give on the average a fair profit. The shrinkage and, in part, the deterioration are together seldom less than 1 per cent. of the weight and may exceed 4 per cent., and the retail dealer also must provide in his selling price for uncollectable accounts.

Advertising is a large expense—in part carried by the retailer directly, but all borne by the industry. The largest single item in the cost of retailing is of course that representing the labor of handling and the local cartage, which together make up about half the marketing cost.

There now remains to be considered the first major item, or the resource cost, which is what the operator has to pay for the coal in the ground—the idle resource, which he starts on its career of usefulness. This cost is expressed as a royalty or a depletion charge.

One of the latest leases by a large coal-land owner provides for the payment of 27 per cent. of the selling price of the coal at the breaker. This percentage is therefore not only a royalty figured on the mineral resource, but also a commission based on the miner's wage. To bring this right home to you and to me, it may be said that the practical result is that if the anthracite we burn in our range this winter happens to come from that particular property, we will pay fully $1 a ton into the treasury of the city trust that owes its existence to the far-seeing business sense of a hard-headed citizen of Philadelphia. Whether such a royalty is excessive or not, the fact remains that this is the tribute paid to private ownership.

The present average rate of royalty on anthracite is probably between 32 and 35 cents a ton on all sizes, which is from 12 to 14 per cent. of the selling value at the mine. The minimum rate (about 10 per cent.) is found in some old leases, and the maximum (20 to 27 per cent.) in leases made in the last five years. R. V. Norris states that in the late sixties, when the annual output of anthracite was around 15,000,000 tons, royalties were 8 to 10 cents a ton on prepared sizes, but that no charge was made on the smaller sizes. In the seventies the rate rose to 25 cents on prepared, one half that on pea, and one fourth on smaller sizes. By the middle eighties, when the output was a third what it is now, the rate was about double that of the seventies—that is, 40 to 50 cents on the larger sizes and 5 to 10 cents on the smaller sizes. The tendency is still upward by reason of increases in the rates for intermediate sizes and the operation of royalty rates based on a percentage of the selling value, an increasing quantity. Figured on the output from the Girard lands, which is nearly 3 per cent. of the total production, the gross return to the estate from its coal lands is over 50 cents a ton.

Nor is the increase in value of anthracite lands any less striking. At the beginning of the last century, as stated by Mr. Norris, the great bulk of these lands were patented by the State of Pennsylvania for $2 to $4 an acre; in the middle of the century the price of the best land rose to $50, and in 1875 even to $500. Now $3,000 an acre has been paid for virgin coal land, and little is on the market at that. In considering these increases in land values, the effect of interest and taxes must not be overlooked.

The bituminous coal industry is a modern institution compared with the mining of anthracite, and much of the bituminous coal land was acquired by the operating companies during the last twenty years for little if anything more than its surface value. To-day there are large areas of bituminous coal-bearing lands that, because they are undeveloped and without railroads, can be purchased at a low price, but little or no anthracite land is on the market, and little has changed hands for years. The present average resource cost of bituminous coal is not much over 5 cents a ton, or about 4 per cent. of the average selling value at the mine. In the Pocahontas region and the Pittsburgh district the royalties are much higher, but these, like others that might be cited, are exceptions—one due to coal of special quality, and the other to location—factors which, incidentally, are exactly those that have assisted in making the resource cost of anthracite what it is.

Should you be interested in summing up all these various costs and striking a balance between labor's share and capital's return, you would find that the mine worker, the trainman, and the wagon driver together receive fully half of the price of the anthracite delivered at your house, and the same three classes of labor receive not less than half the price paid by the average consumer for the cheaper soft coal. In a similar manner the average return on the capital invested in land, mining plant, railroads and coal yard may be roughly calculated, with the result that landlord, bondholder and stockholder of coal company and railroad together receive about $1.15 from the ton of anthracite and only 50 to 75 cents from the ton of bituminous coal, and of either of these amounts the mine operator's share is only a small fraction.

