10342

10/6

fest

БИБЛІОТЕКА
УЧЕНАГО КОМИТЕТА МИН. ФИН.

BY THE SAME AUTHOR

THE DISTRIBUTION OF PRODUCTS. Or, The Mechanism and the Metaphysics of Exchange. Three Essays :

WHAT MAKES THE RATE OF WAGES?

WHAT IS A BANK?

THE RAILWAY, THE FARMER, AND THE PUBLIC.

Second edition, much enlarged. Octavo, pp. v. + 365 . $1 50

"His remarks on the legislators of the country are vigorous and refreshing. The book, notwithstanding its statistics, is exceedingly interesting and is the ablest defense of capital that we have seen."—*Chicago Advance.*

THE MARGIN OF PROFITS. How Profits are Now Divided; What Part of the Present Hours of Labor can Now be Spared. Together with the reply of Mr. E. M. Chamberlin, representing the Labor Union, and Mr. Atkinson's rejoinder to the reply. (No. XL. of "The Questions of the Day Series") Cloth, 75 cents; paper . . . . . 40 cents

"This volume abounds in facts and statistics of first importance, and no student of the economic problems of the day should fail to give it a careful reading."—*Boston Traveller.*

G. P. PUTNAM'S SONS, PUBLISHERS
NEW YORK AND LONDON

10342

THE INDUSTRIAL PROGRESS OF THE NATION

CONSUMPTION LIMITED, PRODUCTION UNLIMITED

БИБЛІОТЕКА
УЧЕНАГО КОМИТЕТА МИН. ФИН.

BY

EDWARD ATKINSON, LL.D., PH.D.

AUTHOR OF "THE DISTRIBUTION OF PRODUCTS," "THE MARGIN OF PROFITS," ETC.

NEW YORK & LONDON
G. P. PUTNAM'S SONS
The Knickerbocker Press
1890

39
A. H. C.

COPYRIGHT BY
G. P. PUTNAM'S SONS
1889

2735

The Knickerbocker Press
Electrotyped and Printed by
G. P. Putnam's Sons

PREFACE.

I VENTURE again to present to the public two series of articles which have appeared, one in *The Century Magazine*, and one in *The Forum*. I have made such slight corrections as have been found necessary. I have continued the statistics which have been previously published down to the present date and I have added some other treatises not previously published, notably the Address, given to the graduating class of the University of South Carolina in which I have given very fully the motive of my work.

I began the investigation of our national accounts early in the year 1862, wishing to demonstrate the ability of the Nation to bear any amount of taxation which might become necessary for the maintenance of the national existence. At that time my own concepts of the great problems in social science which I have since undertaken to treat, were very vague and indefinite ; I held, however, a profound conviction—

1st. That the purpose of human life upon earth could only be the development of the character and capacity of the individual through the very struggle for material existence which seems to be so arduous.

2d. That mind and character must be the paramount factors in material production.

3d. That there must be a higher law leading through the correlation of mental and material forces toward an ample and abundant subsistence and toward an equitable distribution.

4th. I held the profound conviction that these conditions of material welfare could only be attained by the development of individual intelligence, leading to the conception that in all commerce among men both parties serve each other.

5th That whenever the interdependence of men and of nations should become a part of the common knowledge of the people, peace, order, and industry would be adopted as the common law and practice of nations.

6th. As I have explored each branch of material production, it has become more and more apparent to me that the earth's capacity to sus-

tain life has hardly yet been touched, and I have come to the definite conclusion that, while the power of mankind to consume the products of the earth is limited, the source from which man may draw satisfaction for his material wants is practically unlimited.

When it first became apparent to me that the subject of our domestic commerce as well as of our foreign commerce must be limited substantially to the exchange of the product of each series of four seasons constituting one year, and that by so much as the few might attain a greater share of this product must others enjoy less, the conception that poverty might be a necessary correlative of progress in wealth under the competitive system for a time led me to question the equity of the present methods of distribution.

This is, however, a very superficial view. To any one who searches thoroughly, it very soon becomes apparent that the competition of capital with capital,—of owner with owner,—of wealth with wealth,—tends to the reduction of profits to a minimum, while at the same time the use and application of capital under the direction of competent owners or agents increases the product perhaps in even tenfold greater measure than the share of such increase which the capitalist secures either in the form of rent, interest, or profit. Hence it follows of necessity that the share of the annual product which falls to the capitalist must be almost in inverse proportion to the efficiency of the capital which he directs. In other words, as capital increases in its productive efficiency it becomes a factor in developing a constantly increasing product, of which a lessening part is secured to its owners. On the other hand, so long as workmen gain in intelligence and skill, they must of necessity secure to their own use and enjoyment a constantly increasing share of this steadily increasing product.

It therefore follows that each man may be held to make his own rate of wages as well as his own rate of profits by the measure of individual intelligence and aptitude which he is able to devote to the occupation in which he is engaged.

The unequal distribution of the annual product therefore becomes equitable; the only condition precedent being, that the government should not intervene either by direct or indirect taxation so as to divert the increasing product which is due to science and invention, either to the destructive purposes of war or to the preparation for war, or to the support of privileged classes.

Whether or not such has been the effect of taxation on the debt- and army-ridden nations of Europe, may perhaps be indicated by the two studies on the "Relative Weakness and Strength of Nations."

As these conclusions were gradually developed in part *a priori* and in part from observation of existing facts and figures, the true function

of statistical investigation assumed a new importance, and in the light of these theories the following studies have been prepared.

This conception of the mutual interdependence of men, and that the necessary relation of mutual service is the condition of general welfare, led of necessity to the conclusion that all trade and commerce should be free from any artificial obstructions created by law, except the regulation of noxious or unwholesome occupations on special grounds.

It may happen that those who are ready to accept the logical conclusions which are developed by the study of the national accounts and the statistics of international commerce, may be obliged to surrender their inherited ideas in respect to the proper functions of government, and may come to the conclusion that commerce should be free from any and all taxation except so far as the necessity of government for a revenue on foreign imports may render it necessary to impose taxes thereon.

Whether I have succeeded or failed in impressing these views upon my readers, each one must judge for himself. If I shall have given a direction to the thought and life of the younger men of the present generation who are about to enter upon its arduous and busy duties, to the end that their conception of the meaning of life and their own enjoyment of life, of work, and of men shall be increased in the measure which I have succeeded in attaining for myself by the pursuit of these studies, then I shall have accomplished my purpose and shall be justified in all the work that I have done.

EDWARD ATKINSON.

BROOKLINE, MASS.,
July 4, 1889.

CONTENTS.

PAGE

PREFACE iii

THE INDUSTRIAL PROGRESS OF THE NATION; CONSUMPTION LIMITED, PRODUCTION UNLIMITED—Commencement Address Delivered before the Graduating Class of the University of South Carolina, June 26, 1889 . 1

THE FOOD QUESTION IN AMERICA AND EUROPE; or, The Public Victualing Department 33

THE RELATIVE STRENGTH AND WEAKNESS OF NATIONS—Two Studies in the Application of Statistics to Social Science:

I.—Strength 53

II.—Weakness 80

LOW PRICES, HIGH WAGES, SMALL PROFITS: What makes them? . . . 101

THE DISTRIBUTION OF PRODUCTS:

I.—How can Wages be Increased? 137

II.—Must Humanity Starve at Last? 155

III.—Progress from Poverty 163

IV.—The Progress of the Nation 176

V.—The Struggle for Subsistence 192

VI.—The Price of Life 200

VII.—An Easy Lesson in Statistics 209

VIII.—Reforms That do Not Reform 219

IX.—How Society Reforms Itself 229

X.—Remedies for Social Ills 239

Theory and Practice (Supplement to No. X.) 247

WHAT SHALL BE TAXED?—WHAT SHALL BE EXEMPT? 253

PRODUCTION, DISTRIBUTION, CONSUMPTION 291

SLOW-BURNING CONSTRUCTION 309

THE MISSING SCIENCE 339

A SINGLE TAX ON LAND 351

RELIGION AND LIFE 377

INDEX 389

THE INDUSTRIAL PROGRESS OF THE NATION

CONSUMPTION LIMITED, PRODUCTION UNLIMITED

THE INDUSTRIAL PROGRESS OF THE NATION;

CONSUMPTION LIMITED, PRODUCTION UNLIMITED.

COMMENCEMENT ADDRESS GIVEN TO THE GRADUATING CLASS OF THE UNIVERSITY OF SOUTH CAROLINA, JUNE 26, 1889.

GENTLEMEN : I imagine that it very seldom happens that one who has missed the training of the College or of the University is called upon to make the Commencement Address to a graduating class, as I been invited at this time by your Faculty. Such, however, having been my loss in the process of education, you may not expect from me either a literary treatise or a philosophical essay ; I can give you only a few observations which I have drawn from the experience of practical life.

I have been for nearly fifty years engaged in the actual work of life in dealing with the material processes which are necessary to the support of mankind in comfort and welfare. I have had but little time for reading books, and I am not learned in economic science as it is laid down in the almost innumerable treatises which have been written under the title of Political Economy. I can only deal with the aspect of life from the standpoint of a workman, but I use the word "workman" in its broadest and not its narrow sense. The mind of man is the prime factor in the work of life. In the material work of production and distribution, without the work of the mind the hand would never have gained its power, or it would lose its cunning. The material processes which are necessary to existence, and which are conducted under the name of farming, manufacturing, trade and commerce, are sometimes looked down upon as being relatively inferior occupations—mere work for bread and butter ; or they are looked upon at least as not being entitled to the same place of dignity or estimation as the so-called "learned professions" ; but I claim for what may be called the *unlearned* professions a place upon the same plane and of equal standing with all others, yielding precedence to only one, the highest of all

professions, that of the jurist. I render the highest honor to him, the law-giver, the true jurist, the man who of right provides against wrong, under whose impartial supervision laws are made and enforced, and by whom the rigid provisions of statute law, imperfect as it must always be, may be alleviated in the Court of Equity.

Had I anticipated the honor which you have conferred upon me in granting me the Degree of Doctor of Laws, I should hardly have ventured to incorporate in my address this estimate of the jurist. You may well conceive that my satisfaction is the greater because the passport which you have given me to enter my name among the learned in the higher law, carries with it a recognition of service measured more highly than I could have ventured to hope for. I most profoundly thank you for this recognition, and I shall value a Degree from the University of South Carolina more than any that could have been conferred upon me by any other institution of learning.

So long as man dwells in this body upon the earth, the development both of the mental and the spiritual elements in human life must depend in great measure upon the manner in which the human body itself is sustained ; that is what bread and butter stand for, or as I believe Carlyle himself once named it, the "Potato Gospel."

I might not again venture to quote to you the old and trite aphorism "Mens sana in corpore sano," had I not asked my friend Dr. William Everett to give me a similar aphorism which should indicate that even the spirit could not be rightly developed except in a well-nourished body ; to which demand he at once replied, "Non est animus cui non est corpus." Can there be a soul unless the body eats ?

On the other hand, the very necessity which is imposed upon us to sustain the human body by manual and mechanical work re-acts upon the mind, and this tends to build up the character of the man himself in just and even proportion to his own conception of the true purpose of his own life. To him who has faith in a higher power which is both supreme and wholly beneficent, no matter from what source he may have derived his idea of the Eternal, there can be but one conception of life itself. The premises on which that conception may be based must be, that this world is the best world that could have been made ; that the conditions of this life are the best conditions that could have been established for the development of mankind ; and that the struggle for existence, hard and severe as it seems to us, must be the necessary school by which man could have been elevated above the beasts of the field. If there could have been a better world or a better method for the development of mankind, man would have the right to ask his Creator why it had not been established.

In other words, to me the alternative of Atheism is my own conception that the whole purpose of life is beneficent and not maleficent, and

that all shall share in the wise purpose of the Almighty to bring all to that conception of life which shall give rest and re-creation to the soul.

In the material world, all we can do is to move something ; but if there were no obstruction to movement, if there were no friction, there could be no movement of any kind. So in the moral world, if there were no possibility of wrong-doing, there could be no right-doing.

In the material world again, if there were no law of gravitation exerting its centripetal force, there could be no lifting of the clouds, no falling of the rain, no development of the plant, no life of the animal ; then no man could exist upon the earth to be elevated by the necessity of labor to the perception of his manhood, and by the development of his own personal character and intelligence to the domination of the forces of nature.

If there were no material wrong to be overcome in the physical world, there could be no virtue in overcoming wrong ; and without the struggle in and with the physical world in order to attain true character, there could be no mental conception of the spiritual world which is around us and beyond us.

It follows then that the three phases of our life upon the earth, the material, the mental, and the spiritual, cannot be separated ; they are complements of each other, each necessary to the other ; therefore each phase of life must be developed in harmonious relation to the others. May we not then assume that the beneficent purpose of that part of our lives which is passed upon the earth in which we are forced to keep up the struggle and to labor for existence, is the building up of each individual character by way of that very struggle ? Would not the work of life otherwise be wholly without meaning? This is the true " potato gospel." It is *not* a dismal science. The experience of men and of nations may sustain this principle.

We can seldom help those who cannot help themselves, and the sentiment of philanthropy often leads to mistaken efforts to remove the necessity for labor. We may alleviate want, and our humane sympathies compel us to do so when called upon ; but we cannot remove the causes of poverty by *giving* relief, only by showing how relief may be *earned*. We can maintain great bodies of men if we have the capacity to dominate over them, by directing their mere physical force to the supply of their material wants, without mental effort on their own part ; but such conditions are dangerous to him who assumes the control, and are also degrading to those who subject themselves to such domination and control.

There can be no great progress in a community where a privileged class assumes a superior position, and, holding it by force or cunning, undertakes to protect an inferior class from the consequences of their own ignorance. In any well-organized society, equality of rights and

the recognition of the law of mutual service are the necessary conditions on which only must rest any true and permanent progress even in material welfare. Every one knows how easy it is to render those who are willing to be helped without rendering corresponding work or service ever more and more incapable of helping themselves. What we can do is to remove obstructions from their way, to provide for their education, and then to give all an equal opportunity with ourselves to work for their own living under just laws assuring equal rights.

Let us then analyze this work of life. One half the work of life in this most prosperous country is even to-day of necessity devoted to the mere purpose of obtaining food. Why should this struggle for food have been permitted? What does it mean? The greater part of the surrounding atmosphere consists of nitrogen; yet the most important and costly element of our food is nitrogen in such a form that it may be capable of being absorbed by plants and thereby converted to the subsistence of men. There are great tropical sections of the world in which the conversion of the nitrogen into plant life through the rapid decay of all organic forms yields most abundant subsistence. But we do not look to the tropics for the development of the highest type of manhood. If what are called favorable conditions for the most abundant product did in fact develop the highest type of man, we who dwell far away amid the granite and ice of New England might in truth have some cause to fear for our future. Midway between the tropics and our zone, which is sometimes called Temperate—perhaps because it is subject alike to tropical heat and to polar cold, and can only be called Temperate on the average,—comes in your Sunny South. Dividing the Sunny South midway is the *terra*, no longer almost *incognita*, as it was when I first ventured to picture it, the Land of the Sky.

How many of you, I wonder, yet know what opportunities you have at your disposal, waiting no longer for Northern capital but now being developed by Southern enterprise? Was I wrong when, but a few years since, I ventured to describe this land, in which, until a very recent day, two or three million homespun people still using archaic forms of English speech, were almost the only dwellers? Was I wrong when I said that if a line were drawn southerly from the Potomac along the easterly margin of the Piedmont plateau, westerly on the southern edge of the uplands of Alabama, northerly to the Ohio along the margin of the Cumberland plateau, taking in that most fertile and beautiful country that eye hath ever seen, the blue-grass region of Kentucky, and back again to the point of beginning,—that boundary would enclose an area more than three fourths as large as France and twice as large as Great Britain, containing potential in agriculture

equal to either, with minerals and timber equal to both combined? That land was waiting only for the mind of man to become the prime factor in production. That I was not wrong, let the great enterprises of the New South bear witness. I need not name them.

Over this great stretch of country the glacial drift never passed; the soil consisting of the disintegrated rock of the old Laurentian Chain is rich in all the elements of fertility that give the strength to your timber and the beauty to your mountains; on which, within two hundred miles of distance east and west from the border of the Piedmont plateau to the top of Roan Mountain you may find the whole *flora* and *fauna* which extend from the St. Lawrence to the Gulf of Mexico, on a line of two thousand miles north and south. When the shrinking of the crust of the earth occurred, by which these convolutions were made, of which the Laurentian Chain with its lateral ridges and plateaus forms a part, the one hundred miles more or less of sandstone which separate iron from coal in the northern section (or which overlies them rendering the mines deep), forming sharp ridges and making difficult grades to be surmounted, were not thrown up. In the southern section of the chain down there in Alabama, the iron, the coal, and the limestone lie close together in adjacent hills, and almost dump themselves by their own gravity into the furnace in which they are to be converted to use, when they are but once loosened from their beds.

Endowed with all these elements of wealth and welfare, you young men of the Sunny South and of the Land of the Sky are now entering into vigorous and urgent competition with us of the cold and sterile North. Behind us both stand the unnumbered millions who occupy the fat and fertile prairies of the far West, waiting for the service which each of us may render them in exchange for the huge abundance of their fields. We welcome the contest, because it is in the busy contest of industry that the highest qualities of manhood have been developed and may yet be established. But we may sound the note of warning—

> "We tell each land; while every toil they share,
> Firm to sustain and resolute to dare,
> Man is the nobler growth our realms supply,
> And souls are ripened in our northern sky."

It is the function of the economist to deal with these elements of wealth and welfare and to evolve the laws of social science to which all human statutes must be made subordinate, so that the gratuitous gifts of nature with which you are so abundantly endowed, and in which we may share by the exchange of services, may be converted equitably to the use of man.

I might have given you the title of this Address—Individual Liberty the only condition on which Material Welfare can be assured.

Given just laws and local self-government established under the central sustaining power of a great nation ; given equal opportunity and free commerce between the States, under which each man may provide for his own wants by rendering service to his neighbor ; and we may then discover *that while our consumption is limited the power of production is practically unlimited.*

In the treatment of this subject, in which I shall endeavor to demonstrate the principle that individual liberty is the only condition on which material welfare can be predicated, you will bear in mind that liberty is not license ; that it does not of necessity stand for the concept of the economists of France, who, at the end of the last century became famous by adopting the motto, "*laissez faire, laissez passer.*" Individual liberty implies full liberty for men to combine for mutual benefit ; it does not of necessity imply the separation of individuals any more than their combination. There are many processes of productive and distributive industry which may be accomplished more effectually by combination under laws and rules, as in the ordinary railway corporation, than through isolated individual action. There are also some necessary processes of a productive or constructive order which are intimately connected and bound up with the industry of every country, but which may be accomplished by the State acting as a corporation, better than they can be done by the individual or the private corporation.

At what point the function of the State or of the corporation rightly ends, and exactly at what point the separate function of the individual should begin, is a matter to be determined by experience and not to be laid down *a priori* with the assurance of a dogmatic principle. Given, as I have said, just laws and local self-government well established under the central sustaining power of a great nation ; given equal opportunity within the domain of a nation, with free commerce or the exchange of services established under organic laws, under which each man may provide for his own wants either by his own work, by combination with others, or by rendering service to his neighbor ; and then only may we expect to derive from experience a true conception of the fundamental rules by which human society should be governed so that the general welfare may be assured.

Social science is therefore in great measure an experimental science. I have faith to believe that on the basis of the progress which we have already attained in this country, the conception which I present as an hypothesis may prove to be a principle, and may be acted upon with absolute assurance of its truth, to this effect : that while the consumption of man in respect to the means of subsistence is limited,—the power of material production, *i. e.*, the power of mankind to direct the forces of nature to the purpose of sustaining human life in comfort and

welfare, is practically unlimited. The very suggestion that there may be such a principle calls attention to the profound importance of the study of economic science.

It will doubtless be generally admitted that the three economic writers who have greatly affected the policy of Great Britain and who have therefore indirectly affected the condition of the whole English-speaking people more than any others, have been Adam Smith, Malthus, and Ricardo. To these three names may perhaps be added in later years the names of Bentham and Mill.

Each of the three writers first named submitted propositions or hypotheses which have greatly affected all subsequent legislation and which have, without question, given a direction to the social relations of the English-speaking people.

Adam Smith, working on a true inductive method after as wide an investigation of the facts of life as the records of his time permitted, prepared the way for the development of modern industry and commerce. Had he published the "Wealth of Nations" but a few years earlier than 1776, the futile attempt of the ten million people who then inhabited the island of Great Britain, might never have been undertaken, to control by force the commerce and industry of the three millions who then occupied the colonies of America for the sole purpose of benefiting or adding to the gains of those who assumed to govern them. But there was not time for the new conception of commerce and of what made the Wealth of Nations, which Adam Smith presented, to pervade the minds of the people of England before the War of the Revolution occurred. This war was distinctly the result of the economic error which was the basis of the so-called mercantile theory of trade, to wit, that in all international commerce what one nation gained another must lose; from which false premise came the conception of the English and of all other European nations, that the object in establishing and holding colonies in other parts of the world was to secure the sole control of their traffic.

It followed of necessity from this misconception of the nature of commerce, that the attempt was made to control the industries of the colonies by force, this attempt long preceding the further effort to impose taxation without representation. Force was met by force, and the necessary separation of the great colonies of America from the mother-country, which might have taken place at a later period by peaceful methods, was brought about by war, engendering an animosity which has hardly ceased to affect the public mind even down to the present day.

A little later Malthus attempted to formulate a law of population upon the basis of utterly insufficient data compiled in a crude way. There were then no complete national statistics upon which reliance

could be placed or which could be safely cited in support of his views. He attempted to prove that the tendency of population is to increase faster than the means of subsistence, and he even adopted the mathematical formula which is now very often cited as if it were an absolute truth, that "population tends to increase in a geometrical ratio while the means of subsistence increase only in an arithmetical ratio." This hypothesis is utterly without warrant either in fact or in experience Malthus appears to have had no imaginative faculty, a very essential quality in dealing with economic questions. He therefore could not forecast the future nor foretell the wonderful results that would be attained through the new scientific discoveries and the better understanding of the art of production and of distribution which had begun even in his own day to work a profound change in the relations of men to each other.

Ricardo, a banker, chiefly engaged in affairs, was governed by the limitations of a rigid accountant and an observer of what is called the money market. His treatment of the whole question relating to banking and currency is of the most valuable kind. His theory of rent, however, was wholly based upon the misconception that the material products of the earth depend upon certain inherent qualities of the soil, varying in different places and subject to exhaustion. He did not conceive of any method by which the soil might be used as an instrument of material production, subject to an increase of production in proportion to the measure of intelligence as well as of the labor and capital expended upon it. Hence the fallacy of his alleged law of diminishing returns from land in proportion to the labor and capital put upon it. He omitted the mind of man in his treatment of the land question, and thereby omitted the prime factor in all material production, even from the soil.

The hypotheses that population tends to increase faster than the means of subsistence, and that land tends to yield diminishing returns, to some extent obscured the broader view of Adam Smith, and gave a very narrow conception to the teachings of the school of English economists until a very recent period. It may now be affirmed that a true philosophy of Social Science which must now almost of necessity be developed upon the inductive method and on the basis of experience, may not have been capable of treatment by any European writers until very recently, on account of the necessary limitations due to their environment. The exp[illegible]e of nations which have been subject in the past to methods of g[illegible]t based upon privilege assumed to have been derived from Divine right, cannot be taken as the basis for rules which should be applied to free nations. On the one hand the conceptions of the English school of economists could not be applied to the conditions of India ; and on the other hand they may not be ap-

plicable to the very different conditions of this country ; yet the very existence and general application of these views of the English writers have profoundly affected the conditions of all the English-speaking people, including ourselves ; and one or the other of the concepts of Malthus or Ricardo modified in some degree by Mill have governed or influenced nearly every writer on economic science in this country. They have imparted to the minds of those who have adopted them, either consciously or otherwise, the hopeless conception that in the end the distribution of the necessaries of life must be compassed by force, and that the possession of land and of all other instruments of production and of distribution must ultimately rest upon force. Such must be the necessary conclusion from these conceptions, it being very evident that whenever the time shall arrive when the means of subsistence are not sufficient for the support of an increasing population of which the surplus can no longer migrate, the rule of survival must of necessity become the rule of the survival of the strongest, the most cunning, the most subtile. From these premises follows also the necessary conception of a government by privilege sustained by force, rather than of a government established by the consent of the governed.

In an indirect and perhaps somewhat obscure way these false conceptions, especially Ricardo's theory of rent, have had a very great influence upon the English customs of land tenure and upon the conduct of the internal affairs of Great Britain and Ireland, although the views of Adam Smith have for about one generation only, controlled her foreign commerce. The present difficulties in Ireland may be attributed to the false concepts of English rulers for the last two hundred and fifty years, and to the efforts, which only ceased with the present century, to destroy great branches of industry in Ireland lest great branches of industry in England should suffer from their competition.

Among our own students of economic science the hypotheses of Malthus and Ricardo, coupled with the false theory of wages sustained by Mill until a very late period in his own life, have also held a controlling influence.

Great progress has, however, been made within the last few years in defining the true source of wages and in proving that wages constitute a share of the product for the time being, in which production capital aids but is not the source, since even the annual sum of wages could nowhere be paid out of pre-existing capital.

On this line of investigation, perhaps, Professor J. E. Cairnes opened the way more than any other writer.

The influence of the German School of State Socialists, coupled with the so-called Collective theory of production, has pervaded and perhaps perverted the minds of a great many of our younger men ; but

no very substantial addition to economic science has been made by theoretic writers or by students of social science in this country, except in the compilation and application of the most adequate statistics which are rapidly becoming available for use. The best economic work yet done in this country has been the study of the facts and conditions of life in a country substantially free from the inherited privileges of the past, on which the basis of a true science may be laid.

It would perhaps be invidious to mention names, but those of Wells, Walker, Wright, White, Hadley, Fink, Smith of Columbia, Taussig, Laughlin, Seligman, and many others are presented to the mind almost instinctively, whose work in the compilation of social data or in their application is rapidly bearing fruit. There are many others whose names are not yet much known beyond the limits of their own States, who are compiling the data upon which a true economic science may hereafter be established. There is not, of course, an American science of Political Economy any more than there can be a French, German, or English science ; but a true inductive science may only be evolved in a country in which production and distribution are no longer governed by status or by force, but are almost wholly conducted under free contracts entered into for mutual service.

If the hypothesis of Ricardo were entitled to be considered as a principle of universal application, then the necessary conclusion would be that poverty would of necessity accompany progress ; and you will observe that the fallacies of Henry George in relation to the possession of land are based upon the Ricardian theory of rent. If mankind may not hold such control over the production of the means of subsistence as may ultimately assure the welfare of each and all, then the restoration of slavery might be justified or the restriction of the ballot would alike be called for. Government by privilege might then become a wiser method than government by the consent of all the governed.

It may be somewhat presumptuous for one who has but little time for the study of economic literature to presume to put forward an hypothesis which is counter to the theories of most of the well-read men. As I have already said, I do not pretend to be a very well-read economist ; but I am inclined to think that it may be an advantage for any one who has a reasonably good faculty for observation, coupled with a power of reasoning from the facts which are now easily brought within the observation of any student, that he should be free from the bias which comes to the special student who crams himself with book knowledge.

Social science is not like the physical sciences or the mathematics, one in which certain fundamental propositions may be laid down *a priori*, which are to be taken as proved and must therefore be accepted as the basis of all subsequent reasoning. There is no Euclid to be con-

sulted in this social work ; economic science is yet vague in its concepts seeking for a solid foundation, inductive and not deductive,—rather than yet finding one. It is therefore, perhaps, more expedient that one should have mastered the principal theories of a few of the great masters, and should then refrain from giving more time and attention to the variation in the application of these theories by the less important writers. He may, perhaps, be more capable than they have been of testing these theories from his own observation.

The late President Garfield had very clear convictions upon all these questions, and had he lived he might perhaps have become a leader of thought had his political courage been equal to his convictions. He told me that he dated his intellectual life from listening to a lecture by Ralph Waldo Emerson, given in the old parish church in Williamstown, in the only year which he had been able to spare from work to be devoted to college training,—of which lecture all that he could remember was that Emerson said : "Mankind is as lazy as it dares to be."

One may venture in such an address as this to be a little egotistical, since there is more teaching by example than by precept. I date my own intellectual life from the reading of "Sartor Resartus" ; after that, Carlyle's "French Revolution" ; then from listening to, and personal acquaintance with Theodore Parker ; but my interest in Political Economy, which Carlyle denounced as the "dismal science," was only fully aroused when the incomplete but most suggestive treatises of Frederic Bastiat first fell into my hands ; I commend them to you.

Many of you may hereafter have as little time as I have had to continue the study of books. Must you then accept the dogmatic teaching of others? By no means. Work out your own mental as well as your own material salvation ; and if you do it with a right purpose you may even add a little to the common stock of ideas as well as things—perhaps adding more than you take away. That is the way the world gets on.

In my own way I have reached a certain general conclusion, perhaps itself *a priori ;* it is this : There must be a scientific basis by which the relations of men are governed, and on which the material products of the earth must ultimately be distributed so as to conduce to the common welfare, else the power which controls all does not rule all things well.

I observe that in dealing with all other material processes of nature it has become apparent that there is a tendency to equilibrium or harmony in all the forces by which the universe is governed ; and I look for the same harmony in the social relations of men. How shall this harmony be attained? It has pleased God to make that problem the true work of our lives.

This faith in the Divine purpose of every life and in the final attainment of welfare here or hereafter, it matters not which, is, for myself, the only *nexus* between religion and life. It is the creed by which I test all dogmas and theories—theological, political, or economical,—it is the little star to which I have hitched my wagon, and which will guide me on my way even if no one else can see it. I advise you all, whatever your vocation may be, to establish a creed in your own minds which shall be your own, and also to take up a hobby wholly aside from your necessary work in getting a living.

In attempting to evolve the laws of social science or the relations of men to each other in the material world, may we not conclude by analogies drawn from the physical world that in the correlation of forces there must be an equilibrium in which harmony will be attained? Read Bastiat's "Harmonies of Political Economy," incomplete and imperfect as it is.

Consider, for instance, heat and cold; we know that there is a margin of many thousand degrees between extreme heat and extreme cold; we also know that if for a single moment the thin shell of atmosphere or vapor which protects the earth from the sun's rays were swept aside, the earth itself might become a cinder. We also know that the continued existence of vegetable and animal life upon the earth rests substantially within the limit of one hundred degrees Fahrenheit; yet that equilibrium within that range has been established for unknown generations.

We also know that if from any cause the internal heat of the earth were to be lowered a little below the present plane which is very near the surface, water would disappear; then our earth would be desiccated; yet the equilibrium of these forces has been maintained for an unmeasured period under conditions which are consistent with the existence of life; and life, so far as we may reason about it, may yet continue for unnumbered generations. Who can measure the eternal?

"High over space and time it rides,
The high thought that can never alter."

If then there is an equilibrium in the forces of nature which makes life possible, may we not predicate upon that fact the existence of a law, although we cannot yet formulate it, on which we may assume that there must be an ultimate equilibrium between material life and the means of living?

Our statistics of population do not yet cover a single century with any approach to accuracy, yet a law of diminishing population begins to be perceived even in prosperous and peaceful countries, in spite of the huge abundance in the means of living and the improvements in distribution, and notwithstanding that the average duration of human

life is prolonged in each century beyond that of the previous one. Statistics begin to prove that there is a law governing the growth of population which is not enforced by any artificial method of limiting the existing population to the present means of subsistence. On the basis of this creed, as I have called it, I have ventured to seek for some broad generalization, which may not yet be capable of proof, and which may be still only an hypothesis, but which shall be wholly consistent with the conception of a beneficent power creating and governing the world and ruling all things well. I have ventured, therefore, to say that on the basis of the statistics compiled in recent years, it may soon be proved to be a rule or law of life that the power of mankind to consume the means of subsistence is limited, while on the other hand, the power of mankind to produce and distribute the means of subsistence is practically unlimited.

I have frequently ventured in conversation to try this hypothesis upon different people, and the very surprise with which it has been received goes to prove that the counter-proposition has unconsciously governed the thought of a very large proportion of the thinking people even of this country.

In support of this rather startling proposition it may be suitable to point out again that material life is itself only a conversion of material forces into a new form ; but man is the only animal that accumulates experience and thereby attains the power to give a new direction of a permanent kind to these forces of nature ; he therefore frees himself from subjection to the law of the survival either of the strongest, the most subtile, or the most cunning ; he attains the power to exist and multiply by dominating the forces of nature, thereby increasiug production, and makes progress by exchanging services with his kindred. Under these conditions, the survival of the intelligent and the capable becomes assured because they are the fittest to survive.

We derive the greater part of the means of subsistence from the soil, a little from the sea ; now if we regard the soil as a laboratory in which the forces of nature may be converted into food in just proportion not only to the labor and capital, but to the mental capacity of him who makes use of the soil as an instrument of production, in place of working land merely as a mine that may be exhausted, we find that there is as yet no limit that can be put upon the production of the land ; no man can say that any single acre of land anywhere has been exhausted ; and no man can prove that any single acre anywhere has ever yet produced the maximum of food which could be produced from it in proportion to the work done. In California an inventor who is also a farmer has lately applied machinery of his own construction to a little bit of the soil of a single county, a farm of three thousand acres in Tulare County, with such effect that the product of wheat of three

hundred days' work of one man, which is equal to one year's steady occupation, may in a fair season come to nine thousand bushels; deducting enough for seed, this product would yield an average of a barrel of flour each to about eighteen hundred people; if we charge this wheat with the cost of distribution from California to Great Britain, this one man can supply one thousand of the inhabitants of Great Britain with bread. This is the modern miracle of the loaf.

Down in Florida a little while ago I came across an old New England sea-captain who had become familiar with the value of the cassava root, when trading in South America. One of his neighbors, a colored man, had complained to him that a bit of land he was trying to cultivate was chuck full of roots; "he could n't get 'dem roots out"; the Yankee on looking at the roots found them to be the cassava from which tapioca is made; he planted an acre and a half the season before I visited him; and on the product of that little patch he had fed seven cows, two horses, three calves, and several hogs for seven months, and he still had a considerable part of his roots to draw upon. The butter which his wife had just churned was good, wholesome, yellow butter, such as I am familiar with on my own place; not white, waxy and tasteless.

What else is there in the way of roots that we yet know but little about? Nitrogen is the most expensive element in fertilizing the soil or in feeding man and beast; yet the larger part of our atmosphere consists of nitrogen. Who can tell how soon the chemist may find out a quicker way of converting the nitrogen of the atmosphere into a form in which it may become food for plants? There are plants which in some way or somehow appear to derive their nitrogen directly from the atmosphere; these are the renovating plants which are turned under, clover, buckwheat, etc.; the cow-pea vine is one of them, familiar to you all (and if I am rightly informed, the common expression for poor land is, "That 'ere land aint even fit to grow pea-vines on"). The mushroom is full of nitrogen; who knows how soon the botanist may enable the growers of mushrooms to produce tons to the acre in place of the little basketful which we seek to gather from our own private preserves that we never tell any one else where to find? The deserted tunnels in the California gold and silver mines are now being made use of to grow mushrooms for the market, perhaps yielding a product which will be more useful and profitable than either the gold or silver that would be taken from them.

Suffice it that throughout this century, a century in which science has been more fully applied to production and distribution than ever before, the means of subsistence have been gaining rapidly upon the population of the globe; and from the very time when Ricardo propounded his hypothetical theory of rent, and laid down the supposed

law of diminishing returns from land, the man who has farmed with brains rather than with hands has been able to obtain a steadily increasing product with a diminishing quantity of labor.

So far as there are any statistics which can be relied upon for proof, the proposition or hypothesis which I have just substituted for consideration is more fully sustained than any other economic proposition upon this branch of social science.

If, then, there may be such a law governing and steadily increasing production in ratio to the labor devoted to the work, in what way shall the benefit of this law be distributed? and how shall the increased production tend to the common enjoyment and common wealth of rich and poor alike? That is now the burning question.

I feel fully justified in bringing these rather prosy facts even into a Commencement Address, because your President who invited me was formerly a Professor of Agriculture in Tennessee, and it was through that that I made his acquaintance. I was engaged in the investigation of the system of saving green crops, named ensilage; I had ventured to make a statement in an address given at the opening of the Mechanics Institute in Boston, the next exhibition immediately following the exhibition at Atlanta, in which the minerals, the timber, and the examples of then almost unknown resources of your Southern land were first brought to the attention of South and North alike, in September, 1882, to this effect: "If I were to say to you that next to the abolition of slavery and the use of the railway and the steamship, the re-discovery of the method of saving green crops called ensilage would prove to be the most important event in its effect on the material welfare of the present century, you might suggest that a Commission *de lunatico inquirendo*, should be appointed to examine the condition of my brain; yet I venture to make that statement." From President McBryde I received the best evidence then existing sustaining this view. He had traced the silo back two thousand years, finding it described almost according to modern methods in the Germanica of Tacitus. Thus it is that in one case, at least, the classics and the economics came together; and I am justified even in this old and classical University in talking plain prose about production.

It is also alleged that just before the first shot was fired at Fort Sumter one of your South Carolina chemists was analyzing the mineral phosphates of your coast; some one brought him the Ordinance of Secession, and asked him what he thought of it. He somewhat impatiently replied, "That 's not what South Carolina needs; she needs manure." I leave it to you whether the chemist was justified or not.

I have said that the main question now at issue is not one of production, but of distribution. What have you young men to do in this matter? You have learned only in recent years that in personal liberty

there is opportunity. Until freedom has been established throughout this broad land there could have been no equal competition. We are approaching the end of the century of the greatest wars recorded in history ; we are nearing the end of a century in which national debts incurred almost wholly for war purposes will either have been paid, or else in part or wholly repudiated because they cannot be paid. Even at this time when the preparation for possible war, which is even more burdensome than active war itself, is eating out the very heart of Europe, may we not venture to predict that war itself will soon become an anachronism ? Let me call upon you to join with me in thanking God that the Potomac had not become the Rhine, separating two rival and hostile nations, each maintaining different institutions, which would have led to antagonism and would have rendered the waste of standing armies and the maintenance of heavy taxes of the most destructive kind, as necessary on this continent as they are thought to be necessary to the existence of nations in Europe.

May we not take courage from a backward glance ? It is but a few centuries since even a private war gave a title to honor. It is only a few years since the private duel became a crime and a dishonor even in this country. It will be but a few years before the captains of industry will take precedence, while the captains of the army may become but the officers of a police force organized chiefly for the maintenance of civil order ; to which position we have already substantially relegated our little army in this country, in which the final establishment of the principle of liberty has almost done away with the necessity for any force in the conduct of our affairs.

Again : I may now venture even here to recall the fact that while the great Civil War devastated our own country, yet for many years the treaty of reciprocity in trade with Canada had so united the people even of that foreign Dominion with ourselves, that not one single soldier was sent to guard that long northern flank, and not one ship of war was required to defend our ports against our neighbor. Mark the contrast ; and also mark the influence for wrong which may come from restrictions which one nation may place in the way of the mutual service of its people and those of another country. The petty tax which we have so unwisely maintained on the salt fish and smoked herring of Canada has brought us to the very verge of a quarrel, of such a nature that a single unwise word or act might have precipitated us into a wicked war.

Whether we will or not, the welfare of mankind depends upon the true comprehension of the nature of commerce. To the friendly contest in the pursuit of industry we of the North welcome you of the South. You have most difficult problems to be solved ; you have obstructions to progress to be overcome, and so have we of the North.

We may well remind ourselves alike that the highest type of manhood has been developed under the most adverse conditions and in places where the struggle for material life has been the most rather than the least severe. The dangers and difficulties which we have yet to surmount in our respective sections differ in kind but not much in degree. Ignorance and incapacity are with us all. Twenty-eight per cent. of the present population of Massachusetts are foreign-born ; more than fifty per cent. of foreign birth or parentage. Can we bring all into subjection to law through intelligence rather than by force ?

I think the most prosperous country that I ever visited is the little kingdom of Holland, where the men who made the state made the very land itself on which the state is founded, over which they laid their smooth brick roads for the conduct of their trade, and built their great water-ways to the sea for the conduct of their commerce, a hundred years or more before a single good modern highway existed in England although the Romans had left the vestiges of their great Roman roads built by them nearly two thousand years before as an example of what might be done. Witness the long struggle of the Dutch to maintain their liberty, of which it is written by their great historian that although not producing a single grain of wheat they ate the whitest bread in Europe ; and although they were subjected during their long struggle with Spain to taxes which before the end took up one half the product of the whole people, yet they came out of that struggle for liberty rich and strong, and more powerful than they had ever been before. How did they accomplish this ? Was it not in the pursuit of trade, commerce, and industry ? While the Spaniard sent his armed ships to conquer foreign lands, reducing the inhabitants to slavery and bringing back treasures of gold and silver, which rendered the nation poor because they were secured by rapine,—the Dutch sent out their fishing fleet and supplied the Spaniards at home with food at the cost of a large share of this very treasure, gaining wealth by the fruits of their commerce, while the Spaniards grew poor even on their ill-gotten gain ; and when the Spaniards again craved the wealth, seeking to recover it by conquest of the Dutch and to plunder them as they had plundered their own colonies, the very seamen who had been trained in the Dutch fishing fleet manned their navy and beat off their would-be oppressors.

2435

It begins to appear from the true history of the last two or three centuries that the most potent cause of war among men in modern times has been the false conception of the functions of commerce.

It may be held that the material well-being of this country has been secured more fully by that clause in our Constitution which forbids State interference with commerce between the States, than by any other of the provisions of our organic law. Under these conditions each section is free to develop its resources in its own way. I am also

profoundly convinced that the true education consists in home education; in the development of the schools, the colleges, and even the universities in which the foundation is laid just where the best work of the future is to be done. The post-graduate courses in special lines may be concentrated elsewhere, as they are in the Johns Hopkins University in Baltimore, and as they are to some extent at Harvard. You will bear in mind that I speak to you as a man of affairs addressing those on whom the conduct of affairs in your own State and in your own vicinity will mainly rest, and who will develop the productive industry of your own section in just the measure that you learn that the mind of man is the prime factor in all arts.

I have said that the main question now pending is not one of *production;* an abundance is already assured in this land for this and for many generations yet to come. The main question now at issue is that of *distribution.* How shall the several sections of this country share not only in providing the abundance but in securing an equitable distribution of their respective products, receiving in return that part of their subsistence which they obtain by exchange?

Let me now call your attention to what I think is the most wonderful chapter in economic history, the true bearing of which neither you nor I can yet measure nor estimate—to wit, the industrial progress of the South since the way to material progress and prosperity was first opened by the establishment of personal liberty throughout this whole broad land.

I may venture perhaps to treat this subject in a very concise way at this time, because it will fall to you, the graduates of this and of other Southern Universities, to supply the mental factor which, as I have already said to you is the prime factor in material production and in material welfare. With respect to certain products you hold almost a monopoly, and monopolies are perhaps more dangerous to those who purport to enjoy them than they are to those who are subject to pay for them. It is fortunate for you that you have not the absolute control of the cotton trade. There is just enough possibility of competition elsewhere to compel you to apply science, skill, and economy to the growth and preparation of this great necessary staple; and you have a great margin for improvement to work upon. Your supremacy in the production of the cotton fibre is due to the gift of God and not to the skill of man; you have the temperate climate, cold enough in winter to prevent the cotton plant becoming a perennial; you have the great central range of mountains gathering the moisture from the winds that blow in over the Gulf Stream, precipitating them in showers, seldom in destructive floods; you have the strong soil of the upper country over which the glacial drift never passed and from which the phosphates so necessary to the production of cotton have not yet been washed out; you

have the lowland soil redeemed from the shallow sea, full of minute shell and other elements of fertility yielding the phosphates so necessary to the production of the seed of cotton which is the true function of the cotton plant, the fibre being only the wing of the seed. The seed takes fifty pounds of phosphate from the soil to each bale of cotton, while the fibre takes but four. In these natural conditions you excel all other areas of the world in which cotton grows except Egypt and the region on the Paraguay and the Parana rivers now being so rapidly settled by the Italians. So long as the Egyptians are despoiled and deprived of personal liberty as they are now and always have been by the oppression of debt and taxes to which the people never gave their consent, and of which it is the disgrace of civilization to enforce the payment since that payment almost reduces the population to starvation—you have not much to fear from them, although the staple of their cotton is better than yours and although, as a rule, it is better prepared for market. Of course in making this comparison I take no cognizance of the little crop of Sea Island cotton which does not belong to the useful class and only serves for purposes of luxury. You may be subject to competition in the somewhat distant future when the region on the Paraguay and the Parana rivers is fully settled, and the attention of the Italians, who have been bred in habits of the closet economy and thrift, is given to the production of the cotton fibre. You may then, if not sooner, be forced to change your methods of treating your cotton in the preparation of the bale and on its way to market. There is no great commercial staple so barbarously treated as the cotton bale of the South even at this time, except the crude products of the most barbarous races of Asia and Africa. This is not a pleasant thing to say ; but observe that in saving waste there is a great margin of profit which the intelligence of the South may reap even from this improvement, when the present bad method is acknowledged. Yet in spite of what has still to be done, witness the vast progress that has been made even on this very line.

The first pamphlet that I ever published was printed in the year 1861, entitled " Cheap Cotton by Free Labor" ; and in that pamphlet I had brought together all the evidence which even then existed, precisely as it does now, of the value of the seed of the cotton ; I made the record either in that pamphlet or in a subsequent magazine article I forget which, that if there were a variety of the cotton plant which would grow in the Northern States, producing no staple and only seed, it would become one of our most valuable products. You have now but just discovered this new source of wealth which had been known in China for five hundred years or more. While the cotton seed rotted to waste in the olden time, your sugar cane craved the phosphates which cotton-seed meal now supplies after the oil has been expressed. That

is now known, and the sugar cane is fertilized as it had been in Formosa for five hundred years. I see that some one has just discovered that the ground hulls mixed with the meal make a better food for stock than the over-rich meal fed by itself. In that again there is nothing new ; I called attention to it long ago.

Again you may have such an advantage in the production of iron as may enable you to draw a large part of that branch of industry away from some of the places where it is now conducted, as that work was taken away from New England and from other points, when anthracite coal was substituted for charcoal in dealing with the ore. But it will not be by the direct establishment of the *production* of pig-iron or crude steel that the general welfare of the South will be assured, whatever may be the gain in personal wealth. It is the *consumption* of iron which marks the progress of a state, not its production.

In 1880 the State of Pennsylvania yielded about one half the pig-iron produced in the whole United States ; and if we should take the estimate of the representatives of that State in respect to the importance of this branch of industry, we might almost fear that the State of Pennsylvania would suffer from the competition of Alabama ; but such will be very far from being the fact. If Alabama can send up to Pennsylvania a larger supply of pig-iron and crude steel at less cost than it can be produced within her own limits, Pennsylvania will make the greater gain. In 1880 the population of Pennsylvania was nearly four and one half millions, of whom nearly one and one half millions were occupied in gainful work in the conduct of all the arts of life. How many do you think it required of all this great army of industry to work the iron mines, the coal mines which supplied the blast furnaces, and the blast furnaces themselves, from which nearly, or quite one half, the pig-iron of the country was sent out to be put to use? Only about thirty-five thousand men and boys out of nearly a million and a half did this work. If the South should take this art away from eastern Pennsylvania, a few great chimney-stacks may remain as reminders of by-gone work ; but when you send to her mechanics, to her artisans, to her machinists, to her engine-builders, to her tool-makers, to her blacksmiths, to the hundreds, or even thousands, by whom iron is consumed where there are ten engaged in its production, even in that State, then the little force of men discharged from beneath the ground or from the mouth of the fiery furnace may find higher occupation and better pay in the consumption of iron and steel in Pennsylvania than they ever found in making iron there.

These examples bring me to the point to which I urgently call your attention. The secret of prosperity and of widely diffused welfare does not lie within the walls of the great factory ; it is not to be viewed by the light of the blast furnace ; it is not hidden in the dark interior of

the bowels of the earth ; these are but the crude factors ; it does consist in the thousand little arts which spring up in the sunshine of personal liberty which make the village, pervade the farm, and bring men and women into closer and better human relations than those either of the factory, the furnace, or the mine.

It has been a favorite idea of my own for many years, long before we heard so much of manual training and of the laboratory method of teaching the mechanic arts, that in every University a Chair should be established to be occupied by the Professor of Gumption. You smile, and maybe ask what I mean. I mean a kind of instruction which shall educe faculty, versatility, observation, readiness, aptitude, and dexterity. I could not myself lay down the course of study or name the text-books, though perhaps I might teach the art myself.

I have referred to the bad treatment of the cotton bale. To the young man who possesses gumption there is the way to fortune in saving a part of that waste. In the department of the University devoted to the Art of Gumption, one of my rules would be that in each year two or three months should be devoted to journeying on foot through the land, as the German Burschen used to and perhaps do now, in order that each young man might find out how little people know, and also how much less he knew himself than almost any one else. In this way he might find out that the true object of the University is to learn how to begin an education, and to know where to go and what authorities to consult in its future conduct.

If the student were to start with only enough money to bread himself for a week, and were obliged to pay his way on the rest of his journey, the more lessons he would learn in gumption and the more opportunity for applying it. There is hardly a machine or a process of industry now in use or practice that will not be out of date in twenty years, and the great fortunes of that day will be in possession of those who save the force that is now wasted. That State will be ahead which buys the most rags and sells the most paper. But we need not wait twenty years to learn this fact. The young man endowed with gumption may begin to observe the pre-historic methods of spinning and weaving in the heart of the Land of the Sky. He may find the wayside furnace and the old Catalan forge for making iron, in southwestern Virginia, and as he passes on his way he may even observe some traces of older methods of chemistry applied to moonshine distillation.

Emerging from these primitive places in which time has worked so little change in two centuries, we may find every type of progress, from the small factory or forge-working for the neighborhood up to the great factory in which a margin of profit of a quarter of a cent a yard suffices, and where the highest wages are earned in making a product at the lowest cost. The whole history of many arts that have required centuries

for their evolution may be studied in its progress in the course of a thirty day's vacation.

Not many months ago two of my Southern friends, Mr. Breckinridge of Kentucky, and Mr. Wilson of West Virginia, visited Boston. They were on the Committee of Ways and Means, and they desired to look over some of the branches of industry in Massachusetts, on whose materials or products they might be called to legislate. They were put in the way of visiting the great factories ; I went with them to one large city where I had arranged that after they had been through the factory they should go to one of the factory boarding-houses and partake of the customary meal which is furnished to the factory operatives, the best breakfast, dinner, and supper that could be had for the price anywhere within my knowledge, and I have made a special study of the distribution and the use of food. They returned to the city much impressed with what they had seen. In the evening, when dining with me and with some other friends, I said to them : "I wish you would come to my office to-morrow morning, and I will take you to the points where you will find reason to change your conclusions if you think you have touched the secret of New England. You think you have touched that secret, do you not ?" "Why, yes," they said ; "we might think so" ; to which I replied : "You have not ; all that you have seen is commonplace ; where I shall take you to-morrow I do not know, but in an hour I will disclose the secret which is open to all who possess gumption." They came, and we went up a narrow court opposite the Old South Church, into a nest of buildings plastered all over with little signs, a busy hive of industry covering arts almost without number. In the first room we entered we found two men beating out gold-leaf for the dentist ; in the next we found a man and a boy seated by a little furnace and a little forge, shaping steel knife-blades, too busy to stop the little trip-hammer, or even to speak to us ; in the next, half a dozen men working in wood, turning out athletic implements of various kinds ; and so on ; and when the hour was over I said to my friends : "Come back here and stay a week, and in every fifteen minutes of ten hours of each day I will take you to the places where in the making of the goods and wares there is the making of the man as well, and even then I shall not have begun to exhaust the tale of the lesser arts for which gumption is required."

I have been rejoiced in my more recent visits to your Southern land to see how this secret is being disclosed to you. Don't think that you are to succeed in competition with the North by way of long hours of work and low wages in the factory or in the mine. You will not subject us to any serious danger in the control of the thousand industries until you have learned the whole secret, that shorter hours and higher wages bring low cost of production where gumption has been taught,

and where the leisure earned by him who does the work in the best way becomes the opportunity for the diligent and intelligent use of his spare time. It is on these lines that you should devote that mental factor which is the prime factor in material progress in every single art on which true prosperity can be predicated.

Your pig-iron, in which you may hold supremacy, may reach a huge proportion in the eyes of those who cannot see through a plate of iron ; but when I look through the plate of iron to something beyond, I find that the hens' eggs sent to market from the barnyards of the land to be consumed every year, are without question more than equal in value to the largest annual product of pig-iron ever made in this country.