It is not the purpose of this analysis of costs to offer any cure-all for the high price of coal, yet some comment on the facts presented may possess value. At least certain lines of approach can be pointed out as not very promising. For example, any one who is at all cognizant of the trend in price of labor and material can see little hope of relief in lower costs for these items. Furthermore, observation of the advances made in mining methods in the last decade or two affords slight warrant for belief in any charge of wasteful operation. As consumers of coal we might do well to imitate the economy now enforced by the producers in their engineering practise. In the northern anthracite field machine mining in extracting coal from 22- and 24-inch beds, and throughout the anthracite region the average recovery of coal in mining is 65 per cent., as against 40 per cent. only twenty years ago. Nor are the bituminous operators any less progressive in their conservation of the coal they mine.

Yet it must be remembered that conservation of a natural resource, though it will undoubtedly be of direct economic benefit in the future, is not essentially a cheapening process; in fact, these increased recoveries of coal have in large part become possible only because of a higher market price. And, following further this line of thought, we may say that the increased

safety in the coal mines that has come through the combined efforts of the coal companies, the state inspectors, and the Federal Bureau of Mines necessarily involves some increase in cost of operation, but the few cents per ton thus added to the cost is a small price to pay for the satisfaction of having the stain of blood removed from the coal we buy. That form of social insurance which is now enforced through the workman's compensation laws alone adds from 2 to 5 cents a ton to the cost of coal.

In the item of transportation perhaps the most promising relief is that of reducing the length of haul. Though many a consumer's preference for coal from a distant field over that from a field nearer home is based on special requirements, the deciding element in the preference of other consumers is simply the price, and this in turn may be largely due to a differential freight scale, which is thus not in the public interest if we admit the premise that it is wasteful to burn coal in hauling coal into coal districts or past such districts, except in so far as quality requirements absolutely demand the long-haul coal. The recent eastward movement of the higher-grade coals, in part caused by the expert demand, may involve some increase in the average length of haul and thus in the transportation cost of coal not exported, but, on the other hand, this enforced adjustment may lead some consumers to discover nearer home sources of coal equally well suited to their purposes.

Reduction in marketing costs is a reform so close to the consumer that he should be able to find for himself whatever relief is possible. Professor Mead, of the University of Pennsylvania, is authority for the statement that the delivery of coal is costing the dealers 50 cents a ton more than is necessary.

There only remains, therefore, the first item of all—the value of the coal in the ground, or rather the return which the land-owner is asking for this natural resource. The fortunate holder of coal land, whether a very human individual or a soulless corporation or a large trust estate administered for benevolence only, is likely to endeavor to get all that the traffic will bear. Especially in the possession of a limited resource like anthracite, the tendency has been and will continue to be to increase royalties as the years pass, and the only penalty imposed by the state for high royalties seems to be high taxes, which too often, indeed, serve to justify the high resource cost put upon coal in the ground. Finally, in considering royalty rates or depletion charge we must not overlook the interest that accumulates throughout the period between the purchase of the coal land and the removal of the last ton of coal.

In placing a value upon the Choctaw land some years ago the Geological Survey figured the aggregate royalties at current rates as 160 million dollars, but if that amount of royalty were to be collected through the six or seven centuries required for mining the 2,000 million tons under this land, the present value of the land would be only $6\frac{1}{2}$ million dollars if purchased by the federal government or only 4 million if purchased by the state of Oklahoma, and even less if the project were financed by a corporation that would need to issue 6 per cent. bonds. Such is an illustration from actual experience in coal-land valuation—the 4 or 6 million dollars invested in these Oklahoma coal lands now would require a final return of 160 million dollars in royalties to balance the account.

More recently Mr. Cushing, the editor of *Black Diamond,* has figured the cost of a monopolistic control of the available coal resources east of the Rocky Mountains on

the basis of the United States Geological Survey estimate of 2,000,000 million tons. At a valuation of coal in the ground of only 1 cent a ton, which he stated is less than has been paid for large holdings, this deal would require a capitalization of 20 billion dollars, and the fixed charges on the bonds of this United States Coal Corporation would require an interest charge alone of $2 a ton against a production of 600 million tons a year. Mr. Cushing characterizes such a financial undertaking in mild terms as hopelessly impossible, and yet his figures, which do not include taxes, are most enlightening as affording some measure of the cost of possessing an undeveloped resource. Incidentally, these startling figures furnish a strong argument for the present policy of the national government in retaining ownership of the public coal lands, at least up to the time when the market conditions justify the opening of a mine and then either leasing or selling a tract only large enough for that operation. The consumer of the next century simply can not afford to have private capitalists invest to-day in coal land for their great-grandchildren to lease.