It is somewhat embarrassing to repeat myself, but as I am a special student of the art of nutrition I will again venture to touch upon a somewhat scientific demonstration of the great progress of your Southern people during the present generation, and I will repeat a little story that I once told at Atlanta. Lord Truro, the head of a commission of inquiry of some sort in Great Britain, wrote to me two or three years since to ask if I could give any explanation of the "deterioration of the American man" ; he appeared to take it for granted that such a deterioration had occurred, and that I should give him the reason for it. Well, I used to think myself only an average man in size, height, and weight at home, but when I made my first visit to England I was rather surprised to find myself a tall and large man by comparison with those whom I passed in the streets. A little later I learned of the comparisons which had been made by Dr. Henry Bowditch in respect to the size, height, weight, and physical development of the class of young men who go to the universities and higher institutions of learning in England and in this country. He had proved conclusively that the boys in our higher schools and the young men in our universities were taller, heavier, stronger, and better developed than the average English boys at Eton and Harrow, or of the young men of the same age at Oxford and Cambridge. But I was a little puzzled how to prove a general rule to the satisfaction of my economic friend. It then occurred to me that for a long term of years, sufficient to prove a rule, the people of this country had been clad in ready-made clothing. I had learned, when studying that branch of industry on its economic side, that in every thousand garments there were certain proportions of given sizes around the chest, the waist, and of given length of leg. I sent a circular of inquiry to a large number of clothing manufacturers, from which I received returns which probably covered their experience in making betweeen one hundred million and two hundred million suits of clothing during the last thirty years. Of these replies, among others three were from firms, one in St. Louis, one in Baltimore, and one, I think, in Cincinnati, whose trade had been mainly with the South.

These replies attracted my attention. Each stated that in former days your Southern men were longer in the leg than they were big around the waist, but within the last few years the waist has grown an inch to an inch and a half on the average, and now measures more than the length of leg. To the head of each of these establishments, which had given their opinion independently of the others, I put the question: "What is the cause of this change?" And each one answered, in his own way: "The better conditions of life, and the better nutrition due to the progress of industry in the Southern States account for this change."

Am I wrong in bringing all these commonplace ideas into a Commencement Address? What else can you expect from one who missed the training of the college?

You young men are about entering upon the work of life, and I have about done with it. The poet says to you:

> "Life is before ye, and as now ye stand
> Eager to spring upon the promised land,
> Fair smiles the way where yet your feet have trod
> A few light steps upon a flowery sod."

You have passed four years in your undergraduate course; you are about to take up your professional studies or to enter directly into the struggle for life. To many, perhaps to all, the urgent question now is: What shall be the measure of your compensation? In common speech: What will be the rate of your wages? We all work for wages, material or immaterial; we stake or wager our time, our intelligence, our physical afforts against the return which those whom we attempt to serve will render to us as the price of our effort. When we begin the true work of adult life few of us have ever yet rendered any service; we have cost the community all that we have consumed; but we have not produced, or added to the production of any thing; how shall we become entitled to either a small or a great prize, material or immaterial, out of the future product? The question which every man may rightly put to himself when choosing his function, is this: What is the service that I can render by which I may become entitled to my own gains, whatever they may be?

The measure of your compensation will not be your own estimate of what you can do, nor may it be in any measure corresponding to the cost of putting you where you are. It may not even be the measure of what you produce if you take part in material production. For want of gumption you may work hard and yet produce little or nothing of what people want, because they already have a plenty, as of cotton, for instance.

The true measure of the dollars of your gain will be what you save other people from doing. If you are versatile, capable, if you have

gumption, you can do what they think it is necessary that some one should do for them better than they can do for themselves ; they pay you well for the time and labor which you save them. At this standard if you engage in reputable and useful occupation, the very dollars of your gain, no matter how numerous they may become, will be the tokens and the measure of the services which you have rendered to your fellow-men. It is in this way that personal wealth and common welfare are or may be reconciled.

The law of life is the law of service. We are members one of another, and the very existence of society rests upon the interdependence of its members. The only factors which are or can be placed at the disposal of each and all alike without distinction of race, color, or condition, are time and opportunity. These being given and equal rights being secured under just laws, the measure of your own success will be the measure of the services which you are capable of rendering to your fellow-men.

What, then, is the measure of our opportunity? It may be rightly considered that only a very small part of the population of the globe computed now at about fourteen hundred millions, belong to what may be called the machine-using nations. The arts to which modern labor-saving inventions have been applied are to be found in greatest measure in Great Britain and the United States ; next in the Netherlands and in France ; and last in Germany ; but these states comprise in all only about two hundred million people. Very limited progress has been made in the application of modern methods of industry toward increasing the abundance of home production in Italy, Austria, or eastern Europe ; almost none in the great continents of Asia, South America, Australia, and Africa, except in the extension of the railway systems. If then it follows that by way of the application of science and invention to all the arts of life an abundant product can be attained at low cost, then that nation may attain the greatest benefit from the progress of science in which this abundant product is free from the blood tax of the standing armies and the money tax of great national debts, and in which all the forces in action tend to remove the prejudices engendered by distinctions of race, privilege, creed, or conditions, and to make the whole body corporate one people. Among that small number of nations and states in the civilized world which I have named, the United States, England, the Netherlands, France, and Germany, in which modern inventions and modern machinery have been most fully put to productive use, who will hold the advantage of position? Will it be the English-speaking people of the United States including Canada, as the time is rapidly approaching when the people of Canada will no longer be prevented from exchanging their services or products with us by an arbitrary border-line?

Will it be the English-speaking people on their little island where the finer ores of iron are now wanting, and where even the coal may soon be costly?

Will it be the polyglot races who dwell apart from each other on the continent of Europe, still separated by all the malignant forces born of war which tend to maintain the distinctions of race, privilege, caste, creed, and condition?

If the interdependence of men and of nations be admitted, it follows of necessity that the exchange of products or services among them benefits both parties in every exchange. It does not follow, however, that the measure of the benefit in terms either of time, of money, or of product must be equal; although the exchange is that of equivalents in money value. For instance, the vast population of China, now believed to be nearly or quite four hundred million people, are clad almost wholly in cotton and silk, the cotton ginned and the silk reeled, and both fibres spun and woven wholly by hand. Their textile fabrics are therefore produced by the application of the maximum of time and labor with a minimum of product. The machine-made fabrics exported from Europe and from this country would not suffice to supply ten per cent. of the population with their average need. China can export raw silk as well as tea to the advantage of consumers because no successful method has yet been invented for reeling silk from the cocoon except by hand. It follows that silk as well as tea is the product of handiwork of a kind which calls for the utmost dexterity and skill. There is, as all know, an excess of population in China capable of performing these handicrafts; and although the Chinese and the Japanese are in some respects the best educated people in the world, technically speaking, yet being limited to hand work, wages are very low, lower than anywhere except in India.

To the extent, therefore, to which other nations will buy tea and silk, the Chinaman will take in exchange cotton fabrics and other products made by machinery. In this way her people secure materials for clothing at less cost than when they produce them for themselves.

The capacity of a spinner or a weaver in any of your Southern factories in which you are now making coarse drillings and sheetings required in China, is fifty- to one hundred-fold that of the hand spinner or weaver in China. If you buy twenty dollars' worth of tea it costs perhaps two hundred days of Chinese labor; when you sell twenty dollars' worth of drills or sheetings they may represent less than twenty days of American labor in the field and in the factory. But when the Chinaman cannot sell the tea which cost two hundred days of labor, and is forced to make the cotton fabric, that fabric may cost him five times as much work as it does to make the tea, or five hundred days' work. In this example you will find an instance of the rule which is

fundamental, to wit: that the rate of wages constitutes no standard of the cost of production. The compensation of the workman depends upon two factors, his own skill and the effectiveness of the capital or machinery which shall be placed at his disposal; under these conditions it follows of necessity that in proportion to the effectiveness of the capital, that is to say, in proportion to the application of science and invention to the resources of a given country—or to the resources of a given section of any country, the wages or compensation of the workman will rise as the cost of production will be reduced; it follows of necessity that the rule of progress in a given community is this: High wages or earnings either in money or in what money will buy are the necessary result or consequence of a low cost of production in all the arts to which science and invention in the concrete form of modern machinery and tools can be applied. This is but another way of saying what I stated at the beginning of this Address,—*the mind of man is the prime factor in material production.* It follows also that where commerce is absolutely free as it is among the States of this Union, wherever the raw materials exist in greatest abundance under the most favorable conditions for working them, either in the mine, the field, or the forest, there the production of the crude or primary forms of manufacture will be conducted at the lowest cost, and at the same time under the highest wages that can be paid in such primary processes. But since time and space have been almost eliminated by the railway and the steamship, the cost of transferring many of these crude materials is but a small element in the cost of the higher or complete forms of manufacture; therefore the finer and higher branches of industry may be almost independent of distance, and may be quite remote from the place where the crude materials are provided; such branches of industry will centre at the point where the conditions of society are the best; where both public and private credit are the highest; where the skilled mechanic can find the best common schools for his children in their earlier years, or the best technical schools for them as they grow up; where the parents who can afford it can find the best universities in which to make the most profitable investment for the benefit of his children in giving them a complete university preparation for the higher duties of life; where the savings-bank, the building society, and the title insurance company make it very easy for any man of moderate aptitude or industry to become the owner of his own dwelling-place; in other words, the higher forms and the best-paid branches of productive industry can be conducted under the best conditions where population is moderately dense; this is the reason why towns and cities grow; to such points food, fibres, and metals may be readily brought, and there all the minor services on which the interdependence of society rests may be rendered with the least obstruction.

Under these conditions we of the cold and sterile North welcome so willingly the competition of the South and West ; you can provide the means for our welfare in far greater measure than you can ever take away from us any part of our industry ; and we may both gain by this exchange. We could not bread ourselves for a week ; our forests are depleted ; we have neither mines, forests, nor fields on which we can any longer rely for any full measure of subsistence ; we must draw all the materials on which we work, and nearly all the food that we eat, from distant points ; but so long as we can lead you in the application of science and invention in the conversion of these crude products into the finer forms, we may exchange fabrics for fibres, wares for crude materials, shoes for leather, wagons for timber ; and on the saving of that which others waste, which is now the entire profit left in almost any branch of manufacture, we may still provide the capital by which our labor will be well sustained.

Thus it is that in the "vigorous prosecution of the pursuits of peace," so well advised by our Governor Andrew at the end of the Civil War, each section, State, town, and person may gain that position to which our commerce may entitle us, free from the obstruction of tariffs, and free from the burden of destructive taxation which now oppresses all other machine-using nations.

We are approaching the end of the nineteenth century, the century in which the greatest progress due to the application of science and invention to the production of the means of subsistence has been made ; the century in which ores have been quickly turned into metal ; in which steam has been converted into power, although as yet by crude and wasteful methods of using fuel ; in which many of the most exhausting processes of labor have been relieved.

We are also near the beginning of the twentieth century, a century in which the waste product even of the iron-stone left after the conversion of impure ores into pure iron and steel will be converted into food for man and fibre for clothing, by pulverizing the phosphatic slag and with it fertilizing the lands which have been wasted by ignorant labor ; the century in which heat may be converted directly into work, power, and light ; in which aluminum, the lightest and strongest metal which forms the base of clay, may even displace iron and steel in common use for many purposes ; in which nitrogen may become a low-priced product derived from the cheap conversion of the force of the atmosphere into the fertility of the soil, a process almost sure to come from the work of the French chemists and of our own chemists, notably Prof. Wm. O. Atwater, of Connecticut ; the century in which water will be burned for fuel, and in which power, light, and heat, under the impulse of that strange form of energy which we name electricity, may be applied in every household at the touch of a button in the wall ; and this will be

the century in which all the methods of distribution may be as complete as the power of production shall have become adequate.

When this new century begins one generation will have passed away since this country was devastated by our Civil War; the fruits of the war will then be free for the enjoyment of those who are to come, and who will have been spared both the pains and the penalties due to their fathers' toleration of a wrong which was inconsistent with the principle of personal liberty—the principle on which this nation was founded by our common ancestors: by Washington and Franklin, by Jefferson and Adams, by Rutledge and Hancock, by Patrick Henry and Alexander Hamilton, by Lee and Greene alike.

In the providence of God our single century of national life is but as a day that is past. We know that it has been the fate of many whose future welfare rests on you young men, that in the century that is past they were subjected to wrongs "darker than death or night." We know that to others it had been given as to you

> "To hope till hope creates
> From its own wreck the thing it contemplates."

We know that the way to personal liberty has been at the cost of so much blood and treasure. To that principle of liberty we have all surrendered, and by its power both North and South have been subdued.

In the new light which now shines o'er all the land, emulating each other in the vigorous pursuit of peace, order, and industry, we may become like the Prometheus Unbound, the Titan among the Nations. Then you and your children and your childrens' children, secure in their personal liberty attained at so great a cost, may realize the very vision of the poet; then may be established a nation which shall be

> "Good, great, and joyous, beautiful, and free.
> This is alone life, joy, empire, and victory."

This is my second visit to these noble halls, so like the old colonial buildings of Harvard, and to your beautiful campus. When I first came here, down under the hill in a great school building, more than nine hundred enfranchised blacks were eagerly striving to attain the rudiments of an education; but here upon the hill the voice of no student broke the silence. Robert Barnwell, ex-senator of the United States, and then one of the oldest living graduates of Harvard University, acting as librarian, kept up the continuity of your history. I spoke hopeful words to him, and I trust that he lived to see the day when new life again surged through your halls. When I returned home I told my friends in Massachusetts that only when the university on the hill should be as crowded as the school-house by the side of it, would the true progress of the South begin. That time has come.

I, myself, missed, as I have told you, the training of the college, but I am an honorary member of the Phi Beta Kappa of Harvard, and from 1877 to 1891 I shall have had representatives there, one of whom accompanies me in my present visit. As I left her Class-Day festival to start on my journey, I thought I might venture to bring to you the fraternal greeting of our ancient University, and to that President Eliot empowered me ; but when I took in the true significance of this greeting, and the meaning of the fact that one should be its messenger, for whom there could have been no welcome here at the time when he himself might have been a graduate, I felt that something more than my own feeble words were needed, and I sought for living words to fitly mark this day ; with them I will conclude an Address which has wound its devious way too long and perhaps too far afield :

" Ring out the old, ring in the new,
Ring, happy bells, across the snow,
The year is going, let him go ;
Ring out the false, ring in the true.

" Ring out the grief that saps the mind
For those that here we see no more ;
Ring out the feud of rich and poor,
Ring in redress for all mankind.

" Ring out the slowly dying cause
And ancient forms of party strife ;
Ring in the nobler modes of life,
With sweeter manners, purer laws.

" Ring out old shapes of foul disease ;
Ring out the narrowing lust of gold :
Ring out the thousand wars of old ;
Ring in the thousand years of peace.

" Ring in the valiant man and free,
The larger heart, the kindlier hand ;
Ring out the darkness of the land ;
Ring in the Christ that is to be. "

THE FOOD QUESTION IN AMERICA AND EUROPE

OR, THE PUBLIC VICTUALING DEPARTMENT

THE FOOD QUESTION IN AMERICA AND EUROPE;

OR, THE PUBLIC VICTUALING DEPARTMENT.[1]

IN the year 1865 the average production of grain to each inhabitant of the United States, man, woman, and child, was thirty-two and one half bushels, consisting of Indian corn, wheat, oats, barley, rye, and buckwheat.

In the year 1885 the average product was fifty-two and one half bushels, an increase of more than sixty per cent.

The gain in the production of hay, of meat, of dairy products, of fruit and other articles of food cannot be accurately measured, but has doubtless been equal to the *per capita* increase of grain.

If objection be taken that the agricultural statistics of 1865 were incomplete, because taken so soon after the war, reference may be made to the average of the decade 1865 to 1874 inclusive, in which years the crop of grain averaged $37\frac{85}{100}$ bushels per head, as against the average of $48\frac{16}{100}$ bushels per head in the years 1875 to 1885—a gain of over twenty-seven per cent. *per capita*. The gain is really greater than is indicated by this percentage, because the proportion of our population which was engaged in agriculture was less in the second period than it was in the first.

In 1861 the railway service between the East and the West had for the first time become a unit, by the completion of various sections of railway connecting the whole system at many points. The importance of this fact in its connection with the power of the North to concentrate its armed forces, and to supply them with food during the civil war, has yet to be treated. It was an important factor in the power of the North to maintain the integrity of the nation.

It was not until 1869 that the first consolidation took place of a through line under one management, from Chicago to the seaboard. This was then accomplished by the late Cornelius Vanderbilt.

In 1865 the average charge for moving a ton of produce from Chicago to the seaboard, and for moving general merchandise from

[1] Reprinted from *The Century Magazine* for December, 1886.

the East to the West, was at the rate of three cents and forty-five hundredths per ton per mile. In 1885 it was sixty-eight hundredths of a cent for the same service.

If we take certain typical quantities of flour, beef, pork, corn, dairy products, and of fleece wool, weighing thirteen tons, their value at the market prices for export in the city of New York in the year 1865 was $1,124.33, either for export or for domestic consumption, and they remained substantially at this value during the years 1866, '67, and '68—the period of paper inflation. The cost of moving thirteen tons one thousand miles over the New York Central Railroad and its connections in 1865 was $448.63, leaving to the producer or his agent in Chicago the net sum of $675.70 in paper money, equal to $475.76 in gold. The same quantities of the same articles were worth in the city of New York in June, 1885, $575.98 in gold. The cost of moving them a thousand miles was $88.40, leaving to the producer or his agent $487.58 in gold. But in the interval the efficiency of the farmer, measured by the increase in the grain crop *per capita*, had increased by sixty per cent., so that he could have placed twenty tons in New York in 1885, as against thirteen tons in 1865, the value of which, after deducting the freight, was $780.13. These figures may explain facts which are of common observation. The old mortgage debts have been paid, and the rate of interest on capital in the West now differs little from that in the East on the same security.

Thus it appears that, notwithstanding a reduction of price by one half, the increased efficiency of the railway service and the restoration of the gold standard of value have enabled the farmer of the West to grow rich on the low price of produce, where he would have inevitably become poor under the former system of paper money, high prices, and heavy railway charges.

If we apply the rates at the two periods to flour, as an example of the average food of the people, at ten barrels per ton of 2,000 pounds,—which is within a fraction of the true quantity,—the cost of moving a barrel of flour 1,000 miles in 1865 was $3.45. In 1885 it was 68 cents. The average ration of wheat-flour to each adult person in the United States is well ascertained to be one barrel each year. Our population is now computed at somewhat over 58,000,000, or, if we rate two children of ten years old or under as one adult, we number in our consuming power 50,000,000 adults, each requiring one barrel of wheat-flour a year, all of which is moved on the average at least 1,000 miles from the producer to the consumer. Before railways were constructed, grain which was 150 miles distant from a waterway could not be moved that distance without an expenditure about equal to its value. If wheat had been subject in 1885 to the charge of 1865, the cost of moving 50,000,000 barrels of flour 1,000

miles would have been $172,500,000. At the actual charge of 1885 over the New York Central line, at the average traffic charge of the year on all merchandise, of 68 cents, the cost was $34,000,000, a difference of $138,000,000 on the flour only.

Bread, however, is a less important factor in the subsistence of the people of this meat-consuming country than it is in other countries. In the Eastern and Middle States recent investigations of the Bureaus of Statistics of Labor—especially in Massachusetts—sustain the substantial accuracy of previous computations made by the writer from the accounts of factory boarding-houses as to the average standard daily ration, or cost and quantity of the daily supply of food materials of adults who are occupied in the work of every-day life as artisans, mechanics, factory operatives, or laborers. The average in the factory boarding-houses—the occupants being mostly adult women—comes to 24 cents a day. A fair average cost of food for men and women engaged in manufacturing and mechanical arts appears to be 25 cents a day, varying in some measure in respect to the proportions, as the dietary of men varies somewhat from that of women, workingmen consuming more animal food than the average of factory operatives, who are mostly women.

This daily ration consists of the following elements :

Meat (including poultry and fish, a half to one pound, according to kind and quantity) at an average cost of	10 cents
Milk (half pint to one pint), butter (1 to 1½ ounces), and a scrap of cheese	5 "
Eggs (one every other day) at 12 cents a dozen	½ "
Total cost of animal food	15½ cents
Bread (about ¾ of a pound)	2½ "
Vegetables (green and dry)	2–2½ "
Sugar and syrup	2 "
Tea and coffee	1 "
Fruit (green and dry)	½ "
Salt, spices, ice, and sundries	1½–1 "
Average cost of daily ration	25 cents

The proportions vary somewhat under different conditions, but they may be taken as a fair average standard ration for adult workmen and women.

In the West the prices of meat and grain are less ; the prices of groceries somewhat higher ; but, on the whole, the same quantity of food can be purchased at somewhat less cost. In the South the habits of the people—especially of the colored race—are very different. Dairy products are much less used, and with the negro corn-bread

and bacon (hog and hominy) take the place of most other varieties of food. On the whole, however, the proportion of wheat-bread to the other elements of the daily ration may probably be established at the proportion of one tenth of the whole ration. If we, then, save $138,500,000 per year in the cost of transportation on our bread bill only, do we save tenfold on our whole food supply? Is our food, on the average, moved a thousand miles, either by railway or by waterway? No exact reply can be given to this question. We find, however, that the tonnage which was moved over all the railways of the United States in the year 1883 represented, on the average, a fraction over seven tons to each inhabitant, man, woman, or child, moved an average distance of 110 miles. In 1884 this quantity was slightly reduced *per capita*, but the distance was a little greater. The charge for this service in 1884 was $8.75 per head of the whole population. In 1885 the quantity was a little more, the average per ton a little less, and the gross charge per person was $8.88. The largest single item of this traffic—probably one half—consisted of food for man or beast. When to this is added merchandise moved by waterways and by wagon, and when consideration is given to the fact that all these materials must be sorted, converted, reconverted, and finally distributed in small parcels by wagon or by hand, so that every adult person may be sure to have from three to five pounds of solid food and one to two pounds of liquids, together with the necessary modicum of fuel, clothing, and shelter, the mere mechanism of subsistence can be comprehended, and the relative importance of the victualing department may be fully realized.

The average cost of the food materials in the Eastern and Middle States has been given. The people of these sections are even more dependent on the mechanism of distribution than any others. Their proportion of the railway tonnage must be double, in respect to distance, that of the inhabitants of other sections; and yet such is the perfection of the railway service at the present day that one day's wages of a common mechanic—or one holiday in a year devoted to work in Massachusetts, will pay the cost of moving a year's supply of bread and meat from the prairies of the West to the centre of Eastern manufactures. This fact cannot be too often repeated.

In view of these data, if the gain compassed in twenty years in the cost of moving bread alone has been $138,500,000 for one year, how much do we now save on all the necessaries of life? No absolute reply will be attempted; but it may be remembered that by way of the railway, waterway, and steamship the whole world has been converted into a neighborhood. Within the lives of very many men now living, each little area of this country practically depended upon its own labor for its own food. To-day the wheat of Oregon and of

California is carried around Cape Horn to England at a fraction of its value, while half the people of Great Britain derive their food from India, Australia, and America, or from fields which are from six to thirteen thousand miles away. A cube of coal which would pass through the rim of a quarter of a dollar will drive a ton of food and its proportion of the steamship two miles upon its way from the producer to the consumer. The great hotels of New York run special railway cars for carrying eggs from Michigan to New York, and yet we import hens' eggs in considerable quantity from Denmark and from Holland. If each adult in the United States consumes one egg every other day, at only twelve cents a dozen, which is the proportion of the factory operatives of New England, the value of our hens' eggs is $91,250,000 per year, or twice the value of the product of silver bullion, 25 per cent. more than the value of our wool-clip, and greater than the value of the entire product of our iron furnaces, even if we increase the product of pig-iron this year to 5,000,000 tons at $17 a ton, at the furnace, or $85,000,000 in the aggregate ; at which figures our iron industry would greatly prosper.

I may venture to give once more a table which shows statistically the food bill of the people of this country, upon the assumption that each average adult ought to enjoy as good a supply of food as the adult factory operatives, mechanics, and artisans of New England and the Middle States :

	Per day.	Aggregate per year.
Meat, fish, and poultry	10 cts.	$1,825,000,000
Milk, butter, and cheese	5 "	912,500,000
Eggs (one every other day)	½ "	91,250,000
Animal food	15½ cts.	$2,828,750,000
Bread (¾ lb. per day)	2½ "	456,250,000
Vegetables	2½ "	456,250,000
Sugar and syrup	2 "	365,000,000
Tea and coffee	1 "	182,500,000
Fruit (green and dry)	½ "	91,250,000
Salt, spices, ice, and sundries	1 "	182,500,000
	25 cts.	$4,562,500,000
Deduct probable excess on sugar, tea, coffee, and dairy products		262,500,000
		$4,300,000,000
Add spirits and fermented liquors at the average between the estimates of Mr. D. A. Wells and the advocates of prohibition about		700,000,000
Probable price of food and drink constituting the victualing department for one year at the present time		$5,000,000,000

These figures are, as to each separate item, greatly in excess of ordinary computations, very few persons ever daring to estimate the

entire dairy product of the country at over two thirds the sum which is given in this table. In explanation of this discrepancy, I may state that few persons comprehend the great cost of distributing food in small parcels at retail. Perhaps the most difficult problem in the victualing department is to reduce this element of the cost of food. For instance, in the foregoing dietary the estimate for bread is three quarters of a pound per day, at a cost of two and a half cents, which would be at the rate of three and one third cents per pound of bread, a quantity corresponding to the ration of one barrel of flour per year to each adult, each barrel yielding two hundred and eighty pounds of bread. Now, there is only one place within my knowledge where good bread can be purchased at so low a price as three and one third cents per pound ; that is in the shops of the Howe National Bakery in New York. In Boston I find the average price of bread which is sold in the bakers' and grocers' shops to be more than five cents per pound, at which price the larger population of this city is served. At five cents per pound the bread of the people of the United States would come to $700,000,000, in place of $456,250,000. It therefore follows that if the food bill of the people is not in quantity what this standard calls for, the reason is that the average dietary is not up to this standard, even after making the admitted deduction for the excess of tea, coffee, sugar, and dairy products which is consumed in the East, as compared to other parts of the country.

In order that some idea may be gained as to the accuracy of the proportions which are given in this dietary, I have been enabled, by the courtesy of Mr. McHugh, Chief of the Bureau of Labor Statistics in Ohio, to give the average cost of the daily rations of the inmates of the insane asylums and of the reformatory institutions of Ohio. It is as follows :

Meat (including fish and poultry)	cents $6\frac{4}{10}$
Milk, butter and cheese	" $3\frac{3}{10}$
Eggs	" $\frac{3}{10}$
Animal food	" 10
Sugar, syrup, salt, spices, and other groceries (including beans and lard)	" $2\frac{1}{2}$
Bread	" $2\frac{1}{10}$
Vegetables and fruit (green and dry)	" 2
Tea and coffee	" $\frac{6}{10}$
Total per day	" $17\frac{2}{10}$
Number of persons subsisted for one year	6256

Many other comparisons might be made from the excellent reports of other Bureaus ; but this will suffice to establish the proportions of the victualing department.