The burden that seems inevitable under unregulated private ownership of a natural resource like coal is that because the lands containing these national reserves of heat and power are taxed and because the individual or corporation properly charges up interest at current rates on his large holding, the consumer must pay a resource cost which takes into account the long period of undevelopment. Even the high rates of royalty on the lands of the Girard estate may be found less excessive than they seem if a century's taxes and interest charges are figured. Yet the fact remains that the royalty for anthracite represents a much larger proportion of the cost of the mined coal than any bituminous royalties. Moreover, we believe the highest royalty prevailing in the anthracite region has far more influence in fixing the selling price than the lower rates of the older leases.

Any study of costs in the coal industry finds its point in the question not who, but what, fixes the price of coal. The cost of mining coal, like the cost of living, is increasing. Exact mining costs, however, can not be determined until the operators have accomplished their reform of standardizing accounting. Too often the operator includes in his account only the two largest and most obvious items, labor and material. Thus, when the market for bituminous coal is dull, the company whose land costs little or nothing is able to set a lower limit of price than the company whose coal must stand a charge of 5 to 10 cents per ton or even more, be that charge called royalty, depletion or amortization. At such time the operator with the large resource cost must sell at a real though not always recognized loss, but of course with the hope of recouping himself at times of high prices like the present, if fortunately he has any coal to sell not already contracted for.

Even with the average low resource cost of bituminous coal, the state of competition that is tied up with idle and half-worked mines results in an average total cost that is little below the average selling price. Of course in this business there are those, both large operators and small, who make a profit in lean as well as in fat years, just as there are those for whom the prosperous years are too infrequent to keep them out of the hands of receivers.

In the anthracite fields the mining costs, and especially the resource costs, are higher. But here, with an average market demand that normally exceeds or at least equals the available supply (and with the passing

years this disparity must be expected to increase), there results naturally a lack of competition for the market. Even gentlemen's agreements are unnecessary so long as every operator can reasonably expect to sell his product, and the market price of anthracite at the mine must therefore tend to be fixed by the operator who has the largest mining and resource cost rather than by his neighbor who may be doubly favored with a mine less expensive to work and a lease less exacting in terms.

Confessedly, this analysis of the cost elements that enter into the price of coal emphasizes our lack of specific facts, which can be supplied in the future only through "installation of uniform cost-keeping methods and uniform and improved accounting systems," to quote from the declaration of purposes of the Pittsburgh coal producers. With the results of such bookkeeping in hand, more definite reply can be made to the public's appeal for relief from high prices. Yet even now it may be possible to suggest how that relief will eventually be obtained. Study of present conditions in the coal-mining districts fails to encourage the idea of governmental operation of the seven thousand coal mines in this country. More in line with the trend of public sentiment in the last decade, however, is governmental control in the interest of the consumer by regulation of prices, and to judge from the facts of experience in the regulation of transportation of other public utilities, the public coal commissions will be given sufficient discretionary powers to safeguard the interests of producer and consumer alike, and even mandatory requirements, either legislative or executive, will be subject to judicial review.

Competition seems to have failed of late years to benefit the consumer of coal. In the bituminous fields the competition, whenever present, has been wasteful and in the anthracite fields there has been practical absence of healthy competition, and whether too great or too little competition, the result is the same—to increase the actual cost of bituminous coal by saddling the industry and its product with the fixed charges on idle or semi-idle mines and to raise the price of anthracite coal by favoring the burdens of high resource costs.

In estimating the aggregate losses incurred by society by reason of the large number of mines not working at full capacity, the facts to be considered are that the capital invested in mine equipment asks a wage based on a year of 365 days of 24 hours, while labor's year averaged last year only 230 days in the anthracite mines and only 203 days in the bituminous mines, with only five to eight hours to the day.