It is admitted that the ration of sugar, tea, coffee, and dairy products in the previous table is too high ; but if, after making deductions for these elements of subsistence, the price of whiskey and beer be added at the average between the lowest computation of the skilled economist, Mr. David A. Wells, say about $500,000,000, and the estimate of prohibition advocates, $900,000,000, there can be no question that the total cost of food of the people of the United States is $5,000,000,000 ; and at this estimate it doubtless represents one half the price of life measured in money to at least ninety per cent. of the population who do the actual physical work of the whole community.

It is a well-established fact that, with respect to the more thrifty and prosperous classes of mechanics, artisans, and other so-called working-classes, as well as in regard to the larger proportion of salaried classes, one half the cost of living is the price of materials for food. As we go down in the grade of work to the level of the common laborer who can earn but from 80 cents to $1.25 per day, the proportionate cost of food materials rises to 60 and even 70 per cent. of the income of the family.

Thus it appears that, notwithstanding the improvement in the mechanism of distribution, and in spite of the enormous increase in the *per capita* product of grain and other food, great numbers of persons, even in this country, can barely obtain their daily bread, while want exists in the midst of plenty. Why is this? Is it not because we waste enough in ignorant buying and in bad cooking to sustain another nation as numerous, and because no common attention has yet been given to what may be called the Art of Nutrition? The writer only ventures to refer to this art in anticipation of a series of articles upon the Science of Food, which are to be given in future numbers of *The Century* by Professor W. O. Atwater, to which this article may serve as an introduction.

It is important to determine the causes of these false conditions in the United States. More difficult yet are the problems in such countries as Ireland and Egypt, each name representing one of the most productive areas of the earth's surface, capable of sustaining a greater population than exists in almost any other country in proportion to area, and yet both stricken with poverty, almost with famine. Why are fertile districts of northern Italy devastated by the *pellagra*, a loathsome disease which is induced by insufficient nutrition? Why has the Government of Germany undertaken to instruct the people in the art of nutrition, lest the sordid conditions of great districts should end in socialism, nihilism, and violent revolution? What is the most important department in the political questions of Europe to-day! Is it not the Victualing Department?

It must be remembered that, in the nature of things, there must be

a substantial equality in the daily supply of food, so far as weight and the elements of nutrition are concerned. If the masses of the people are to be well nourished, each adult person must have the due proportion of protein or nitrogenous material, of fats, and of carbohydrates or starchy materials, because if either one is deficient vital force cannot be sustained. Neither can there be any true mental vigor or spiritual life when the body is not well nourished. "*Non est animus cui non est corpus.*" So far as any disparity can be admitted, the workingman or common laborer requires more than any one else. His food is his fuel, and his physical exertion must be sustained by a sufficient supply with the same regularity and certainty that the boiler of the steam-engine must be fed with coal; and, in fact, it will appear in Professor Atwater's future treatment of this subject that, although the standard rations which have been established as necessary to sustain a workingman in full vigor by several leading authorities in Germany, France, and England vary somewhat in the relative proportions of protein, fats, and carbohydrates, yet when reduced to calories, or mechanical units or equivalents of heat, they correspond almost exactly each to the other. He will also show that it has been found expedient for the employers of labor in certain brickyards of Massachusetts and Connecticut to serve their workmen with a supply of the best food which represents in its chemical proportions, as well as in its calories, twice the ration which is served to the soldier of the German army when upon a forced march, or when engaged in the most arduous struggle of active service in war, in order to promote the largest production of brick per man at the lowest cost to the employer.

The actual production of the principle element of food in the United States, to wit, the grain crop, has been given. Attention has also been called to the perfection to which the mechanism of distribution has been brought.

A few words may now be given to the use of land—the source of nearly all our food. The arable portion of the United States is computed at more than one half the total area of 3,000,000 square miles, omitting Alaska. Of this portion only 282,500 square miles are yet put to actual use in the production of grain, hay, roots, or other articles of food, omitting only that proportion of animal food which beasts derive from pastures. The several areas of arable, pasture, and mountain land are given below, and in the portion set off as pasture-land are given the areas which might suffice for a much larger production of beef, dairy products, mutton, and wool than we now enjoy, if known methods of agriculture were intelligently applied to these arts.

In the accompanying diagram the outer square indicates the total area of this country, omitting Alaska, substantially 3,000,000 square miles. This square has been subdivided into three parts. The upper

half or section represents, in a rough-and-ready way, the arable land of the country. What is called arable land really constitutes a larger portion, but one half at least may be called fairly good land.[1]

The lower half is divided into two sections. One of these sections fairly represents pasture or grazing land, too dry for agriculture without irrigation, but capable of sustaining great flocks and herds. The other portion is assigned to mountain and timber. But even this part has many fertile valleys, and much of it may be made use of for the production of food.

OUR NATIONAL DOMAIN.

WHAT WE HAVE DONE WITH IT, AND WHAT WE MIGHT DO WITH IT.

SECTION 1. ARABLE LAND—1,500,000 SQUARE MILES.

IN ACTUAL USE.

Corn and Pork. 1,900,000,000 bushels. 112,500 sq. miles.	Wheat. 500,000,000 bushels. 60,000 sq. miles.	Hay. 40,000,000 tons. 50,000 sq. miles.	Oats. 550,000,000 bushels. 30,000 sq. miles.	Cotton.	Miscellaneous.

302,500 square miles now produce all our grain, hay, cotton, sugar, rice, and garden vegetables.

SECTION 2. PASTURE-LAND.

WHAT MIGHT SUFFICE.

Beef. 60,000 square miles.	Dairy. 60,000 square miles.	Sheep. 60,000 square miles.

(A square mile = 640 acres.)

SECTION 3.

MOUNTAIN AND TIMBER.

Compiled from the records of the Agricultural Department and other sources.

Within the lines of the upper half, certain proportions drawn on the same scale as the outer square, which represents the total area, will be observed. These smaller sections represent proportionately the actual cultivation, as it now is, in its ratio to the whole.

[1] The following analysis of the use of land has been previously submitted in "Bradstreet's" by the writer.

CORN AND PORK.

Our average crop of Indian corn ranges from 1,800,000,000 to 2,000,000,000 bushels. At twenty-five to thirty bushels to the acre, the area of the cornfield is only 112,500 square miles, or less than four per cent. of the total area of the country. Our customary average is less than thirty bushels, but on the best land fifty bushels are commonly produced, and sometimes one hundred. Corn may be reduced to pork at the ratio of about one bushel to ten pounds, including waste.

WHEAT.

About 60,000 square miles are all that are required or are now under cultivation in wheat. At only thirteen bushels to the acre, this little patch, constituting but two per cent. of our total area, would yield 500,000,000 bushels of wheat. This quantity, after setting aside enough for seed, would supply 80,000,000 people with their customary average of one barrel of flour per year.

HAY.

A hay crop of 40,000,000 tons, at the average of a good season, one and a quarter tons per acre, calls for less than two per cent., or 50,000 square miles.

OATS.

The oat crop of between 500,000,000 and 600,000,000 bushels, at thirty bushels to the acre, calls for one per cent., or 30,000 square miles.

COTTON.

While the cotton crop has never reached 20,000 square miles, or two thirds of one per cent. of the entire area of the country (less than two and a half per cent. of the area of the strictly cotton States), yet on this little patch, at the beggarly crop of one half to three fifths of a bale to the acre, 6,000,000 to 7,000,000 bales can be made each year.

MISCELLANEOUS.

Lastly, all our miscellaneous crops of barley, hay, potatoes, and other roots, of rice, sugar, tobacco, hemp, and garden vegetables, are raised on one per cent. of our area, or 30,000 square miles.

POSSIBILITIES.

It is perfectly safe to affirm that, were a reasonably skilful mode of agriculture generally applied to these crops, the area now under cultivation would yield all that could be required by double the present population of the United States, and would yet leave over as much as we now export.

In the square which has been set aside to represent pasture-land certain subdivisions have been made which represent what *might* be done with the land, not what *is* done with it. Our cattle truly roam over a thousand hills and over wide plains, under the worst possible conditions for the best production of meat, or even of dairy products. When an intelligent and an intensive system of farming shall have been adopted, and when each one of the Eastern States (with the possible exception of Delaware and Rhode Island) shall produce within its own limits all its own meat and its own dairy products (as may soon happen), the area set off for beef, dairy, mutton, and wool will more than suffice.

BEEF.

The area assigned to beef is 60,000 square miles. This would yield each year one two-year-old steer to every two acres. It is now admitted, as has been frequently proved, that sufficient green fodder can be made and saved in pits, under the name of ensilage, to carry two steers to one acre. The additional nutriment—meal from Indian corn, cotton-seed meal, or hay—has been already provided for in the area set off for these crops. At the rate of one two-year-old steer taken off each two acres, each adult inhabitant of the United States, counting two children of ten years or under as one adult, could be served with very nearly one pound of dressed beef per day.

DAIRIES.

The area set aside for dairy products is also 60,000 square miles. At the ratio of one cow to each two acres, fed on ensilage, cotton-seed meal, and a modicum of hay, there would be a yield of fifty per cent. more milk, butter, and cheese than the people of the United States now enjoy; while the eggs, valued at the present time at not less than $90,000,000 a year, and probably at $120,000,000, could also be doubled in the same area.

MUTTON AND WOOL.

To a similar area of 60,000 square miles mutton and wool are assigned. Were sheep folded and fed as they are in England and in some parts of this country, protected from cur dogs and properly nourished, wool to the amount of 500,000,000 pounds a year (which is more than our present entire production and import) could be readily produced from this little patch, together with a greater secondary product of mutton and lamb than we now consume.

CONCLUSIONS.

It may therefore be inferred that, for the present at least, there will be no danger of starvation within the limits of this country, or of the

exhaustion of our land. No one yet knows the productive capacity of a single acre of land anywhere. When land is treated as a laboratory and not as a mine, subsistence may become more of a science than it now is, and neither prosperity nor adversity may then be attributed either to abundance or to lack of land.

In this connection it may be well to say that the distribution of the farm-lands of the United States is one of the most important factors in the social order. In 1880 the census disclosed the following facts :

Total number of farms	4,008,907
Cultivated by owners	2,984,306
Rented on shares	702,244
Rented for money payments	322,357
Average size of farm, acres	134
Farms of 50 acres or less	1,175,564
Farms over 50 and not exceeding 500 acres	2,728,973
Farms of over 500 acres	104,550

From these facts it may appear that if there is want in the midst of plenty in our own land, and if there is any difficulty in procuring daily food, it may not be attributed either to lack of land, want of capital, or scarcity of laborers. The modern miracle of the loaves is this : One man working the equivalent of three hundred days in the year, or three men working one hundred days in the harvest season on the far plains of Dakota in the production of wheat, aided by one man working three hundred days in milling and barreling the flour, and supplemented by two men working three hundred days in moving wheat and flour from Dakota to New York, and in keeping all the mechanism of the farm, the mill, and the railroad in good repair—four men's work for one year places one thousand barrels of flour at the mouth of the baker's oven in the city of New York—a yearly ration of bread for one thousand men and women.

What, then, is needed in order that all alike may have their necessary equal share of food—their three to five pounds per day of grain, meat, vegetables, and products of the dairy, and the like? Is it not a knowledge of the alphabet of food? Is not the missing factor in our material welfare to-day the want of a common knowledge of what food to buy, and how to cook it? Half the mere price of life in money is the price of food. If we add to this the household labor in its proportion, the measure of the cost of food in terms of labor is far more than half the work of life. How many eight- and ten-hour men have fourteen-hour wives, whose work is toilsome and continuous, day in and day out, almost night and day, for the support of their families!

Although the food question is one of grave importance, even in this country, there can be with us no possible scarcity of food. Nearly one fifth part of the products of agriculture (including cotton) is exported

to feed and clothe the people of other lands. In return for these exports—the grain which we could not consume, and the cotton which we could not spin, and the oil which we could not burn, because there is enough and to spare besides—we receive our great volume of imports in exchange for what we export, which has been divided into the following proportions by the measure of value in money, according to the average of recent years :

Articles of food and live animals		$200,000,000
Articles in a crude condition, which are necessary in the processes of domestic industry		160,000,000
Articles fully or in part manufactured, which are used in the domestic arts or manufactures		75,000,000
Total		$435,000,000
Manufactured goods ready for final consumption	$130,000,000	
Articles of voluntary use which may be classed as luxuries	65,000,000	
		195,000,000
Total		$630,000,000

The proportion of the product of agriculture exported varies year by year. If the declared value of exports be compared with the valuation of all crops at the farms, it ranges from twenty to twenty-five per cent. A fairer comparison is to extend the farm values to the final values at wholesale in the principal markets. The writer applied this method to the census figures of 1880 with the aid of other experts. The conclusion was that the wholesale value of all crops at the centres of wholesale distribution in the census year was a little less than $4,000,000,000. Of this quantity somewhat over $700,000,000 worth was exported or over seventeen per cent. ; the proportion is now less.

In the production and movement of the crops to the centres of distribution 8,000,000 men were occupied, of whom seventeen per cent. or more, say 1,360,000, depended on a foreign market. In return we received imports classified as above, of which more than two thirds consisted of articles of necessity or common comfort. It is in this way that the interdependence of nations asserts itself in spite of the obstructions of time, distance, and taxes, and that in all true commerce men and nations serve each other, both parties making a gain in every exchange of product for product.

The enormous export demand, especially of European countries, upon us for food, which is brought into notice by the fact of our large exports, brings into conspicuous observation the urgency of the demands of the victualing department, especially upon the continent of Europe ; while the simple fact that several European states have obstructed the import of provisions from this country by heavy duties, or have absolutely prohibited the import of our pork upon the false

pretense that it is especially unwholesome, bears witness also that although the wages of labor in these countries are very low, yet the cost of the production of food, as measured by labor or in money, is very high. Where the product of agriculture is relatively small in proportion to the population and to the demand or purchasing power, it follows of necessity that the wages of labor must be very low, and the subsistence of the people inadequate. Only one or two examples can be given within the limits of this article.

I am permitted to give the following data, which have been furnished me by one of the most intelligent official observers in Germany, Consul J. S. Potter of Crefeld, Germany, in a report on the condition of German agriculture.[1] From this report I find that the income of a Prussian farm laborer, employed as first hand upon a large farm, whose family consisted of himself, his wife, and five children, all under thirteen years old, averaged as follows in a recent year :

Wages of husband	$142.80
Wages of wife in harvest time	11.90
Value of pork and potatoes raised and consumed	47.60
Value of goat's milk and vegetables sold	26.18
Total income	$228.48

EXPENSES.

Wheat-bread	$ 7.14
Rye black bread	24.75
Pork and potatoes (valued as before)	47.60
Cheese	4.95
Syrup	5.00
Coffee	3.71
Salt, pepper, and sundries	1.24
Total food for seven persons for one year	$94.39

This makes a cost of three cents and seven tenths per day per person. If the five children under thirteen be computed as two and one half adults, making the family equal to four and one half adults, the average per day is only five and three quarter cents.

In my investigations of the food question I have found no statement of the food supply of a thrifty workingman and his family so meagre as this, or at so low a cost *per capita*.

[1] These reports and others of equal value have since been published among the consular reports issued by the State Department. Attention may well be called to these reports. At the request of the Secretary of State, the representatives of the great industries of the country prepared very careful forms of interrogatory in respect to the several arts on which reports were desired, including agriculture. Responses to these questions thus prepared by experts are now being published, so that the reports of such consuls as have the capacity to report facts are becoming of great value to the student of social science.

It may be interesting to give the other items of expenditure of this thrifty German peasant :

Clothing	$39.97
Rent of house and three quarters of an acre of land	35.75
Fuel and lights	14.24
Oil, soap, etc.	3.71
Meal for goat and pig	16.66
Beer and tobacco	7.14
Sundries	14.28
Making a total expenditure for a family of seven persons	$226.14

In this same neighborhood, which is one of the most fertile parts of Prussia, the wages of other farm laborers who are supplied with food by their employers are as follows :

First laborer per year,			$71.50	with	board.
Second	"	"	39.25	"	"
Third	"	"	26.18	"	"

Average wages per year, $44.25, or less than $4 per month with board.

But when we turn to the production of a first-class Prussian farm and its cost, we find the product of a fraction less than ninety-one acres of land, which had been cultivated in a most skilful and intelligent manner, valued in all at $3,942.47. Part of this product consisted of wheat, the cost of which is given at eighty-four cents per bushel of sixty pounds. Another portion consisted of rye, the cost of which is computed at sixty-eight cents per bushel of fifty-eight pounds.

It will be observed that although the wages of the farm laborer in this section average less than four dollars a month, with board added, the money cost of a bushel of wheat is set at eighty-four cents. In our great wheat-producing States and territories of the Far West wages are four- to five-fold, with board, and yet the cost of a bushel of wheat in some places is not over one half, or forty-two cents a bushel. It may be alleged that this is because we are converting the original fertility of a virgin soil into wheat, and thereby exhausting the land ; but the rule holds true in only a little different proportion in the wheat-producing counties of New York and Pennsylvania, where fertilizers are as much required as in Germany. Wages in these sections are as high as those in the Far West, while the cost of wheat in money is not over two thirds of that given as the cost in Germany at the farm.

It is interesting to consider the dietary of this prosperous Prussian farmer. The food is nearly one half black bread made of rye. The proportion of meat is very small, as compared with the rations of this country. His family consisted of nine persons, three being children of

over fourteen years of age. Their total living expenses for the year were $736.28, divided as follows :

Food	$300.41
Clothing	119.00
Fuel and light	23.89
Beer, wine, and spirits	71.40
Cigars, tobacco, and entertainments	47.60
Sundries	29.75
School expenses, and maintenance of son in army	144.23
Total	$736.28

The cost of food per person each day is nine and a quarter cents.[1]

It is singular to compare the school expenses, the support of the son in the army, and the beer, wine, and spirits with the food bill. The food supply of this farmer, whose book accounts appear to have heen kept with the accuracy of a merchant, and whose method of cultivation, as described, might serve as a lesson anywhere in scientific agriculture, is less in quantity and variety, and less in cost by at least one third, as compared with the rations which are served in the prisons of Massachusetts.

The significant item in this expense account is the maintenance of the son in the army.

There are, of course, many other causes, aside from the military system of Europe, for the differences which are to be found in the subsistence of the people, which cannot be treated in the limits of this article. For instance, the relative area and population of European states, aside from Russia and Turkey, enter into the consideration. The area is about one half that of the United States, while the population is little more than eight-fold, the ratio to the square mile being a little less than twenty in this country and one hundred and sixty in Europe.

This area is divided into fifteen empires, kingdoms, or states, omitting the petty states of eastern Europe, which are separated from each other by differences of race, creed, and language. Their commerce is obstructed among themselves by as many different systems of duties upon imports as there are states. The natural outlet for the crowded population of central Europe might be in southern Russia and in the fertile sections of Asiatic Turkey, were the relations of these several states to the eastern country the same as those of the Eastern States of this country to those of the West. There is land enough, and to spare ; but the armies of Europe are sustained in order to prevent this very

[1] For further comparisons of the food supply of working people in different countries, reference may be made to the first report of the National Bureau of the Statistics of Labor, by Hon. Carroll D. Wright.

expansion of the people ; and the misgovernment of the Turk, which renders Asia Minor almost a howling wilderness, is protected by the mutual jealousies of these very states, which are thus being destroyed by their own standing armies.

As war becomes more scientific, it becomes more costly. Victory rests not only on powder and iron, but yet more on bread and beef. It may have been the German sausage by which France was beaten, quite as much as the German rifle.

The food question in Europe may be one of possible revolution and repudiation of national debts, and of the disruption of nations as they now exist ; and to this branch of the victualing department attention may well be called, because its conditions are so greatly in contrast to those of the United States ; but this phase of the question will be treated separately in a subsequent article. May we not find in these costly armies, excessive debts, and excessive taxes not only the cause of pauper wages, but also the cause of the ineffectual and costly quality of so-called "pauper labor"? May there not also be found in these figures incentives to socialism, to communism, and to anarchy? What hope for men and women, the whole of whose product would barely suffice for subsistence, when ten, twenty, and perhaps even thirty per cent. is diverted from their own use, and even food is denied them sufficient to maintain health and strength, in order that these great armies may be sustained?

The victualing department is therefore presented in these three phases :

First. In our own country the only question is how to save the waste of our abundance, and how to teach not only the working people, but even the prosperous, the right methods of obtaining a good and wholesome subsistence at less cost in money than they now spend for a poor and dyspeptic one.

Second. In Great Britain and Ireland the victualing department underlies a system of land tenure which is now on its trial, and which has led to such artificial conditions that great areas of good land have been thrown entirely out of cultivation, while half the people are being fed from fields from five thousand to fifteen thousand miles distant.

Third. Upon the continent of Europe the victualing department stands face to face with a forced method of distributing and wasting a food-product which, as a whole, is insufficient to maintain the whole population in vigor and health even if it were evenly distributed, as food must be equally distributed by weight if not by quality, in order that men and women may be equally well nourished.

When a famished democracy becomes conscious of its power, what will be the end of privileges which are not founded on rights, and of national debts which have been incurred by dynasties without the

consent of the people who are now oppressed by them? How will standing armies be disbanded, which now seem to be as incapable of being sustained as they are impossible of being disarmed?

Such are some of the appalling questions to which we are led when we attempt to analyze the way in which men, women, and children now obtain the modicum of meat and bread which they must have every day in order to exist, and that daily ration of dairy products, of fruit, of sugar, and of spice, which is needed for common comfort.

There is but one element of life which all have in common, and that is Time. Who can teach us how to use our time so as to obtain the substantially even weight of food which is necessary to the adequate nutrition and to the common welfare of rich and poor alike?

THE RELATIVE STRENGTH AND WEAKNESS OF NATIONS

TWO STUDIES IN THE APPLICATION OF STATISTICS TO SOCIAL SCIENCE

THE RELATIVE STRENGTH AND WEAKNESS OF NATIONS.[1]

TWO STUDIES IN THE APPLICATION OF STATISTICS TO SOCIAL SCIENCE.

I. STRENGTH.

FROM one of the little-known but very remarkable financial essays of Pelatiah Webster, a patriot merchant of the era of the Revolution, who most urgently resisted the issue of the Continental currency, predicting all the malignant effects which ensued therefrom, we quote these words :

> "I conceive very clearly, that the riches of a nation do not consist in the abundance of money, but in number of people, in supplies and resources, in the necessaries and conveniences of life, in good laws, good public officers, in virtuous citizens, in strength and concord, in wisdom, in justice, in wise counsels and manly force."

As the century is now just ended since the first steps were taken to frame the Constitution under which we live, it may be fitting to account to ourselves for the work which has been done during this hundred years in the land wherein we dwell.

We may, perhaps, test the wisdom of our laws and the equity of our institutions by measuring the development of our resources, the abundance of our supplies, and the strength of our nation. Our national domain is a trust with which we have been endowed. How have we discharged the trust ?

The main source of all material life is land. The sea supplies food in small measure, but upon the land mankind almost wholly depends. May not that system of land-tenure and that form of government, therefore, be considered best which has resulted in the largest production and in the most equitable distribution of the products of the soil ? May we not claim this position among the nations ?

Is not the only equitable distribution of the materials required for food a substantially even one by weight ? There may be a great differ-

[1] Reprinted with additions from *The Century Magazine* for January, 1887.

ence in the quality, but the requirement for nutrition is the same among rich and poor alike; each adult person should have substantially the same quantity of the chemical ingredients of food or "nutrients" by the conversion of which the body is sustained, and which are derived from animal and vegetable food.

OUR NATIONAL DOMAIN.

WHAT WE HAVE DONE WITH IT, AND WHAT WE MIGHT DO WITH IT.

SECTION 1. ARABLE LAND—1,500,000 SQUARE MILES.

IN ACTUAL USE.

I.	II.	III.	IV.	V.	VI.
Corn and Pork. 1,900,000,000 bushels. 112,500 sq. miles.	Wheat. 500,000,000 bushels. 60,000 sq. miles.	Hay. 40,000,000 tons. 50,000 sq. miles.	Oats. 550,000,000 bushels. 30,000 sq. miles.	Cotton. 20,000 sq. miles.	Miscellaneous. 30,000 sq. miles.

302,500 square miles now produce all our grain, hay, cotton, sugar, rice, and garden vegetables.

SECTION 2. PASTURE-LAND.

WHAT MIGHT SUFFICE.

VII.	VIII.	IX.
Beef. 60,000 square miles.	Dairy. 60,000 square miles.	Sheep. 60,000 square miles.

(A square mile = 640 acres.)

SECTION 3.

MOUNTAIN AND TIMBER.

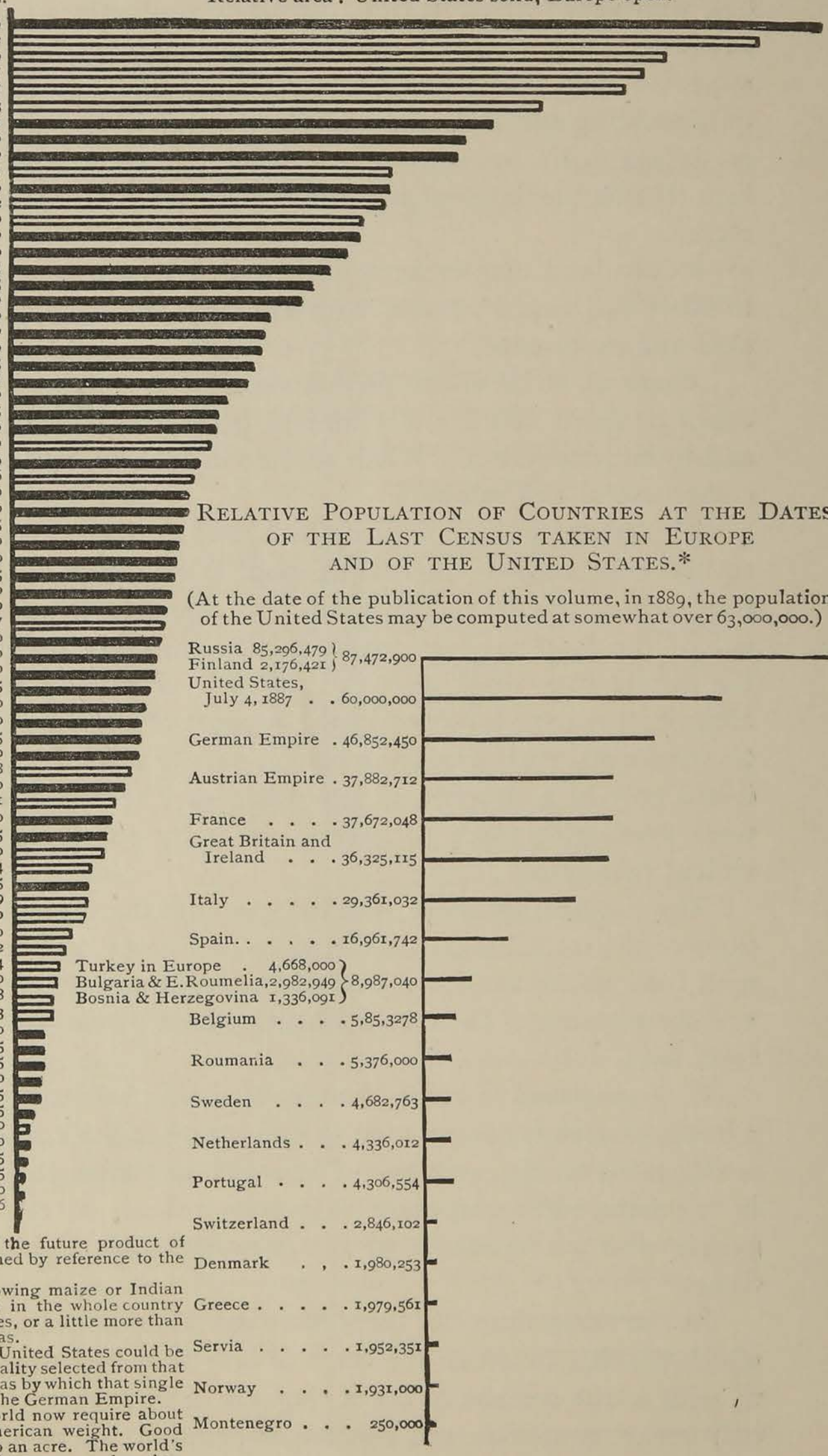
Compiled from the records of the Agricultural Department and other sources, in November, 1886.