As coal is more an interstate than intrastate commodity, any regulation of prices needs to be under federal control, and to benefit both consumer and producer such control can not stop with transportation and mining costs, but must stand ready to exercise full rights as a trustee of the people over the coal in the ground. The private owner of coal land, which derives its real value from society's needs, has no more sacred right to decide whether or not that coal shall be mined when it is needed by society or to fix an exorbitant price on this indispensable national resource than the coal operators have to combine for the purpose of exacting an excessive profit from the consumer, or the railroads to charge all that the traffic may bear. The proposal to bring landowner under the same rule as mine operator and coal carrier may seem radical, but where is the point at which coal becomes the resource upon which industrial society depends for its very life?

Public regulation, however, will be fair, and indeed in the long run will prove beneficial to the landowner as well as to the consumer, to the mine worker as well as to the operator, because any such agency as the

Federal Trade Commission, in its control of prices, must determine costs; and as we interpret the present attitude of the whole coal-mining industry the operators are willing to rest their case on a fair determination of actual costs on which their profits may then be figured.

Geo. Otis Smith,
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JOSIAH ROYCE[1]

Josiah Royce died September 14, 1916, aged nearly sixty-one. He was born at Grass Valley, California, November 20, 1855. At sixteen he entered the University of California. There he came under the teaching of the geologist, Joseph LeConte, a pupil of Louis Agassiz; and this teaching Royce himself estimated as one of the greatest philosophical influences of his early life. There also he first became known to Daniel Coit Gilman, who was then the president of the university. Royce received his bachelor's degree in 1875, and left at once for a year of study in Leipzig and Göttingen. At the same time, Gilman was called to Baltimore to "launch" the Johns Hopkins University; and thither he summoned Royce to be one of the first twenty fellows on the opening of the new university in September, 1876. Two years later, in 1878, he received the doctorate at Baltimore, and then returned to Berkeley, where for four years he taught English and incidentally logic. In 1880 he married Katharine Head, and to her unfailing devotion and helpfulness the public acknowledgments of her husband's prefaces bear ample witness. In 1882, he was called to Harvard to fill a temporary vacancy occasioned by the absence of William James, and in 1885 he was appointed assistant professor. Not long after came a nervous breakdown so serious that he made the voyage to Australia in a sailing-vessel, and with happy result. In 1892 he was made professor, and in 1914, on the retirement of Professor Palmer, he became Alford professor of natural religion, moral philosophy and civil polity.

During his fruitful career as scholar and writer and teacher, he grew steadily in renown and influence. He was regarded with constantly deepening love by those who knew him, and with increasing admiration by the great company of those who read his books and heard his lectures. He received honorary degrees from Johns Hopkins, Aberdeen, Yale, St. Andrews, Harvard and Oxford. He was Ingersoll Lecturer at Harvard in 1899, and Walter Channing Cabot Fellow from 1911 to 1914. He was Gifford Lecturer at the University of Aberdeen, 1898 to 1900, and lecturer on the Hibbert Foundation at Manchester College, Oxford, 1913.

He died in the fullness of his intellectual powers, and with his fame still in the ascendant. During the last summer he heard of his election to an honorary fellowship in the British Academy. At the meeting of the American Philosophical Association, held in Philadelphia in December, 1915, he was honored as no American philosopher has been honored during his lifetime. Two sessions were devoted to papers concerning his philosophy and teaching (since published under the title "Papers in Honor of Josiah Royce on his Sixtieth Birthday"); and there was no member of the association who did not feel that he had a debt to acknowledge. Royce was able to receive such homage with the sincerest modesty and with a radiant kindliness and broadcast affection that made him loved even by those who never saw him except in public. He was a natural leader in any community of scholars, but his superiority, though it was masterly in quality, was both fatherly and brotherly in its feeling. During the last year of his life he was rarely able to forget the awful tragedy of the war. Many will feel that he reached the climax of his greatness when, at Tremont Temple on January 30, 1916, he became the inspired vehicle of a righteous indignation. His remarkable address, which at once made Royce a great public figure, is soon

[1] Minute on the life and services of Professor Royce placed upon the records of the faculty of arts and sciences, Harvard University, at the meeting of November 7, 1916.