There can neither be matured strength in the man nor in the nation without an adequate supply of food; on the other hand, the very existence of the almshouse and the pauper asylum in civilized countries bears witness to the admitted necessity of a substantially equal distribution of food by quantity or by weight.

OUR NATIONAL DOMAIN.[1]

GRAPHICAL PRESENTATION OF THE COMPARATIVE AREAS OF THE STATES AND TERRITORIES OF THE UNITED STATES AND THE COUNTRIES OF EUROPE, OMITTING RUSSIA AND ALASKA.

[Corrected from the revised computations of the United States Census of 1880, and the Statesman's Year Book of 1887.]



The visionary possibilities of the future product of the United States may be imagined by reference to the following statement:

The land in actual use for growing maize or Indian corn, wheat, hay, oats, and cotton in the whole country now consists of 282,500 square miles, or a little more than the area of the single State of Texas.

The entire wheat crop of the United States could be grown on wheat land of the best quality selected from that part of the area of the State of Texas by which that single State exceeds the present area of the German Empire.

The cotton factories of the world now require about 12,000,000 bales of cotton of American weight. Good land in Texas produces one bale to an acre. The world's supply of cotton could therefore be grown on less than 19,000 square miles, or upon an area equal to only 7 per cent. of the area of Texas.

RELATIVE POPULATION OF COUNTRIES AT THE DATES OF THE LAST CENSUS TAKEN IN EUROPE AND OF THE UNITED STATES.*

(At the date of the publication of this volume, in 1889, the population of the United States may be computed at somewhat over 63,000,000.)

* Authority: Almanach de Gotha, except where later figures are given in other compilations.

[1] *Reprinted from the Century Magazine for January*, 1887.

Raw land, if such an expression may be used, itself possesses no more value than free air or running water. A price may be paid, or a contest may be waged for a time, in order to secure the opportunity to reap and dispose of the harvests which are due to original fertility; but, with very rare exception, the virgin properties of the soil are soon exhausted, and what is known as "economic rent" almost wholly disappears; then land ceases to be a mine and becomes a laboratory, only yielding product, and therefore only yielding wages and profits, according to the measure of the labor put upon it, of the capital put into it, and the intelligence with which both capital and labor are directed.

At last land may cease to yield either wages or profits in response to labor and capital unless both are combined under the direction of skill and experience.

There is no absolute private ownership of land in this or in any other civilized country, yet limited possession is necessary to its use and to its production. When subject to such limited possession it becomes useful and valuable.

All systems of land-tenure which tend to limit or retard production, so that even a slowly increasing population gains upon the means of subsistence, may be rightly subject to change. Or if, after the product of the land has been made in sufficient measure for the welfare of the people who dwell upon it, it is then so wrongly distributed that a considerable part is wasted in the support of standing armies or dynastic privileges, while great numbers of people suffer from absolute want, it will only be a question of time when such forms, systems, or institutions must give place to others, either by peaceful evolution or by violent revolution.

The purpose of these studies is to treat the present relative conditions of the so-called civilized nations of Europe, and to compare them with the conditions of the United States, in respect to the production and distribution of the means of subsistence which are wholly derived from land.

It is proposed to apply the test of such a balancing of accounts as a business man is accustomed to call for when any corporate enterprise is subjected to his scrutiny. The work of States may be considered in the nature of a corporate enterprise subject to the control of the people who are members of the corporation, as they may choose to direct.

At the same time, all such direction by statutes, and all customs which precede or attain the force of law, must be brought into harmony with a true science of law if they are to be permanent, else they will only create confusion and become inoperative. It may be said that no true science of law has yet been established among men: then the

more reason to test the present condition of nations which claim to be governed by law, in order to determine by a comparison of their conditions which one has attained the best results, so that a basis may be laid for a true inductive science of law governing the social order, fully consistent with the higher law which governs the universe.

As regards land, the continent of Europe and the territory of the United States are about even. The area of Europe, including all of Russia, is 3,761,657 square miles. The area of the United States, including Alaska, is 3,501,404.

If we omit in Europe the uninhabitable portions of Norway, Sweden, and Russia, and if we omit Alaska from the territory of this country, we reach a substantially even proportion of habitable land, to wit, about 3,000,000 square miles in each country.

The population of Europe approximates 334,000,000.

When this article is published, the population of the United States will be substantially 60,000,000.

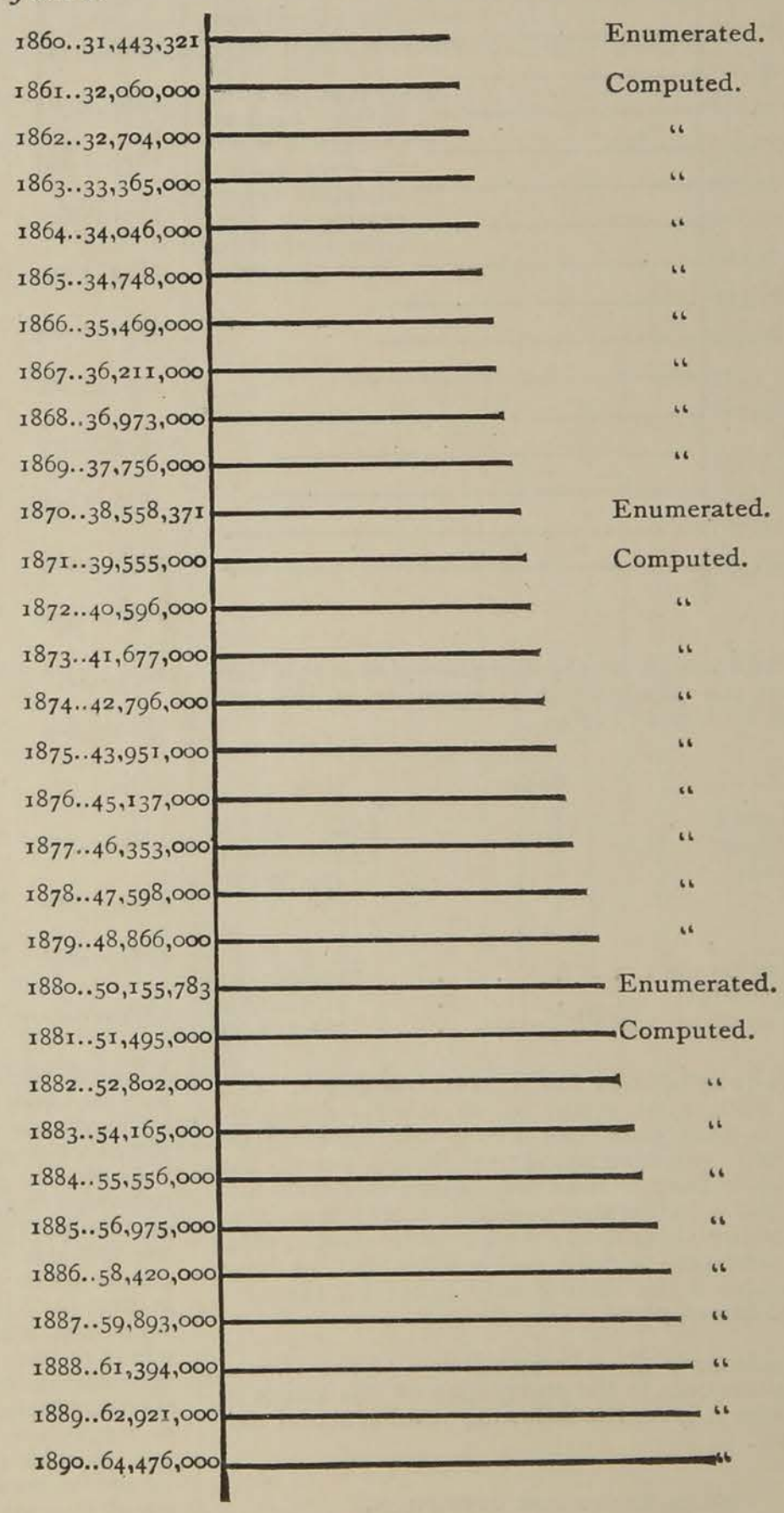
If we omit Russia wholly from the computation, the area of the remainder of Europe covers 1,500,000 square miles, of which the population is about 240,000,000

I.

POPULATION OF THE UNITED STATES,

EITHER AS ENUMERATED IN THE CENSUS OR AS COMPUTED BY MR. E. B. ELLIOTT, ACTUARY OF THE TREASURY DEPARTMENT.

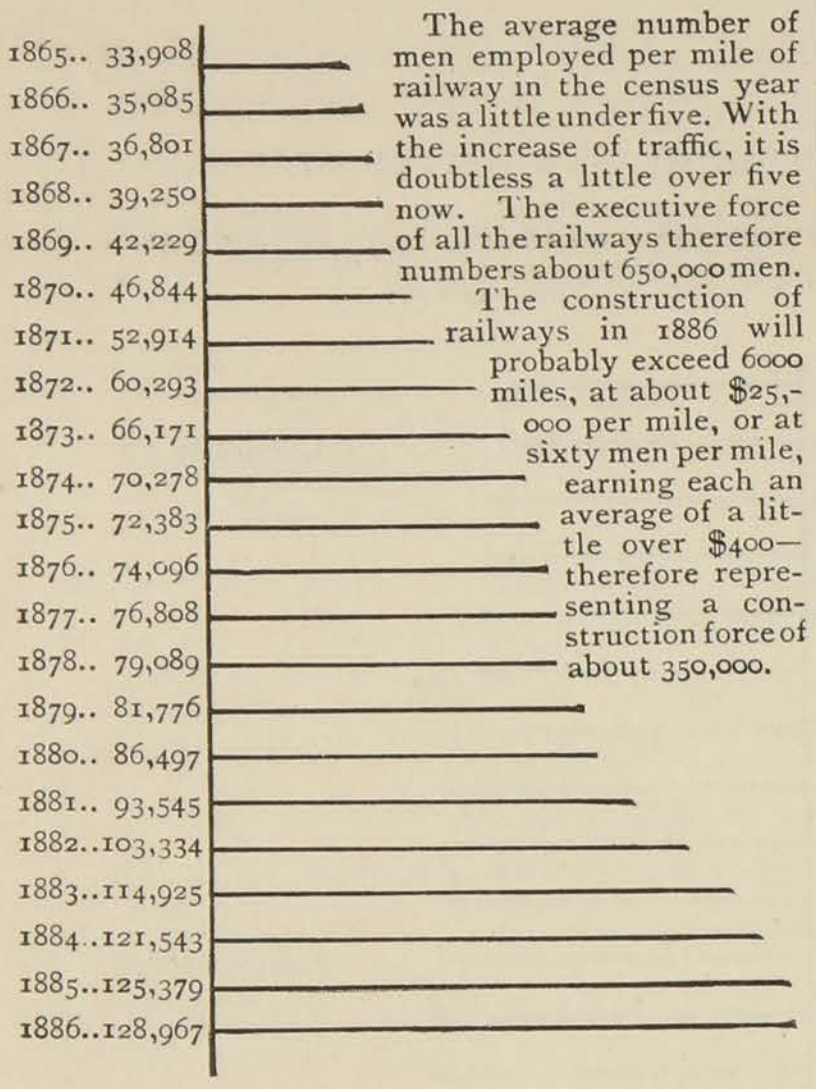
June 1.



II.

MILES OF RAILWAY IN OPERATION IN THE UNITED STATES

ON THE FIRST OF JANUARY IN EACH YEAR, BEGINNING 1865. COMPILED FROM POOR'S RAILWAY MANUAL.



The average number of men employed per mile of railway in the census year was a little under five. With the increase of traffic, it is doubtless a little over five now. The executive force of all the railways therefore numbers about 650,000 men. The construction of railways in 1886 will probably exceed 6000 miles, at about $25,000 per mile, or at sixty men per mile, earning each an average of a little over $400—therefore representing a construction force of about 350,000.

One million men are therefore occupied at this time either in the construction or operation of the railways of the United States.

1885.

Capital stock	$3,817,697,832
Funded debt	3,765,727,066
Other debt	259,108,281

TOTAL.

Passenger receipts	$200,883,911
Freight receipts	519,690,992
Total, including miscellaneous .	765,310,419

The railway mileage Jan. 1, 1881, was 93,545. In a treatise upon what would be an adequate service, written in that year, the writer said that 117,500 miles should be added in the next fifteen years; but as we should have at least one commercial crisis and railway panic during that period, it might be safer to assign twenty years to the work. Since Jan. 1, 1881, we have had both a crisis and a panic, but we have added 35,422 miles, leaving only 82,025 for the next eleven to fifteen years.

The increase in the railway mileage of the United States subsequent to the publication of this article in *The Century*, gives the following results, actual and estimated:

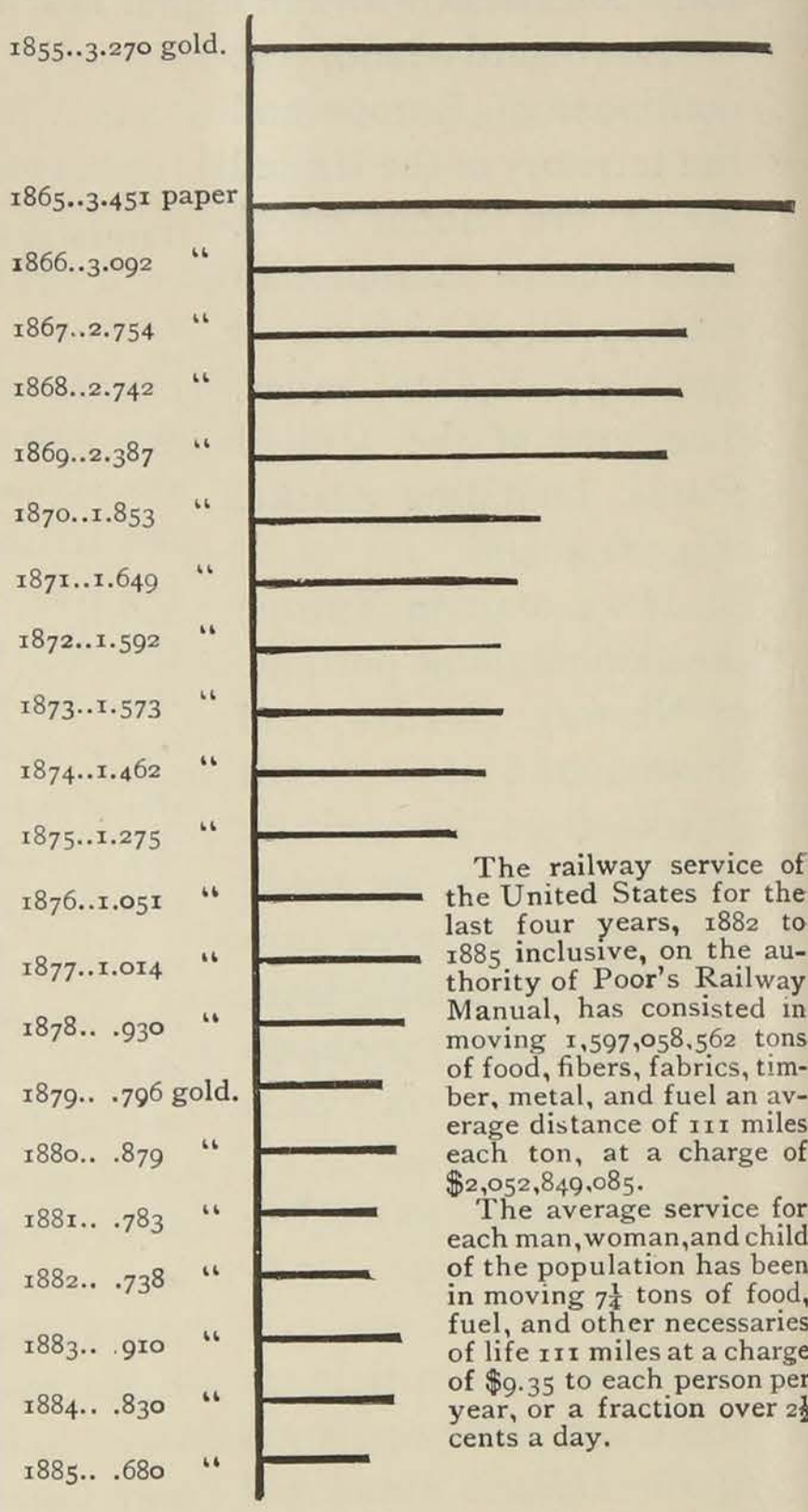
MILES READY FOR OPERATION.

Jan. 1, 1887	137,987
" 1888	149,913
" 1889	156,613
" 1890 (Estimated)	164,000

III.

CHARGE PER TON PER MILE

FOR MOVING MERCHANDISE OVER THE NEW YORK CENTRAL AND HUDSON RIVER RAILROAD, AT THE AVERAGE, IN EACH OF THE SEVERAL YEARS DESIGNATED.



The railway service of the United States for the last four years, 1882 to 1885 inclusive, on the authority of Poor's Railway Manual, has consisted in moving 1,597,058,562 tons of food, fibers, fabrics, timber, metal, and fuel an average distance of 111 miles each ton, at a charge of $2,052,849,085.

The average service for each man, woman, and child of the population has been in moving 7¼ tons of food, fuel, and other necessaries of life 111 miles at a charge of $9.35 to each person per year, or a fraction over 2½ cents a day.

The New York Central and Hudson River Railroad may be taken as a good example of an important line of railway under most efficient management, and as a standard of what other lines may accomplish when the magnitude of their traffic will permit them to make as great a reduction in rates. The average charge per ton per mile on this line from 1865 to 1868, four years, was 3.0097 cents per ton per mile. From 1882 to 1885, four years, the charge was 0.7895. Difference, 2.2202 cents. If we may assume that the people of the United States have been saved two and one fifth cents per ton per mile on the whole railway traffic of the last four years, either by the construction of railways where none before existed or by such a reduction in the charge for their service, the amount or money's worth saved in four years has been $3,898,373,159, which sum would probably equal the cash cost of all the railways built in the United States since 1865, to which sum might probably be added the entire payment upon the national debt since 1865.

The following table brings into yet more conspicuous notice the beneficent effect of the railway system in the distribution of food:

ILLINOIS CENTRAL; CHIGAGO AND ALTON; CHICAGO AND ROCK ISLAND; CHICAGO, BURLINGTON, AND QUINCY; CHICAGO AND NORTH WESTERN; AND CHICAGO, MILWAUKEE, AND SAINT PAUL RAILROADS.

Years.	Tons moved.	Tons moved 1 mile.	Charge per ton per mile (in cents).
1865	4,032,166	573,421,459	3.642
1866	4,803,205	576,888,638	3.459
1867	6,303,783	768,171,050	3.175
1868	7,064,305	893,856,974	3.151
1869	8,071,568	1,054,559,835	3.026
1870	8,540,579	1,234,678,291	2.423
1871	9,391,684	1,233,058,058	2.509
1872	10,592,414	1,337,038,063	2.324
1873	11,958,467	1,719,496,690	2.188
1874	12,637,729	1,851,645,825	2.160
1875	12,662,768	1,904,937,377	1.979
1876	13,488,204	1,994,712,255	1.877
1877	13,364,721	2,211,021,475	1.664
1878	15,705,226	2,822,885,886	1.476
1879	18,807,123	3,470,822,877	1.279
1880	24,212,307	4,167,610,830	1.389
1881	27,076,047	4,498,641,431	1.405
1882	29,851,868	5,040,239,952	1.364
1883	31,663,979	5,768,109,279	1.310
1884	32,573,518	6,093,282,749	1.220
1885	34,348,684	6,500,185,261	1.158
1886	35,690,547	6,806,148,918	1.111
1887	40,276,909	7,776,436,486	1.014

PENNSYLVANIA; PITTSBURGH, FORT WAYNE AND CHICAGO; NEW YORK CENTRAL AND HUDSON RIVER; LAKE SHORE AND MICHIGAN SOUTHERN; MICHIGAN CENTRAL; BOSTON AND ALBANY; AND NEW YORK, LAKE ERIE, AND WESTERN RAILROADS.

[Graphically compiled from revised figures derived from H. V. Poor's Railroad Manuals.]

Years.	Tons moved.	Tons moved 1 mile.	Charge per ton per mile (in cents).
1865	11,151,700	1,649,316,859	2.900
1866	14,049,602	2,044,416,231	2.503
1867	15,594,454	2,258,216,174	2.305
1868	17,468,693	2,541,578,620	2.132
1869	20,556,154	3,159,832,217	1.860
1870	21,456,135	3,685,824,803	1.593
1871	25,098,953	4,340,131,068	1.478
1872	28,634,347	5,081,263,127	1.504
1873	32,817,277	5,762,062,724	1.476
1874	32,899,152	5,879,662,649	1.332
1875	32,956,655	5,935,242,397	1.161
1876	36,166,865	6,739,527,502	.985
1877	36,133,676	6,536,997,523	.971
1878	39,124,614	7,855,222,593	.898
1879	48,585,226	9,594,719,603	.706
1880	53,937,403	10,313,056,759	.869
1881	62,816,114	11,560,001,888	.763
1882	64,948,002	11,191,066,104	.764
1883	66,695,608	11,326,271,886	.829
1884	64,397,566	10,719,521,813	.740
1885	66,521,153	11,331,308,298	.636
1886	74,517,207	11,915,435,513	.711
1887	84,754,598	13,543,351,451	.718

The population of the United States is now a fraction under twenty to the square mile ; while that of Europe, aside from Russia, is about 160. But there are many portions of the eastern section of the country which are as densely populated as any of the European States, with the single exception of Belgium.

The low cost of the railway service in the United States makes the distance between the farm and the factory of very little consequence so long as there are no artificial obstructions to commerce. The whole country is one great neighborhood in which each man serves the other; and this is its true strength. The wages for one day's work of an average mechanic in the far East will pay for moving a year's subsistence of bread and meat a thousand miles or more from the distant West.

On the other hand Europe is filled with obstructions to commerce which are far more difficult to surmount than that of distance.

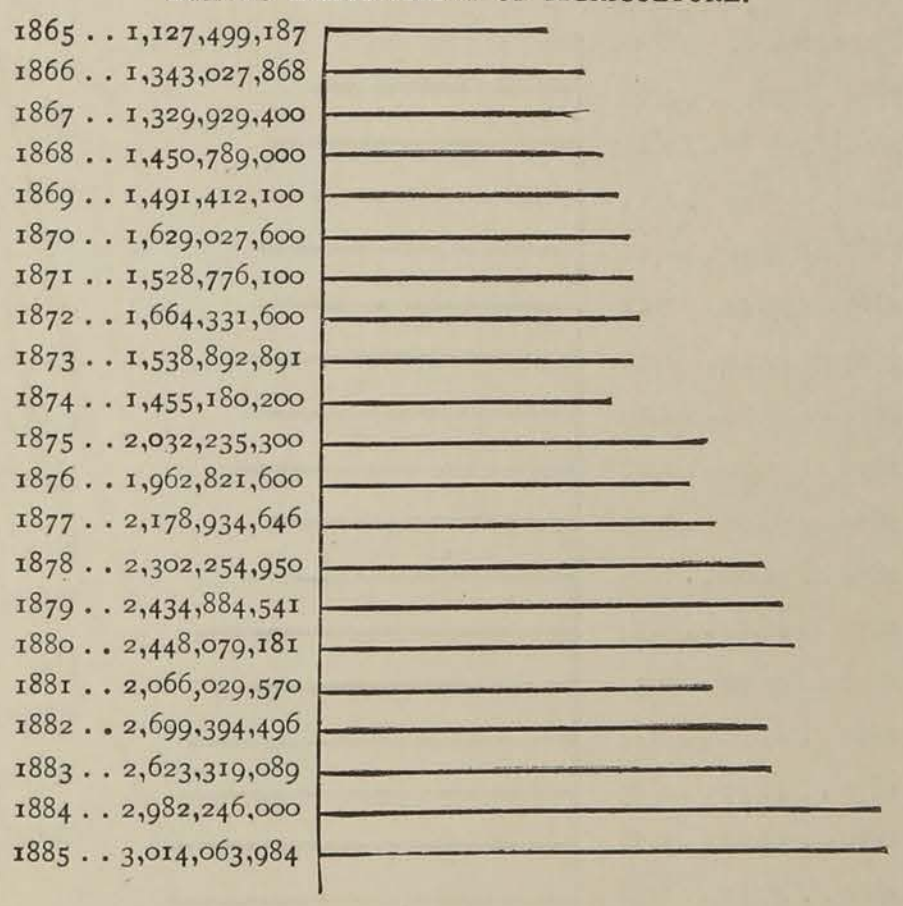
In other conditions aside from land there is a considerable similarity between this country and Europe. Until a very recent period more than one half the territory of Europe was still kept back in its progress by the serfdom of the peasantry of Russia ; while nearly one half the territory of the United States which had been occupied before the opening of the Civil War was kept back in its material progress by slavery.

Again, there is as great a difference in the relative conditions of soil and climate, and in the physical conformation of the land—as great a difference between the mountains and plains, of the United States, as there is in Europe.

IV.

GRAIN CROPS OF THE UNITED STATES.

MAIZE OR INDIAN CORN, WHEAT, RYE, BARLEY, OATS, AND BUCKWHEAT. FROM THE REPORTS OF THE UNITED STATES DEPARTMENT OF AGRICULTURE.



The close coincidence between the increase in the miles of railway constructed and the bushels of grain produced will be observed.

It may be held that by the construction of railways in advance of the population a great rise in the value of fertile land in the East has been retarded and the increased product of the Western farmer has been rendered possible ; while under the land-grant system, land which might otherwise have been sold in large parcels has been broken up into small farms by the reservation of alternate sections. Under this influence, a superabundant supply of food has been produced by a less proportion of the population occupied in agriculture in 1885 than in 1865.

The grain crops of the United States subsequent to the publication of this article have been :

1886	.	3,015,439,000 bushels	
1887	.	2,649,613,000 ,,	
1888	.	3,200,000,000 ,,	estimated in part.

If the early promise of the season of 1889 is maintained, the crop of grain will be the largest ever grown, both absolutely and in ratio to population.

The relative differences in the conditions of the people of the several states of either continent must therefore be sought in some other cause than in the physical geography or the climatology of the two continents.

Reference may perhaps be made to the difference in language and in creed in Europe. But it must be remembered that the settlers who have occupied the United States formerly differed as much as the people of Europe in these matters; yet the common school of this country has proved, or is proving, to be the solvent of race, creed, language, color, and condition, and is rapidly merging the whole population, so far as the conditions of material welfare are concerned, into one single and substantial body-politic, as firmly bound together as if all the people had been strictly homogeneous.

It is not, however, the purpose, nor would it be within the ability of the writer, to attempt any general treatment of the profound differences which have brought the greater part of continental Europe either to actual or prospective national bankruptcy, and in some places to such abject conditions of want as may perhaps account for the conditions of socialism, communism, nihilism, and anarchy. These phases of resistance to social order as now established may perhaps be deemed only the reflex or complement of despotism or of dynastic privileges, and of misapplied and misdirected national greed as yet unenlightened as to what is the true source of the wealth of nations.

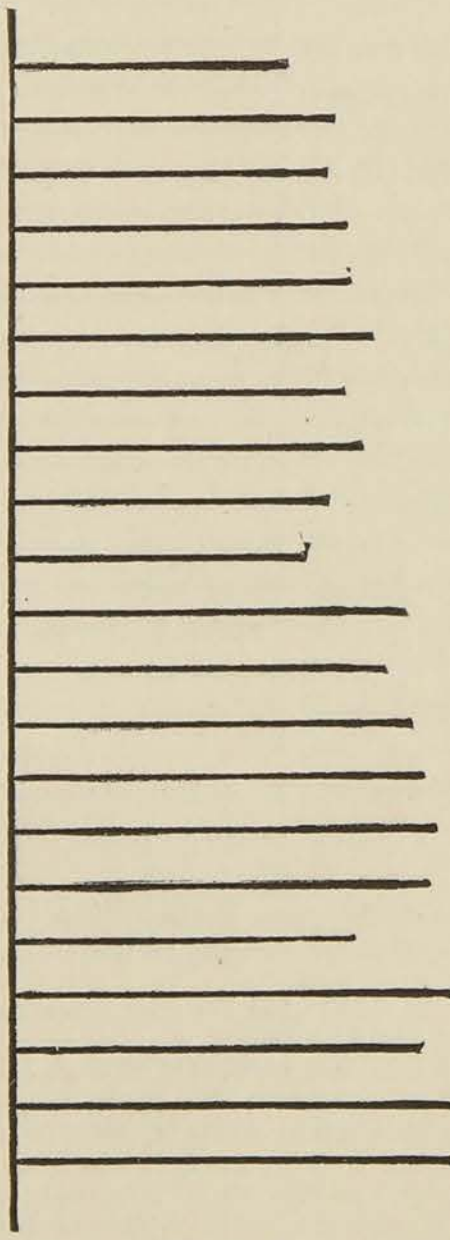
The business man who attempts to comprehend the causes and effects of existing conditions may well leave the philosophy of the subject to the student and to the statesman; but perhaps such a one can apply common business methods of account to the conditions of the present, and by sorting assets and liabilities and striking a trial balance of the accounts of the several civilized

V.

PRODUCT OF GRAIN PER CAPITA.

And Ratio of the Increase of Grain to the Increase of Population.

Date.	Bshls. per head.	Ratio to population.
1865	32.50	1.00
1866	37.80	1.16
1867	36.73	1.13
1868	39.30	1.21
1869	39.44	1.21
1870	42.24	1.30
1871	38.64	1.19
1872	41.00	1.26
1873	36.90	1.13
1874	34.00	1.05
1875	46.19	1.42
1876	43.50	1.34
1877	47.00	1.44
1878	48.37	1.49
1879	50.20	1.54
1880	48.80	1.50
1881	40.00	1.23
1882	51.12	1.57
1883	48.40	1.49
1884	53.68	1.65
1885	52.50	1.60



The increase in the per capita product of grain does not show as conspicuously on the chart as the absolute increase, but it gives even greater evidence of progress in common welfare. A less proportion of the population is now occupied in agriculture, and especially in the production of grain, than was required at the beginning of this period, while the substitution of machinery for the arduous handwork of a former day has greatly relieved the severity of the toil, and rendered the harvest much more certain.

states of the world, he may perhaps throw a little light upon problems which students and statesmen alike now seem to be incapable of solving.

There can be no question that the 3,000,000 square miles of habitable land in Europe, taken as a whole, could sustain in peace and plenty a very much larger population than now exists thereon, if the relations of the people among themselves were the same as the relations of the people of the several States of this Union to each other. The potential of subsistence in Europe has not yet been approached.

Again, if there were no greater obstruction to mutual service between the people of Asia Minor and of North Africa, especially Egypt, than now exists or may soon exist between the United States and the Dominion of Canada, an absolute abundance of food, fibres, fuel, and materials for shelter, upon which material life and welfare depend, would be assured to as large a population in Europe as the absolute but visionary figures of our census bring into prospective view upon this continent a century hence.

If such are the natural conditions, then the social and political differences must be weighed in the trial balance of nations by their material results. We will set off democracy against dynasties in figures and by the facts of life.

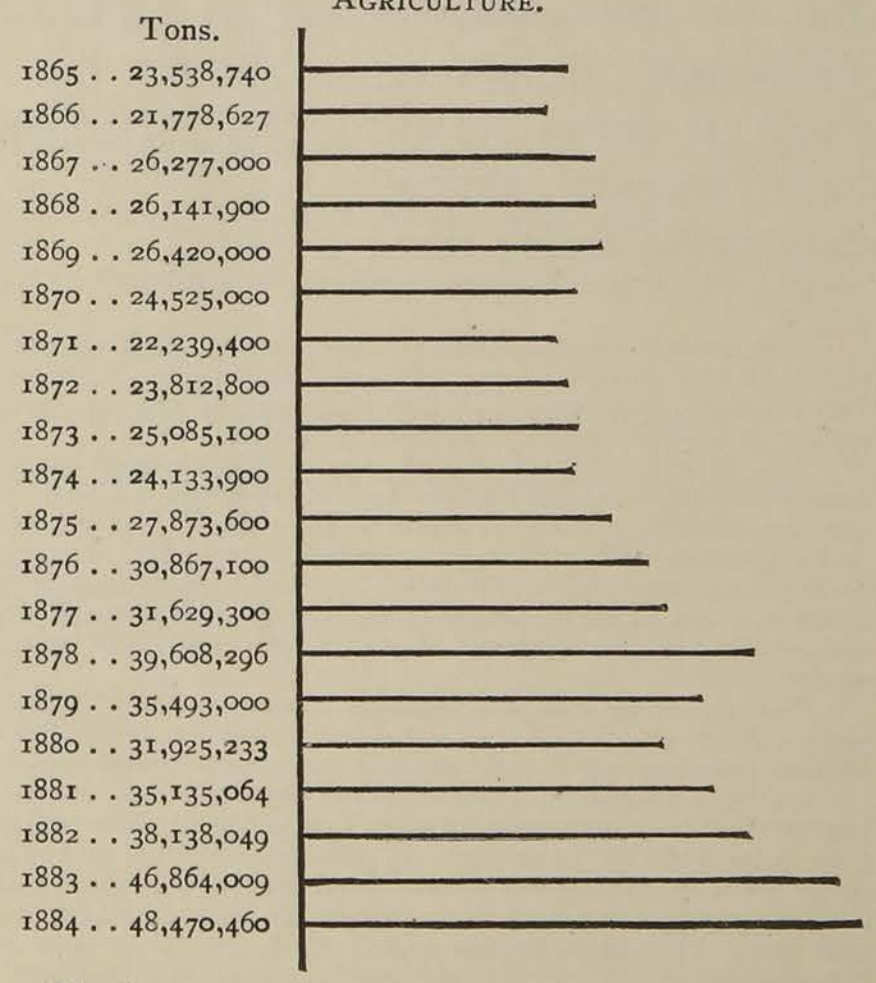
In the attempt to bring into comparison the absolute weakness of the states or nations of Europe whose chief strength is now assumed to be in their armies and navies, I have used tables showing the progress of the industries and arts upon which our own material welfare chiefly rests, dating from 1865 to 1885, inclusive. Several of these tables have been previously used in other publications, but they are now brought down to the latest dates and grouped together in such a way as to show their real significance.

In Europe we find nineteen separate and partly or wholly *independent* nations or states, nearly all governed by dynasties, with the exception of Switzerland. Even

VI.

HAY CROP OF THE UNITED STATES.

From the Statistics of the Department of Agriculture.



The hay crop at the farm is worth much more than the cotton crop at the factory.

Food costs the average family three to four times as much as clothing. The combined value of the poultry and eggs only which are annually consumed is computed at $200,000,000. This is more than the value of the product of pig-iron, silver bullion, and the wool-clip combined.

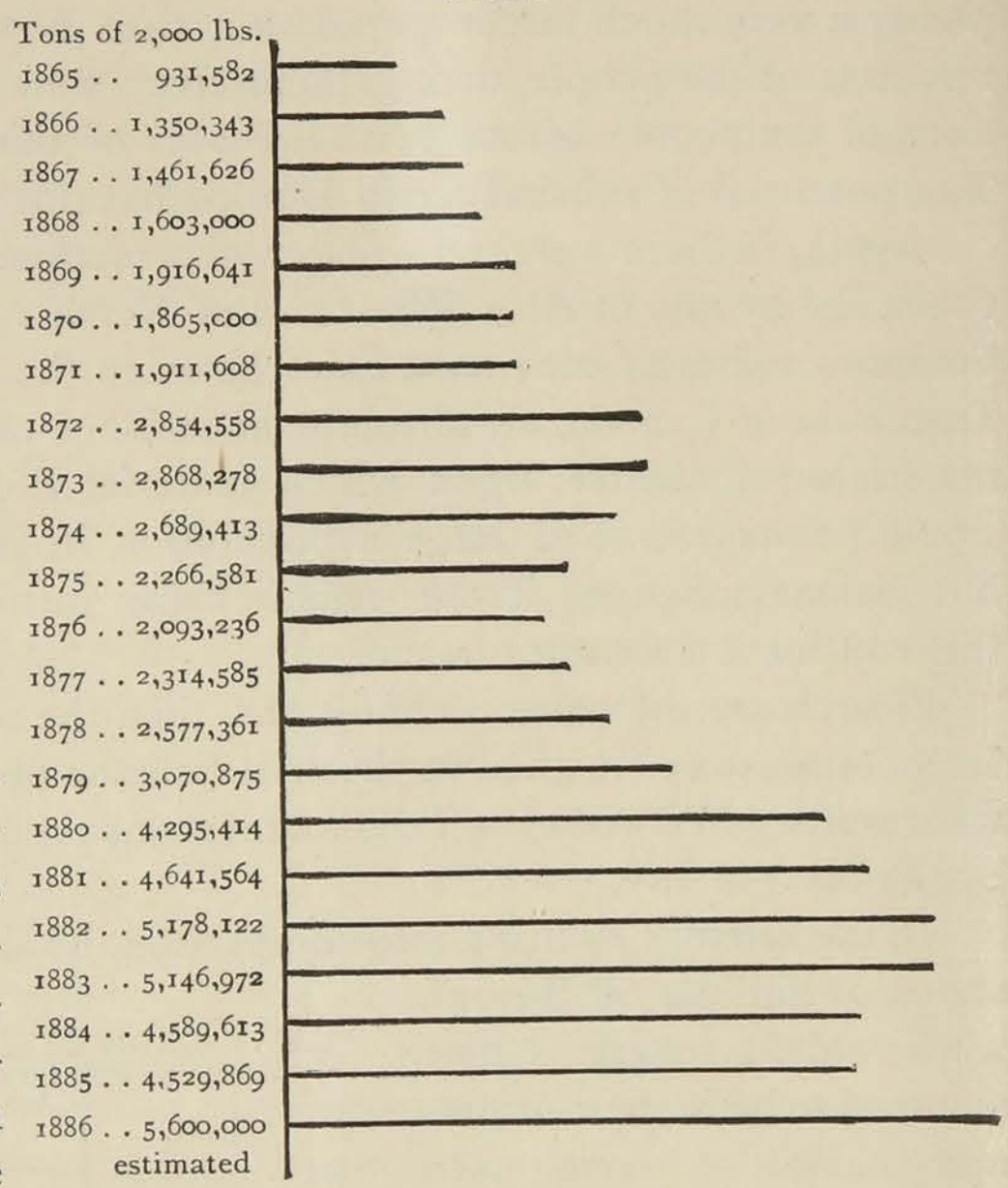
in republican states like France, the dynastic method has not yet been displaced by local self-government in any true sense of that term, while in Great Britain, which in some respects is more democratic than the United States, or is rapidly becoming so, a feudal practice of land-tenure remains in force and the paternal form of government yet dominates internal affairs, although it has been almost wholly thrown off in respect to foreign commerce. This centralized system appears to be now culminating in the final struggle of the English Parliament to relieve itself of duties which have become almost impossible, and to rele-

VII.

PRODUCT OF PIG-IRON IN THE UNITED STATES.

COMPILED FROM THE RECORDS OF THE IRON AND STEEL ASSOCIATION.

Estimate of 1886, given by courtesy of the Secretary, Mr. James M. Swank.



The ascertained or estimated production of pig-iron subsequent to the publication of this article has been :

1886	. .	6,365,328 tons,
1887	. .	7,187,206 "
1888	. .	7,268,507 "
1889	. .	Estimated by Mr. Swank at about the same number of tons as in 1888.

The production of pig-iron is an arduous and somewhat undesirable occupation, giving employment at the present date, 1889, in this country to about 150,000 men and boys. On the other hand, this relative consumption of iron and steel is one of our surest standards by which the progress of a nation in material welfare may be measured.

The production of iron and steel in this country has not sufficed to meet the demands at several periods during the last twenty-five years when railway construction has been active—especially in the last decade. The production of pig-iron for the years 1879 to 1888 inclusive amounted to fifty-two and a quarter million tons of 2,000 lbs. each ; the consumption in the same period has been over sixty million tons, two thirds consumed in the form of iron, and one third in the form of steel. This consumption was equal to nearly thirty per cent. of the entire production of the world during this period, and in 1887 our consumption of 300 lbs. per capita was equal to nearly forty per cent. of the production of the world.

The prices of iron and steel have been steadily falling, subject to occasional upward fluctuations, since 1865, both in this and all other countries, and with the reduction the use of iron and steel for various purposes other than railway construction has steadily increased.

While the absolute price has thus been reduced, the relative disparity or difference in price in the United States as compared to other countries has increased. From 1879 to 1888 inclusive, the relative difference paid by consumers in this country has averaged $7 per ton on iron and $7 per ton additional on steel taking Bessemer metal for comparison. The amount of this difference paid by consumers here as compared to consumers in Great Britain has amounted to $420,000,000 on 60,000,000 tons iron, with $140,000,000 added at $7 per ton on 20,000,000 tons converted into steel, making $560,000,000 in all. It is therefore not surprising that the import of machinery and other fabrics of metal should be increasing. The effect of our tariff has doubtless been to increase our actual product and perhaps to have hastened the general reduction in price both here and elsewhere, but the cost of this method of promoting the production of iron and steel has averaged $56,000,000 a year for ten years, making the total above given, which sum amounts to more than the entire capital now invested in all the iron mines, blast furnaces, steel works, and rolling mills now in existence in this country. Whether this method of promoting the domestic production of iron and steel has been worth what it has cost is a question which must soon be considered.

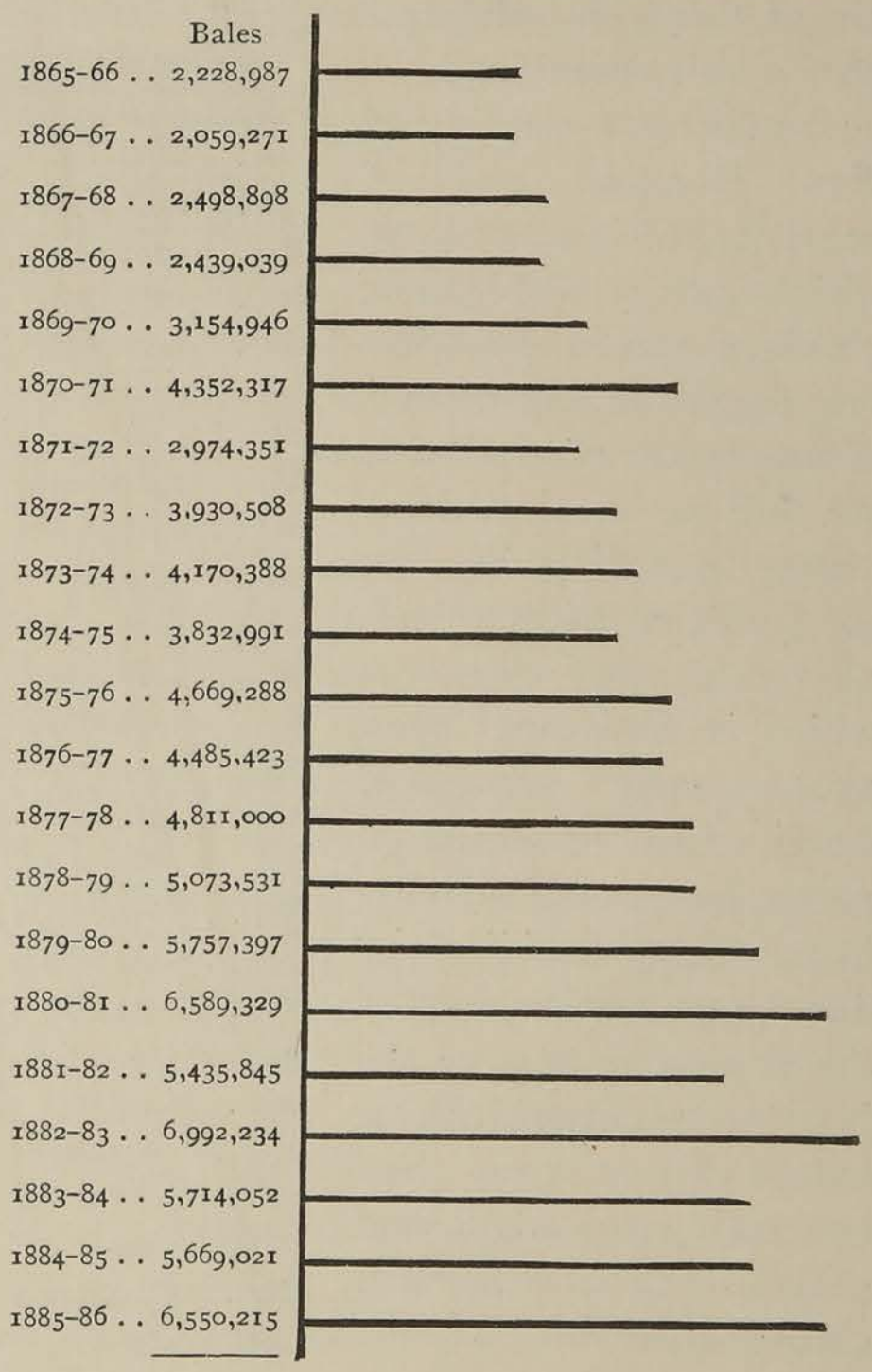
gate to the people not only of Ireland, but of England, Scotland, and Wales as well, the functions of home-rule, of self-government, and the charge of their own local affairs.

Members of Parliament appear to have at length discovered that the lesser details of local affairs are entirely beyond the power even of a representative but single and centralized Parliament, although such Parliament may be nominally supreme. One can more readily comprehend the present condition of Great Britain and Ireland by imagining the deadlock which would arise in this country if it were necessary to apply to Congress for an act to construct water or sewage works for the service of each town or city in Massachusetts or any other State, or to build a railroad in any part of the country.

In the United States, on the other hand, we find thirty-eight *interdependent* States to which others may soon be added, in each of which local self-government in the strictest sense is absolutely assured by the support of the central sustaining power of the nation. We have neither the weakness of the cen-

VIII.

COTTON CROPS OF THE UNITED STATES.



	93,389,031	21 crops made by free labor.
1841-1861 inclusive,	58,441,906	21 crops made by slave labor.
	34,947,125	21 excess by free labor.

The average weight, per bale, has also steadily increased.

The value of 35,000,000 bales of cotton produced by free labor in excess of the product of slave labor cannot have been less than $2,000,000,000 or about the full valuation of all the slaves who were made free by the war. This gain is due not only to the freedom given to the blacks, but to the emancipation of the white men of the South from the indignity of enforced idleness.

The cotton crops of the United States subsequent to the publication of this article have been:

1886-87	. . .	6,513,623 bales
1887-88	. . .	7,017,707 "
1888-89	. estimated	7,100,000 "

To the value of the cotton crop may now be added the utilization of the cotton seed and its conversion into oil, food for cattle, and other purposes. Under the old system of slave labor the cotton seed was nearly all wasted: yet such was its known theoretical value to those who had made a complete study of the plant, as to have justified the writer in stating in a treatise on "Cheap Cotton by Free Labor," printed in 1861, that if there were a variety of the cotton plant which could have been grown in the Northern States producing only seed but no lint, it would long before have become one of the valuable crops of free labor.

tralized nation nor that of the separate petty states; but under our system we have the united power of a body of English-speaking people outnumbering all the English-speaking people of Great Britain and her colonies combined.

In the town-meeting of New England, and of some of the Western States which were settled by her children, and in somewhat less degree in the county divisions of other States, we find an absolute democracy guarding its own local affairs with a jealousy of centralized power which is sometimes even too urgently expressed. Each little community is, perhaps, more self-governing and self-sustaining under the protection, first of the State and next of the Nation, than any which ever before existed in any civilized state, or in any period of time since the Norsemen clashed their shields in the meetings of the freemen, from whom so much of our liberty has been derived.

IX.

PROGRESS IN WEALTH.

Computations of wealth, such as are given in the census, are not of much value. Progress in wealth can, perhaps, be measured as accurately by the amount of insurance against loss by fire as by any other standard.

The following table, compiled by Mr. C. C. Hine, editor of the *Insurance Monitor*, of New York, gives the amount of risks taken by all the fire insurance companies which are licensed to transact business in the State of New York.

In the judgment of Mr. Hine, about ninety per cent. of all the insurance taken in the United States is covered by the companies which make an annual report of their whole business in the United States to the Insurance Commissioner of this State.

The effect of the war may be traced by the apparent reduction of risks during the period in which business intercourse with the Southern States was interrupted.

Year.	*Risks taken.*	*Proportion.*
1859 . .	1,498,569,125	
1860 . .	1,345,004,487	
1861 . .	1,258,972,728	
1862 . .	1,373,766,641	
1863 . .	1,612,361,852	
1864 . .	2,223,833,544	
1865 . .	2,564,112,505	
1866 . .	2,945,381,297	
1867 . .	3,165,666,666	
1868 . .	3,420,490,029	
1869 . .	3,778,713,296	
1870 . .	4,035,907,596	
1871 . .	3,987,386,026	
1872 . .	4,529,668,173	
1873 . .	5,783,777,818	
1874 . .	5,889,403,314	
1875 . .	6,039,507,339	
1876 . .	5,914,565,904	
1877 . .	6,008,976,461	
1878 . .	6,229,312,193	
1879 . .	6,673,099,069	
1880 . .	7,184,511,455	
1881 . .	7,949,581,516	
1882 . .	8,534,253,737	
1883 . .	9,359,423,527	
1884 . .	9,736,329,252	
1885 . .	10,517,940,175	

Insurance risks reported to the Commissioner of the State of New York subsequently:

1886 . . .	$11,349,685,459	1888 . . .	13,093,938,785
1887 . . .	12,230,325,078	1889 . Estimated	13,800,000,000

There are no absolute data for computing the risks which are not reported to the Commissioner of the State of New York. The Factory Mutual Companies of New England cover a little less than $500,000,000, and by comparison with the census of 1880 the local fire companies which do not transact any business in the State of New York cover about $700,000,000 more, making a total of policies now in force of about $15,000,000,000.

This is a large and perhaps incomprehensible sum, but as the population must now be over 63,000,000, it gives an average per capita of only $238.

The experience of insurance companies warrants an estimate that the amount of insurance carried corresponds to about two thirds the value of property that might be consumed. On this basis the average capital of the community which is subject to loss by fire amounts to about $360 per head. If foundations, railway tracks, and other forms of capital which cannot be burned amount to one third the amount subject to loss by fire, then the actual capital may be $480 to $500 per head; this sum reached by a wholly different process of computation, very fairly sustaining the estimates of the census of 1880, which came to $870 per head, including land, and less than $500 aside from the valuation of land. It also sustains the estimates of economists and statisticians, that the capital of the richest community seldom or never exceeds the value of two or three years' production, which I have elsewhere computed at not over $200 per head in 1880.

What would have been our condition had the Potomac become the Rhine, dividing two nominally independent states or communities, or had the country beyond the Mississippi remained under the dominion of a foreign nation?

We may answer this question by referring to the facts. The nineteen *independent* states of Europe, whether empires, kingdoms, dukedoms, or republics, require a standing army of over four million men in the aggregate, constantly under arms, to guard the frontiers and to maintain the so-called balance of power. About ten million more men are held in reserve who have already wasted the best and most productive part of their lives in preparing for, or in active war.

The thirty-eight *interdependent* States of this country require a standing army of only 25,000 men, serving mostly as a border police. and also forming a nucleus around which freemen may gather at a day's warning, to be formed into an army with which it would be useless for any foreign or domestic disturbers of the peace to attempt to cope.

To what do we owe this immunity from force? Is it not mainly because we have *almost* learned the open secret that in all commerce, whether between states or with other nations, each man serves the other, and that the gain of each is the gain of all?

Was there any more potent influence by which the people were induced to surrender their carefully guarded separate existence under the confederate form of government which preceded the adoption of the Constitution, than the difficulties and dangers to the Union, which occurred during the Revolution itself, and also in the short period from 1783 to 1787, growing out of the separate attempts to control not only the trade with foreign countries, but of the several States each with the other, by separate laws and regulations?

Were not the prime causes of the war of the Revolution itself and the separation of the colonies of America and Great Britain strictly commercial in their character? The resistance to the stamp tax was but the final pretext. The real grievances had existed for a long period, and they consisted in the attempt of England to prevent the manufacture of iron and steel in the colonies, and to repress textile manufactures, which were rapidly becoming established. To this end repressive laws were passed, commerce between the several colonies was restricted or forbidden, and the navigation acts, passed at the instance of the Long Parliament in a vain attempt to destroy the free commerce of the Dutch, were revived in an equally futile attempt to restrict the growing commerce of the colonies, especially with the West Indies and the Spanish Main. John Hancock had himself been one of the great smugglers of his day. It remained for the Congress of the United States to do what Great Britain failed to ac-

complish. By means of the same navigation acts, modeled on those of Cromwell's time (known as the 12th of Charles II.), applied to our own people, we have substantially succeeded in driving our own flag from the ocean.

Whatever may now be the difference of opinion among men of affairs in this country in regard to the conditions by which foreign commerce shall be conducted, there is but one common judgment as to the vastly greater commerce which exists among ourselves. No one now questions that the stability of this nation and its exemption from the necessity of a large permanent armament have been more fully assured by the single provision of our organic law which forbids any interference with commerce between the several States, than by any other law or custom which exists among us. Had it not been for this absolute freedom of domestic trade, we might have repeated the blunders of European states, and we might now be in almost as desperate a condition as many of them are in.

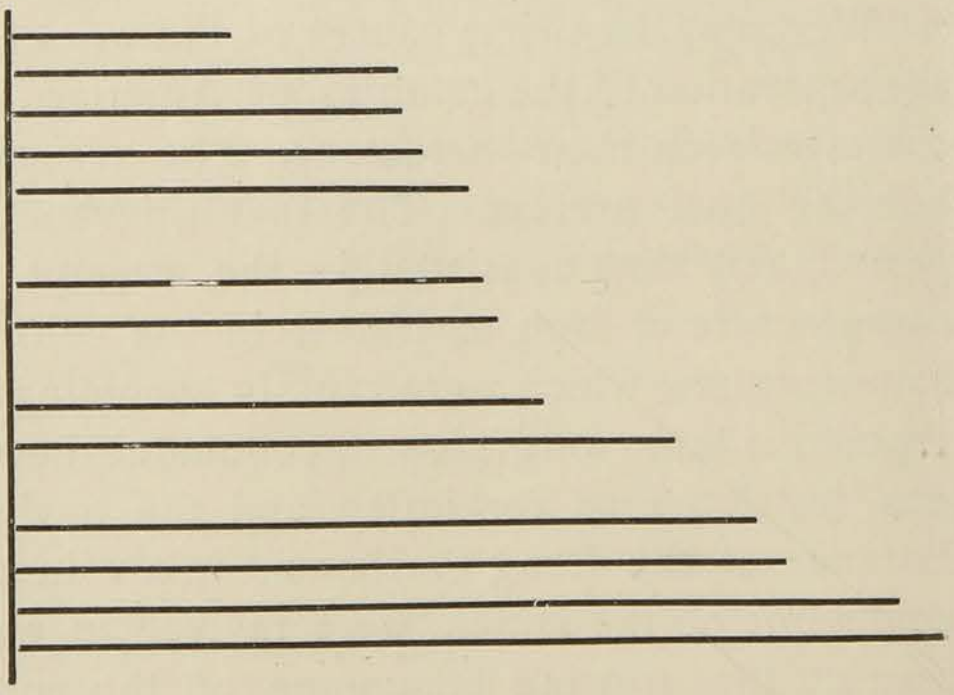
It will be in no boastful spirit that some of the material results of a century of the constitutional history of this country will now be given and the balance struck with other states or nations. It is only since the passive war of slavery culminated in the active war by which it destroyed itself, that a citizen of the United States could face the English-speaking people of other lands without a blush of shame. It is only in the last twenty-one years, or since slavery finally surrendered

X.

The following Recapitulation is substituted for one which was given in the original article; it is brought down to a later date.

PERCENTAGE OF
GAIN IN POPULATION, PRODUCTION, WEALTH, AND SAVINGS, 1870 TO 1885, AND ON SOME ITEMS TO 1886.

To 1885.	Population	48
1885.	Production of grain	85
1885.	Consumption of cotton	86
1885.	Consumption of wool	88
1885.	Production of hay	100
1885.	Deposits in savings-banks of Massachusetts	102
1885.	Production of cotton	108
1886.	Deposits in savings-banks of Massachusetts	115
1885.	Production of iron	143
1885.	Insurance of property against loss by fire	160
1885.	Miles of railroad	168
1886.	Miles of railroad	192
1886.	Production of iron	200



In considering these relative gains it will be observed that they represent a constant gain in the means of subsistence over population; that with the exception of the increase in personal wealth, which is indicated by the increase in the amount of property insured against loss by fire, they represent the progress of the million in the means of common welfare rather than of the millionaire in personal wealth, and that they give testimony to the beneficent law of progress *from* poverty.

at Richmond, that local self-government has had any existence over the southern half of our country. *The Southern States have gained in their defeat the very end for which they rebelled; and they have now discovered for themselves that local self-government can only exist in any true sense where the equal rights of all men are respected, and when sustained by the power of a great nation.*

There has been not only such a revolution of institutions but of ideas in the Southern States, that it would take a larger Northern army to re-impose the burden of slavery upon them than it did to remove it. The growing prosperity born of liberty is now so fully assured that the very "rebel brigadiers" have become most loyal citizens and safe legislators; yet less than a generation has passed since all this was accomplished. All that we can therefore claim is that we have just begun to comprehend the problem of common welfare, while we admit that we have yet much to learn.

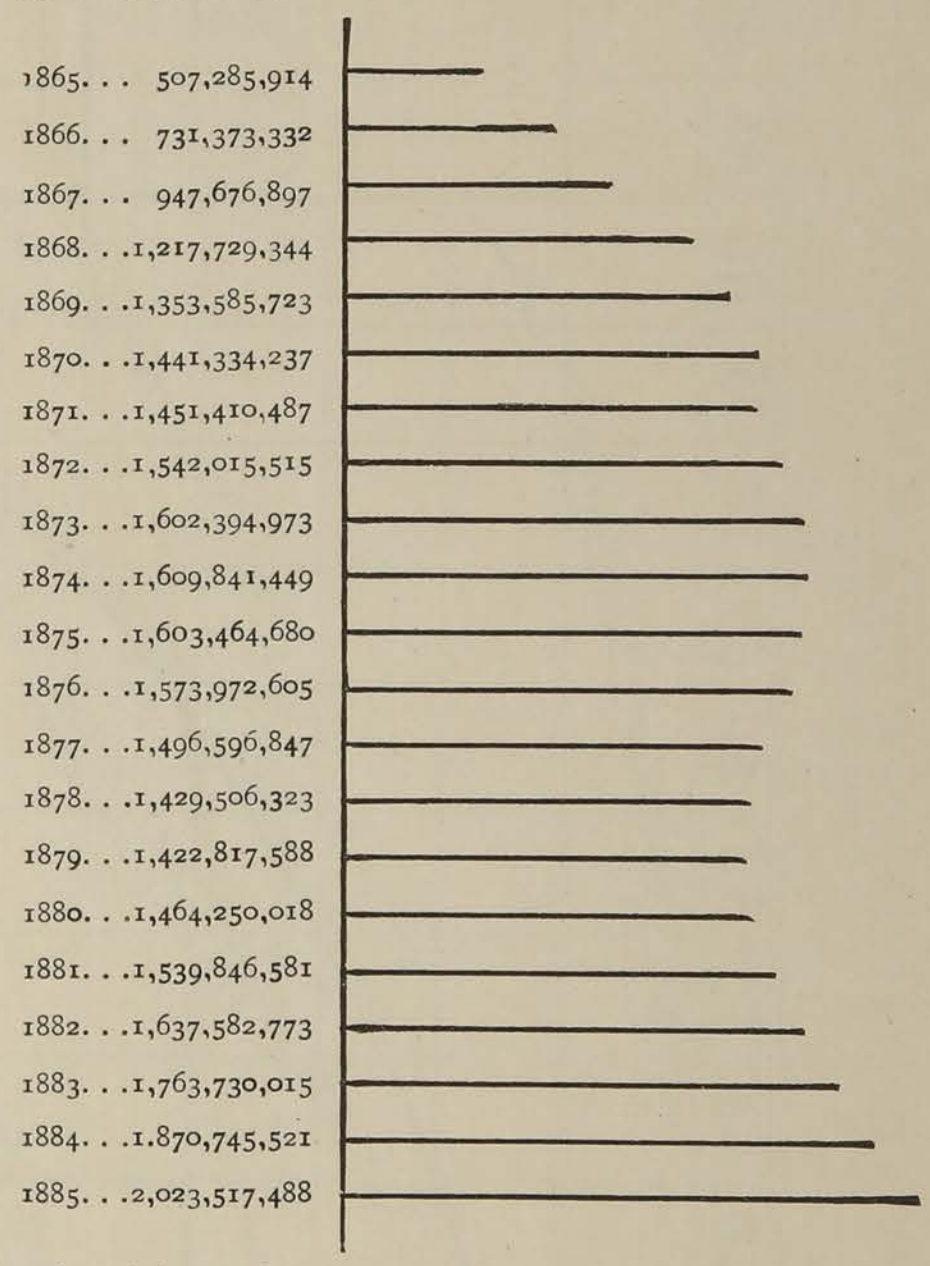
XI.

LIFE INSURANCE.

Compiled by Mr. C. C. Hine, Editor of the "Insurance Monitor," of New York.

There are now twenty-nine solvent and prosperous life insurance companies in the United States, of which nineteen were in existence in 1865. Between these two dates others have become insolvent.

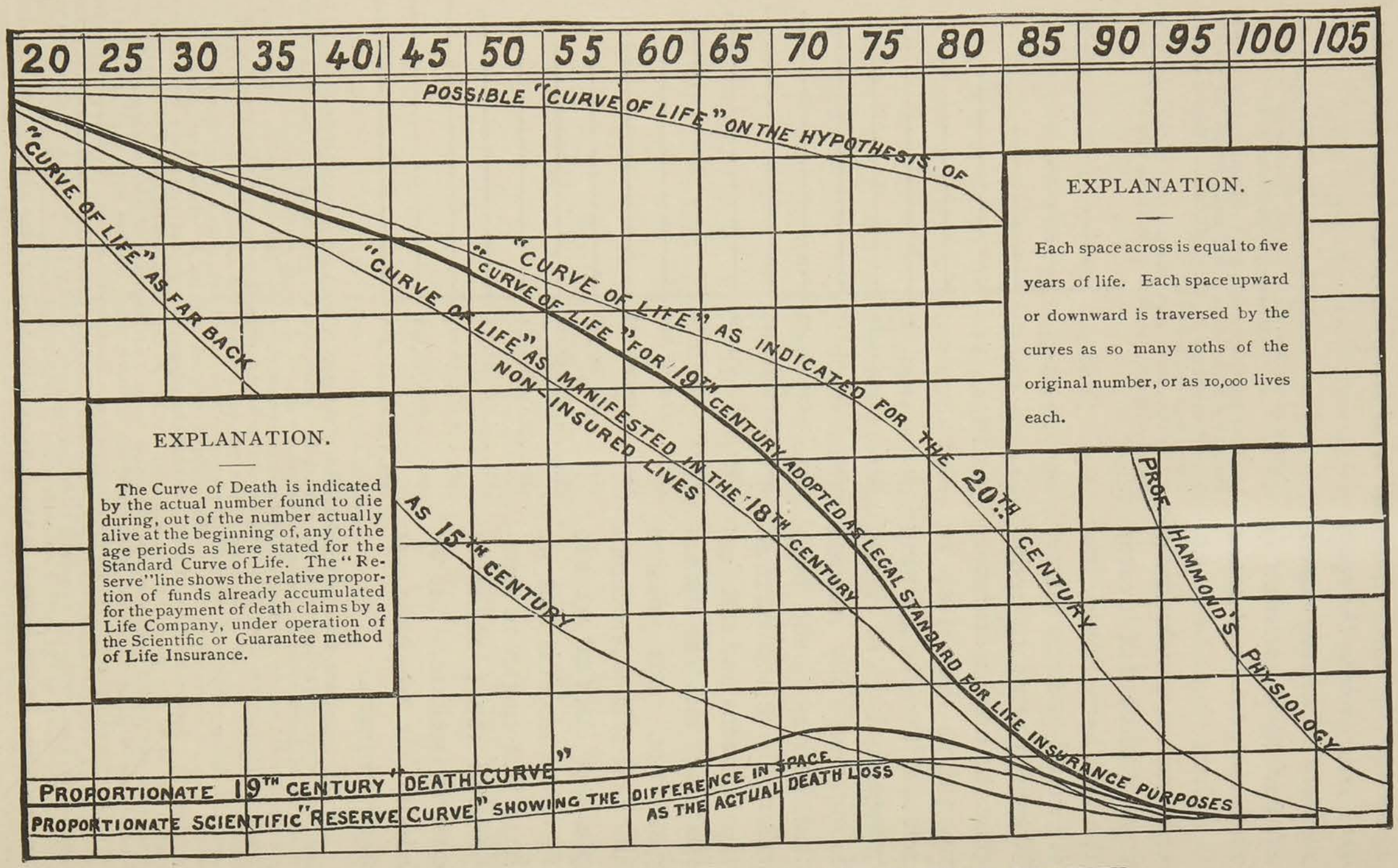
The data below show the progress of the existing companies by a comparison of their risks in force in each year.



It will be apparent, from the consideration of the quality and kind of products of which the increase has been so very great during the last twenty-five years, that the gain has been mainly in the products which are of common consumption by the great mass of the people—food, metals, and fibres. This great additional supply of materials of common consumption, or which are used in the processes of domestic industry, either directly or when exchanged for foreign imports for similar use, must have been mainly consumed by the great mass of the people, because the small number of the rich, and the somewhat larger number of the well-off who cannot be called rich, were already able to provide themselves with all that they could possibly require of such articles as wheat, corn, cotton, iron, wool, and the like. Hence it follows of necessity that the additional product must have been consumed in such a way as to add greatly to the material welfare of the great masses of the people. Under such conditions one would rightly expect the result to be a prolongation of life; a more ample supply of food and clothing, better shelter, easier methods of distribution, coupled with great progress in sanitary science would of necessity tend to an increase in the duration of life. This expectation has been realized. [Through the courtesy of Mr. William P. Stewart, one of the most experienced actuaries in the country, I am permitted to print a table (page 70) which he has lately prepared, showing the actual and possible curves of life, giving scientific proof of progressive increase in the duration of human life.] Had it not been for this increase in the duration of life, it might have happened that life-insurance companies would have suffered from the reduction in the rate of interest which they are now obliged to accept on their investments in consequence of the rapid accumulation of capital; but it will be very plain that if, coincidently with the reduction in the rate of income upon investments, the duration of life insured is being prolonged, then policies issued on existing tables might be even safer than they were under former conditions, while it may soon happen that the rates of premium which are now established may be computed on new tables computed at lower rates.

ACTUAL AND POSSIBLE "CURVES" OF LIFE,

AS PREDICATED ON 100,000 LIVES TAKEN AT AGE TEN, AND INDICATED BY THE NUMBER SURVIVING AT EITHER OF THE FOLLOWING AGES:



VITAL STUDIES, BY MR. WM. P. STEWART, PROFESSIONAL ACTUARY, NEW YORK.

Short as has been the period since we first began to reap the harvest of true liberty, yet cannot the words

DISARM OR STARVE

be read between the lines or underneath the figures of the balance-sheet of nations which is now submitted ?

When government by force of arms meets the competition of a free people governed by their own consent, in the great commerce of the world, what chance of success can there be on the part of states into the cost of whose product is charged the blood-tax of huge standing armies and of war-debts, or upon whom a war-tax presses which takes from a product that would barely suffice for a meagre subsistence so much that many are already starving or only eking out a feeble life on pauper wages ?[1]

I have endeavored to put into the form of what may be called a visible speech the results of the comparisons which I have made in regard to the relative weakness and strength of this and of other nations,[2] from the standpoint simply of a man of affairs engaged in the daily work of life.

I have taken the year 1865 as the starting-point. It is sometimes held, and perhaps with truth, that in the very struggles which ensued between the dates 1861 and 1865, in the effort to eliminate from our organic law the elements of injustice and wrong by which it had been perverted, that the imagination of the people of both sections was first aroused and their knowledge of each other was greatly extended. A knowledge of the vast extent of the land and its resources also became common to all. Thus great enterprises became possible which might otherwise have been deferred for half a century or more. The great railroad constructor, the manufacturer, and the merchant of to-day engage in affairs as an ordinary matter of business, which to their predecessors, or even to themselves in their early manhood, would have been deemed impossible of accomplishment in a whole lifetime. Before the war, one line of railway to the Pacific was the vision of a half-cracked enthusiast ;

[1] When the people of this country shall learn the simple lesson that in all commerce between men or nations, both parties gain, or else the commerce ceases ; and that high wages in money or what money will buy are the necessary correlative or consequence of low cost of production, then may we expect to see a great commercial union or system of free trade among the English-speaking people of the world, against which no army-ridden nation can hope to compete. Then the vision of Richard Cobden, the calico printer, and of John Bright, the cotton-spinner, will become living truths, and the law of mutual service will overcome the disorder of mutual strife, while the weakness of great armies will compel armed states and nations to disband them. Until this simple lesson is learned, the people of the United States will fail in their claim to be great among nations, however great in their own domain, and their influence for right will be impaired by their intellectual and political mediocrity.

[2] The substance of this article was first submitted in the form of an address to the American Association for the Advancement of Science, at the meeting of 1886, held in Buffalo.

to-day the opening of a fifth or sixth line would call only for a descriptive paragraph in a newspaper.

XII.

WAGES, PER DAY, OF CARPENTERS, PAINTERS, MACHINISTS, BLACKSMITHS, CABINET-MAKERS, AND OTHERS IN SIMILAR OCCUPATIONS.

Comparisons of wages at different dates and in different places are apt to be fallacious, because of the difference in conditions; therefore certain specific leading establishments have been taken as a standard, where the work has been continuous. The statistics were obtained by the Massachusetts Bureau of Labor Statistics, in part from the books of the employers and in part from the accounts of workmen.

Table I.—Workmen of average capacity, per day.

1860	Gold	$1.68
1865	Paper	2.285
1870	"	1.824
1872	"	1.375
1878	"	1.714
1881	Gold	2.18
1885	"	2.04

Table II.—Workmen of superior skill, per day.

1860	Gold	$2.37
1865	Paper	2.75
1870	"	2.25
1872	"	1.87
1878	"	2.12
1881	Gold	3.00
1885	"	3.00

RELATIVE PURCHASING POWER OF ONE DOLLAR OF LAWFUL MONEY AT DIFFERENT DATES, AS COMPILED BY MR. WM. M. GROSVENOR BY THE TABULATION OF THE PRICES OF TWO HUNDRED ARTICLES, COMPRISING NEARLY EVERY COMMODITY IN COMMON USE, ONE DOLLAR OF GOLD BEING TAKEN AS A STANDARD IN 1860, REPRESENTED BY A PURCHASING POWER OF 100.

One dollar, lawful money, 1860	100
May 1, 1865	56.84
" 1870	75.47
" 1872	74.45
" 1878	118.76
" 1881	102.97
" 1885	123.63
Average, year 1885	126.44

Wages of mechanics in Massachusetts having been twenty-five per cent. more in 1885 than in 1860, while the purchasing power of money was twenty-six per cent. greater, the workman could either raise his standard of living, or on the same standard could save one third of his wages.

In a subsequent chapter reprinted under the title of "Low Prices, High Wages, Small Profits—What Makes Them?"—comparisons are given class by class, compiled from more adequate data, more than sustaining the combined effect of the lower prices and of wages both higher in rate and in purchasing power upon the welfare of the great mass of the people.

In the table on page 54 the proportions of arable, pasture, and mountain or timber land of the United States is repeated from the January *Century* as the preface to the subsequent tables. Much of the pasture land may yet be converted into most productive arable land by irrigation; while the mountain and timber land is permeated by a great number of fertile valleys.

Subsections I. to VI., inclusive, show the absolute use of land for our present grain, vegetable, and cotton crops, upon which we now produce grain enough for 80,000,000, and cotton enough for 250,000,000 people or more.

Sub-sections VII., VIII., and IX., if they were cultivated by well-known methods of intensive farming, would suffice for a larger product of beef, wool, and mutton, and of milk, butter, and cheese, than is now enjoyed by the present population, even at a more wasteful and lavish mode of subsistence than is now practised.

In tables subsequent to the first I have given the statistics of the increase of cotton, of the railway mileage, and of the products which lie at the foundation of all material welfare.

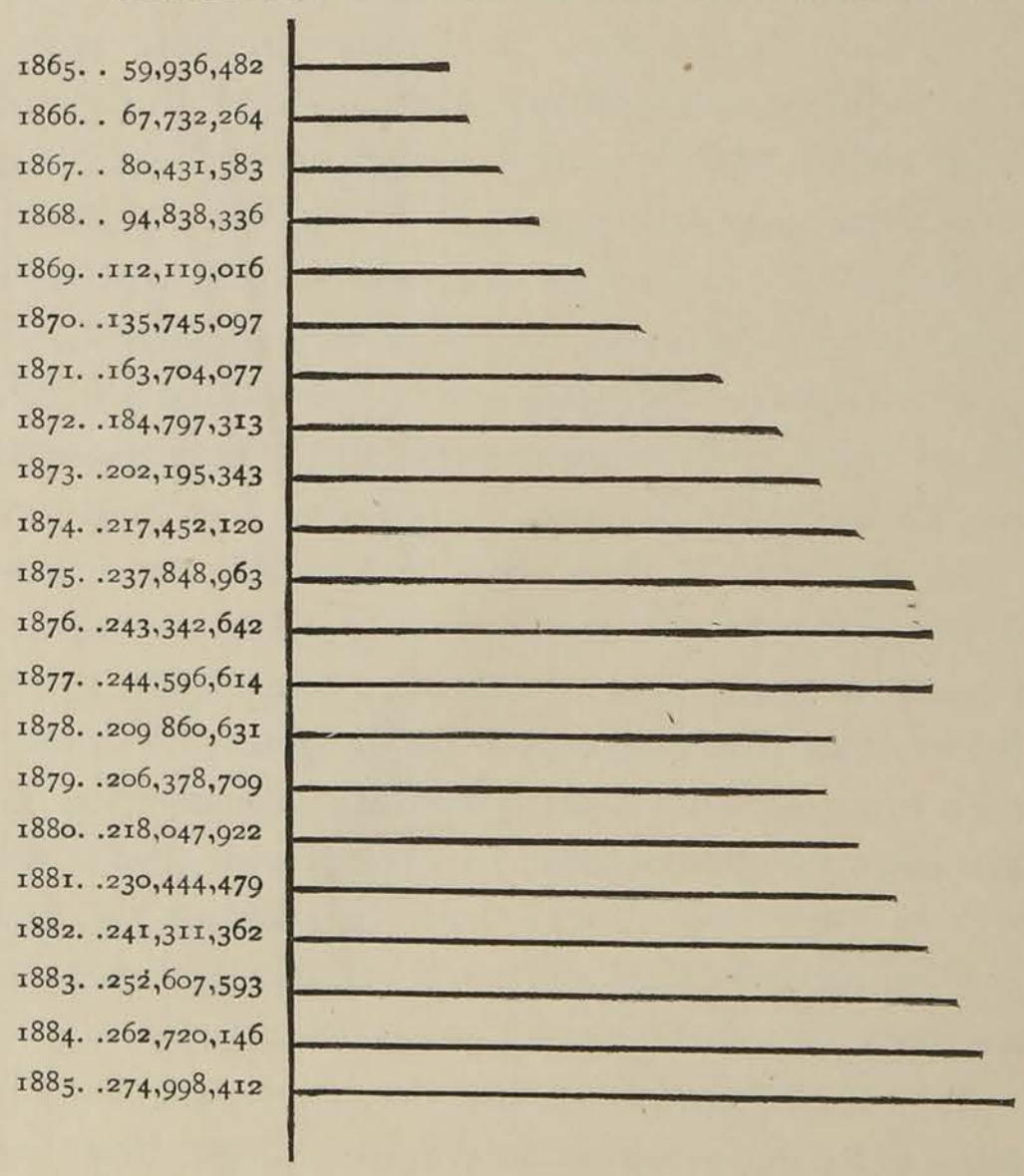
The tables printed in connection with this article give conclusive testimony to the enormous growth in wealth of the United States since the end or even during the civil war. It is admitted, however, that growth in wealth may not be synonymous with growth in general welfare. Absolute proof of the latter, statistical especially, is a matter of great difficulty to the economist and the statistician. For the present I can only refer to the following table No. XIII., in which the increase of deposits in the savings-banks of Massachusetts is given, and also the increase in the purchasing power of a dollar, as shown in table XII. This subject will be treated more at length in a future article.

In the judgment of the Commissioner of Savings-Banks, and of many others who are competent to form an opinion, at least three fourths of the present deposits in these banks belong to those who are strictly of the working classes, in the limited sense in which those whose daily work is necessary to their daily bread make use of that term. This system of savings-banks, managed by unpaid trustees without expectation of personal profit to any stockholder or individual, or to any one except the depositors and the relatively small executive force required, is practically limited to New England and the Middle States. The total sum on deposit in all those States is now computed at $1,100,000,000, at an average of $356 to each depositor.

If the system were

XIII.

DEPOSITS IN THE SAVINGS-BANKS OF MASSACHUSETTS.



Population, 1865	1,267.329
Number of deposit accounts	291,488
Average deposit, each account	$205.62
Average deposit per head of population	$47.29
Population, 1885	1,941,465
Number of deposit accounts	848,787
Average deposit, each account	$233.99
Average deposit per head of population	$141.64

If the savings-bank deposit of the whole population of the United States were now equal per capita to that of Massachusetts, the sum of such deposits would be over $8,400,000,000.

extended throughout the country, and the deposit per capita of the people of the United States were equal to that of Massachusetts, the total sum would amount to somewhat over $8,400,000,000.

Another fact may be cited which fairly sustains the general statement that those who do the actual work of production are now securing to their own use a larger share than ever before of the joint product of labor and capital.

The earning power of $100 in gold coin invested in United States bonds of the best class was, at the highest point of paper-money inflation in 1864, $16\frac{66}{100}$ per cent. per year. At the present time the earning power of $100 in gold goin invested in $4\frac{1}{2}$ per cent. United States bonds is only $2\frac{20}{100}$ per cent. per year.[1]

While the power of capital to secure income merely as capital has thus been diminished, the wages of by far the larger part of all the mechanics, operatives, domestic servants, and the like, are now as high or higher in gold coin than they were in paper money at the highest point which wages or earnings reached in the paper-money inflation period of 1864 to 1867. See table XII.

By the use of this extremely valuable table of the prices of 200 commodities, constituting almost every thing necessary to subsistence, compiled by Mr. Wm. M. Grosvenor, of New York, it appears that if the purchasing power of one dollar in gold coin, on May 1, 1860, be taken as the standard, or one hundred cents' worth, the corresponding purchasing power of one dollar of lawful money on May 1, 1865, at a period of great paper inflation, was $56\frac{84}{100}$ cents' worth of the same commodities. On May 1, 1872, in the year preceding the financial collapse of 1873, the purchasing power of a paper dollar was less than seventy-five cents' worth.

At the present time, and at present prices, the gold dollar will buy twenty-six per cent. more than in 1860. That is to say, wages are now as high or higher than they were from 1865 to 1872 in paper, and much higher than they were in 1860 in gold: they are now paid in gold coin or its equivalent. This gold coin will buy the commodities which are necessary to subsistence, in the ratio of 126 units now relatively to 75 units in 1872, and to $57\frac{1}{2}$ units in 1865, or to 100 units in 1860. Wages have increased absolutely and relatively, while profits have decreased relatively in much greater proportion.

It is made apparent that the increased abundance derived from our fields, forests, factories, and mines must have been mostly consumed by those who performed the actual work, or who belonged to the

[1] The fact that the city of New York has, during the present year 1889, negotiated a loan for park purposes, on untaxable bonds, payable in forty but redeemable after twenty years, at two and one half per cent. per annum, the loan having been placed at a fraction above par, may go far to prove that capital is now accumulating in this country even faster than the general intelligence of the people, which is necessary to its productive use.

working classes in the sense in which those who work for wages for small salaries or on small farms choose to construe that term, because they constitute so large a proportion—substantially about ninety per cent. —of the whole number of persons by whom such products are consumed.

The greatest increased production has been in substances which are mainly used by the masses of the people. Articles of food necessary to life have increased more than the luxuries consumed by the rich. Hence no other evidence is needed to prove that the working men and women, in the strictest meaning of those words, are, decade by decade, securing to their own use and enjoyment an increasing share of a steadily increasing product.

The labor question, as it is called, therefore consists in determining the conditions of the distribution of that greater proportion which is consumed by those who do the physical work of production. Invention creates opportunity for skill, and hence skilled workmen who do not bind themselves to work at the same rates of wages as those who are less skilful and less industrious, are steadily rising, so that there may now be greater disparity between the conditions of skilled and common laborers than ever before.

While the great products of the United States have thus increased, in the same period the burden of the public debt of the nation has been steadily reduced. The books of the Treasury never showed the maximum debt; but in his last report as Secretary of the Treasury, the Honorable Hugh McCulloch added the debt which was due August 1, 1865, but which had not been audited and entered, to the debt then recorded, showing that the maximum debt was but a fraction under $3,000,000,000.

Our ability to reëstablish the specie standard of value has rested mainly upon our power to produce a great excess of food, cotton, oil and other commodities, which we have been able to export in exchange for our foreign purchases, while retaining our production of gold and adding thereto in the full measure necessary for our purpose.

A review of the traffic of the last five years will show the relative importance of our foreign commerce.

In the five fiscal years ending June 30, 1881 to 1885, inclusive, the exports of domestic products, consisting in much the greater proportion of the products of agriculture, have been valued at the port of export at $3,873,057,515, an average of $774,611,503 each year.

At the average of $200 worth of product per capita of the population, or at $600 worth of product to each person occupied in gainful work, mental, mechanical, manufacturing, or distributive, this export represents the result of the work of 1,129,019 farmers, mechanics, factory operatives, railway employees, merchants, and others, in each

year. So large a part of these exports, however, consisted of cotton and other farm products, that the average of $600 product per man is too high; $500 per hand would be a large estimate, at which rate our average export for five years would represent the product of 1,549,223 persons, and even that estimate is probably too small. Except for this foreign demand for the excess of our food, of our cotton, of our oil, of our dairy products, and the like, they might have rotted upon the field or remained unused because they were the excess over our own lavish and wasteful consumption.

In exchange for these products of our own fields, mines, and factories, we have imported $3,314,818,061 worth of the necessaries, comforts, and luxuries of life; the balance of the traffic, including the profits of our export trade, having come back to us almost wholly in gold coin or bullion.

Possessing, as we do, an almost paramount control of the most available supply of food and cotton, which Europe must have or starve, we hold a demand check upon every bank in Europe for the coin or bullion on which we maintain the specie standard of value, which is so essential to prosperity.

The commodities imported in the five fiscal years ending June 30, 1881 to 1885, inclusive, have been classified in the National Bureau of Statistics as follows:

A. Articles of food and live animals	$1,079,869,829.00
B. Articles in a crude condition which enter into the processes of domestic industry	720,826,681.00
C. Articles wholly or partially manufactured, for use as materials in manufacturing and mechanic arts	390,102,678.00
	$2,190,799,188.00
D. Articles manufactured ready for consumption	$718,300,081.00
E. Articles of voluntary use, luxuries, etc.	405,718,792.00
	$1,124,018,873.00
Total	3,314,818,061.00
Free of duty	$1,024,385,175.00
Subject to duty	2,290,432,886.00
Duties paid thereon	986,002,925.00
Export per capita	$17.52
Imports " "	15.04

Except for this export our excess of grain and cotton could have little or no present use, and therefore no value; what we import we could not pay for except with grain, cotton, oil, etc. The whole value of our imports, therefore, becomes the secondary product of our own labor, and the sum of such imports is so much added to the fund from which wages, profits, and taxes are alike derived.

In the use of the imports which enter into the processes of our

domestic industry and are thereby converted into domestic manufactures, another great body of industrious working men and women have been occupied.

Although the domestic commerce of this and of every other civilized nation is vastly greater in volume and value than its foreign commerce, yet the latter serves as a balance-wheel to the whole. The interdependence of nations thus asserts itself: the wider the commerce or mutual service, the greater the result of the labor applied, the lower the proportionate cost, and the higher the rates both of profits and wages, which are alike derived from the final sale of all products, whether the money distributed comes from the sale of the primary products of strictly domestic industry or from the secondary products imported in exchange for the excess of the first.

Thus far it has been easy to prove the enormous growth of the productive power and wealth in this country. We have gained in "number of people, in supplies and resources, in the necessaries and conveniences of life"; have we made equal progress "in good laws, good public officers, in virtuous citizens, in strength and concord, in wisdom, in justice, in wise counsels, and manly force"? If we have not, then

> "Of what avail the plough and sail,
> Or land or life, if freedom fail?"

May not this vast gain in the conditions of material welfare in the United States be mainly attributed to the following elements in our national life?

First. The free purchase and sale of land, and the stability which ensues from the fact that so large and constantly increasing proportion of the people actually possess land.

Second. Absolute freedom of exchange among the several States.

Third. The system of common schools which is now extending throughout the land.

Fourth. The protection which the possession of the right to vote gives to the humblest citizen, both white and black.

Fifth. Local self-government in the strictest sense, in the management of local affairs.

Sixth. General laws in most of the States enabling cities and towns to provide water and sewage without special acts of legislation, and also enabling corporations to be formed for the construction of railways, so that no monopoly of the mechanism of exchange can exist.

Seventh. The habit of combination and organization engendered by long practice, to the end that if any thousand persons, with perhaps the present exception of the lately enfranchised blacks, were suddenly removed to some far distant place, away from their fellow-men, the

men of adult age would immediately organize an open meeting, choose a moderator, supervisor, or mayor, elect a board of selectmen, of

THE PRICE OF LIBERTY.—THE PUBLIC DEBT OF THE UNITED STATES.

			Per Cap.
1860	July 1	$59,964,402	1.91
1861	"	87,718,660	2.74
1862	"	505,312,752	15.45
1863	"	1,111,350,737	33.31
1864	"	1,709,452,277	50.21
1865	"	2,674,815,856	76.98
1865 [1]	Aug. 31	2,997,386,203	84.00
1866	July 1	2,636,036,163	74.32
1867	"	2,508,151,211	69.26
1868	"	2,480,853,413	67.10
1869	"	2,432,771,873	64.43
1870	"	2,331,169,956	60.46
1871	"	2,246,994,068	56.81
1872	"	2,149,780,530	52.96
1873	"	2,105,462,060	50.52
1874	"	2,104,149,153	49.17
1875	"	2,090,041,170	47.56
1876	"	2,060,925,340	45.66
1877	"	2,019,275,431	43.56
1878	"	1,999,382,280	42.01
1879	"	1,996,414,905	40.86
1880	"	1,919,326,747	38.27
1881	"	1,819,650,154	35.36
1882	"	1,675,023,474	31.72
1883	"	1,538,781,825	28.41
1884	"	1,438,542,995	25.80
1885	"	1,375,352,443	24.09
1886	Oct. 1	1,367,549,567	23.00
1886 [2]	"	1,274,728,153	21.60

Reduction debt per capita.

At the date when this treatise is being proposed for republication the net debt of the United States of all kinds, including the bonds advanced to the Pacific Railroad, is less than $1,100,000,000. On the 1st July, 1889, a further reduction will have been made, and, omitting the bonds advanced to the Pacific Railroad, the net debt will be a little less than $1,000,000,000, and the population will then be 63,000,000, giving a ratio of debt to population of less than $16 per head—a reduction of seventy-five per cent. since Aug. 1, 1865.

It now seems probable that as the people have not yet decided in what manner the national rev-

[1] Debt audited and entered on the 31st of August, 1865, being the highest record . $2,756,431,571
Added for debt due but not then audited . 240,954,632

Total $2,997,386,203

[2] According to the old form, corresponding to the form in use 1865–85 inclusive, which does not include the bonds advanced to the Pacific Railroad Company to be paid by them. The first statement for October 1, 1886, includes these bonds and excludes the value of subsidiary silver coin from assets.

assessors of taxes, and a school committee, appoint one or two constables, and then, adopting the principle of the English common law, would at once undertake their customary gainful occupations.

These factors in the life of a free people are not named in the order of their relative importance, but are given in a list, each relative to the other, and, as a whole, composing the main elements of our social organism.

There may be a fallacy in the old democratic dogma that "the government is best which governs least," but there is no fallacy when it is put in another form: That country will prosper most which requires least from its government, and in which the people, after having chosen their officers, straightway proceed to govern themselves according to their common habit.

In the conclusion of this branch of the study of the facts and figures of this country, may it not be held that the alternate periods of activity and depression which have affected the industries of this country since the end of the civil war, have been mere fluctuations or ebbs and flows in the great rising tide of material progress, ending in an adjustment to ever new and better conditions of life? Is it not true that while the rich may have become relatively no poorer, the poor have been steadily growing richer, not so much in the accumulation of personal wealth as in the power of commanding the service of capital in ever-increasing measure at a less proportionate charge? Can it be denied that labor as distinguished from capital has been and is securing to its own use an increasing share of an increasing product, or its equivalent in money?

enue is to be reduced, and since the Congress, which will hold its first session in 1889, will probably prove to be wholly incapable of dealing with the question, the excess of revenue above authorized expenditure may go on at the rate of about two dollars per capita for about four years more, in which period, under such conditions, the debt will be reduced to a fraction over $500,000,000, and may be wholly paid in one generation from the date when it reached the maximum.

The cost, measured in money, of removing the compromise with slavery from the Constitution of the United States, was as follows:

The national revenue collected from April 1, 1861, to June 30, 1868—four years of war and three of reconstruction under military rule—was:

From taxation and miscellaneous receipts	$2,213,349,486
From loans which had not been paid June 30, 1868	2,485,000,000
Total	$4,698,349,486
The peace expenditure would not have been over	698,349,486
Cost of the war	$4,000,000,000

To the computed cost of the war—$4,000,000,000—must be added by estimate the war expenditures of the Northern States and the value of the time, materials, and destruction of property in the Southern States, together probably amounting to a sum equal to that spent by the National Government.

The price of Liberty in money has therefore been $8,000,000,000.

This comes to $1,135,000,000 per year for a little over seven years. The productive capacity of an average man is now about $600 worth per year. If it was then $500 worth, this sum represents the work of 2,270,000 men for seven years; at $400 each, 2,837,500 men.

The average population during this period was 35,000,000. If we assume one in five an adult man capable of bearing arms, there were 7,000,000, of whom one third paid the price of liberty in work for seven years, or in life.

In an address given in Georgia a few years since, the writer ventured to predict that a time would come when the children of Confederate soldiers would erect a monument to John Brown in commemoration of the liberty which he brought to the white men as well as to the black men of the South. Has it not come?

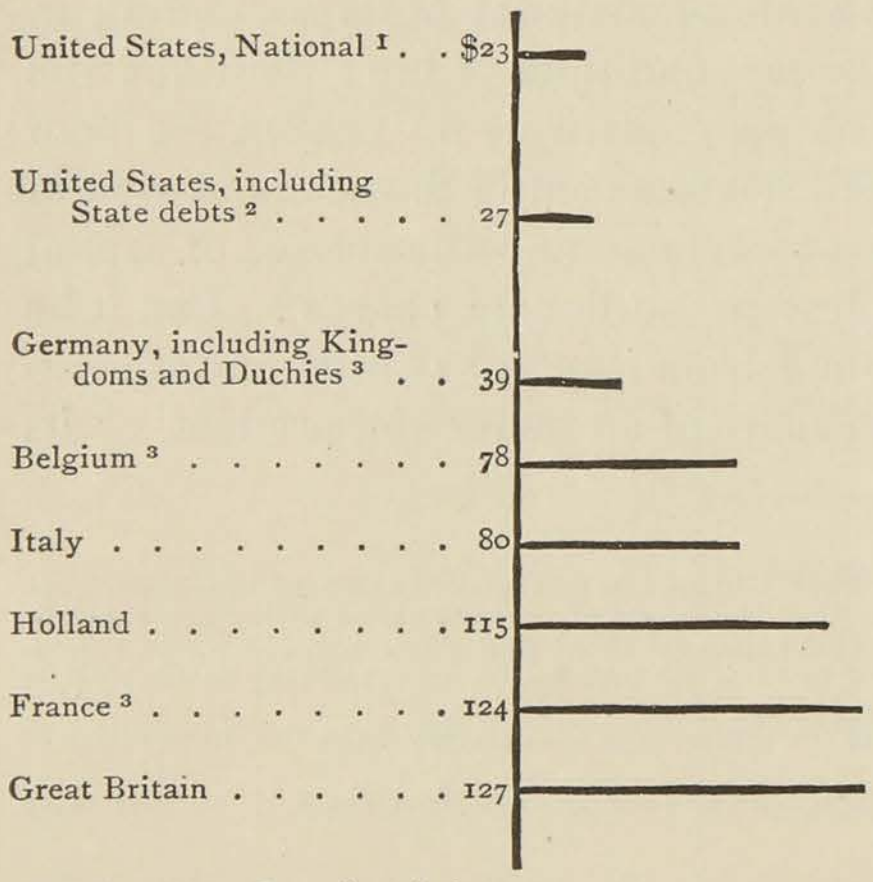
THE RELATIVE STRENGTH AND WEAKNESS OF NATIONS.[1]

TWO STUDIES IN THE APPLICATION OF STATISTICS TO SOCIAL SCIENCE.

II. WEAKNESS.

HAVING analyzed the strength of Democracy in America we may now turn our attention to the other side, and consider the sources of the weakness of nations which are governed by dynasties.

NATIONAL DEBTS—PER CAPITA.



[1] July, 1889. Less than $16.
[2] July, 1889. Less than $20.
It may be claimed that the debts of the several States constituting the United States should be added to the national debt.
In 1880 the total amount of such debts was $226,597,594, since which date they have been diminished by large payments in many States. The present debt of all the States is not in excess of $4.00 per capita of the whole population.
The data for computing department, county, city, town, and communal debts are not within the reach of the writer; but as these debts have been mostly incurred for public improvements, both in Europe and in this country, they do not come into the same category—debts of nations mainly incurred in war or in preparation for war.
[3] It should be stated that a considerable part of the debt of Germany and Belgium and a small part of that of France, was incurred in the construction of railroads, but most of these railroads have been constructed for military purposes.

In Professor J. R. Seelye's recent book upon the expansion of Engand, he has traced nearly all the European wars of recent times to the struggle of nations for dominion over other continents or parts of continents, in order to establish colonies and to control commerce therewith; commerce itself having been regarded by almost all nations, and being now regarded by the greater number, as a *quasi* war in which what one nation gains another must lose.

This fallacy has led to very many of the great actual wars of the last century and a half, and the vast national debts of Europe have been incurred in this futile and foolish attempt to set up as a rule among nations:

"Let him take who has the power,
And let him keep who can."

[1] Reprinted with additions from *The Century Magazine* for February, 1887.

The business man who fully comprehends the function of the merchant and of the manufacturer, and the place which commerce holds in the beneficent progress of the world, may well covet the genius of Southey in order that he might add new verses to the "Devil's Walk" as he passes in review the great wars which have been fought to gain the control of commerce which could have been had for the asking, and which would then have yielded a vastly greater benefit to both parties than either could gain by attempting to get an advantage over the other.

What more fruitful subject for the satirist than the bluster of the party politician at the present time, whose zeal is apparently in inverse proportion to his sincerity, in regard to the respective claims of this country and of Canada over the right to fish within a certain distance from the coast, when it would benefit both countries to put the regulation of all the fisheries under a joint control, so that both might be far better served with fish than either can now be?[1]

What greater economic blunder has ever been committed than the support of slavery in this country for nearly a century of its history? It was the most costly and least productive system of labor, brutalizing to the black man and debasing to the white man; yet it was justified

[1] Since this article was written, the fishery treaty negotiated by the late administration of President Cleveland, under the direction of the Secretary of State, Thomas F. Bayard, has failed of ratification in a Senate controlled by the opposition party. A more discreditable debate may never have occurred in the history of this country. In it the true point at issue was obscured by a mass of historic rubbish and misrepresentation, especially on the part of New England. If salt cod and smoked herring were not taxed in the sum of $350,000 to $400,000 when imported from Canada, there would be no cause of dispute on the so-called fishery question. This tax is imposed upon a necessary article of food at the instance of the owners of fishing vessels, on the pretence that American seamen are trained for the navy in sailing these vessels—the fact being that at least three fourths of those who man the fishermen are foreigners, mostly natives of the maritime provinces of Canada. When the record of history is made in regard to this matter, it may be written that a cause of quarrel with Canada was maintained for many years in order to collect a tax on a necessary article of food, which cost more for the administration of the customs service, the naval protection of the fishermen, and in the waste of time in the discussion in Congress, than the whole revenue derived from the tax. This tax was supported by the votes of those who were induced to pervert a public trust to purposes of private gain through false representations made to legislators whose integrity can only be justified at the cost of their intellectual capacity to comprehend the true limits of public taxation. A tax which could not be justified for purposes of revenue, and which failed even in its ostensible object of giving more employment to American seamen in the fishing vessels, could therefore only have been maintained by a great and powerful nation out of petty jealousy and pusillanimous fear lest the progress of our poorer neighbors, in their attempt to serve us while gaining a living in an arduous and dangerous calling, should harm us in some way which no Senator proved to be capable of defining in the whole progress of the debate on the treaty.

by men of such intelligence and force that had it not been for the narrowing influence and the bitter apparent necessity imposed upon them to sustain a crime against humanity, they might have left a reputation as statesmen.

What more ludicrous commentary upon the intellectual mediocrity of legislators than the demand lately presented in Congress by the representatives of one of the New England States for a heavier duty upon sugar when imported in bags rather than in boxes, in order that the Cuban planters might be compelled to buy the decreasing timber supply of the forests of Maine in the form of sugar-boxes, and charge it back to all consumers of sugar in this country as a part of the cost of imported sugar.

Could there be a more complete *reductio ad absurdum* than the conclusion to which the late Henry C. Carey was led by his lack of true insight in respect to the functions of commerce, namely, "that the material prosperity of this country would be more fully promoted by a ten-years' war with Great Britain than it could be in any other way"? (I quote this from memory; the statement was made in a conversation to which I listened.)

Yet out of this very jealousy of nations we gained almost without cost one of our most important possessions.

One of the most singular of the incidents of one of these great European contests was the sale of the Louisiana territory to this country by the First Napoleon, who, being unable to keep it, chose that England should not possess it. In a few short weeks this territory might have come under the dominion of England. One's imagination can hardly grasp the changed conditions of the world as they would have been had Great Britain succeeded in getting and keeping the control of all that vast territory west of the Mississippi River which was comprised in this purchase, thus confining the United States substantially to what lies east of this mighty river.

It is a singular fact that there appears to be no historical school atlas in use in this country in which the several additions to the territory of the United States are pictured and described; hence very few persons realize the vast importance and extent of the Louisiana purchase, or know the true conditions of the great contest with the slave power over the extension of slavery into what was known in 1830 as the Territory of Missouri, which comprised a vast area outside the limits of the present State of Missouri.

While modern European wars have thus become a struggle for the control of commerce, or for the control of vast areas of territory in the attempt to secure its commercet o single states, war itself has also been mainly sustained by what may be called commercial methods—that is to say, the rulers of nations have made use of bankers, through whom

they have pledged the national credit in order to support dynasties or to secure power to them. Even success in war has in later years depended as much upon the commissariat, or upon the business department of war, as upon the actual battles, or even more.

This possibility of mortgaging the future by incurring a national debt has finally become the chief cause of the weakness of nations. The same century that has witnessed the increase of European national debts from a little over $2,600,000,000 to more than $22,000,000,000 has also seen Spain, Portugal, Austria, and Greece become bankrupt, while Russia is without credit. The attempt to enforce the payment of the bonded debt of Egypt by the force of armies at the instance of foreign creditors may be held to be a disgrace to the nations that have engaged in the undertaking. The debt was incurred without the consent of the people, and even the interest cannot now be met without taking so large a share of the meagre product of the fellaheen as almost to reduce them to starvation.

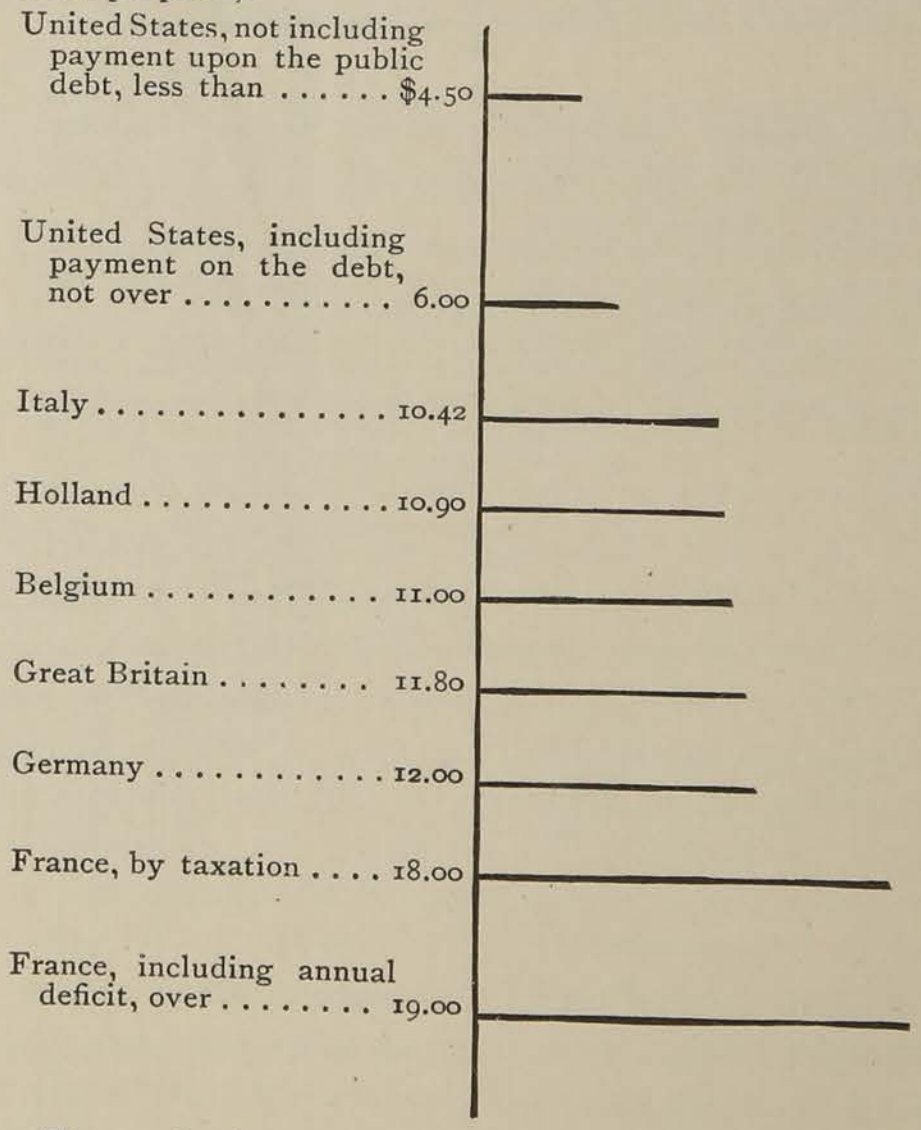
Before the century ends we may even witness a general repudiation of these national mortgages, which the dynasties of the past have imposed upon the people of the present without their consent, and in almost all cases to their injury rather than to their benefit.

In order that the relative weakness of Europe caused by the burden of debts and of standing armies may be fully comprehended, the following statements are submitted:

The debt of the United States at its highest point, in 1865, was eighty-four dollars per head, which is now the average debt of the commercial and manufacturing states of Europe specifically named in the ensuing statement. The debt of the United States is now less than twenty-three dollars per

RELATIVE BURDEN OF NATIONAL TAXATION

Per capita of the principal commercial or manufacturing states of Europe which are solvent, and of the United States (omitting local taxation for departments, counties, cities, or for town purposes):

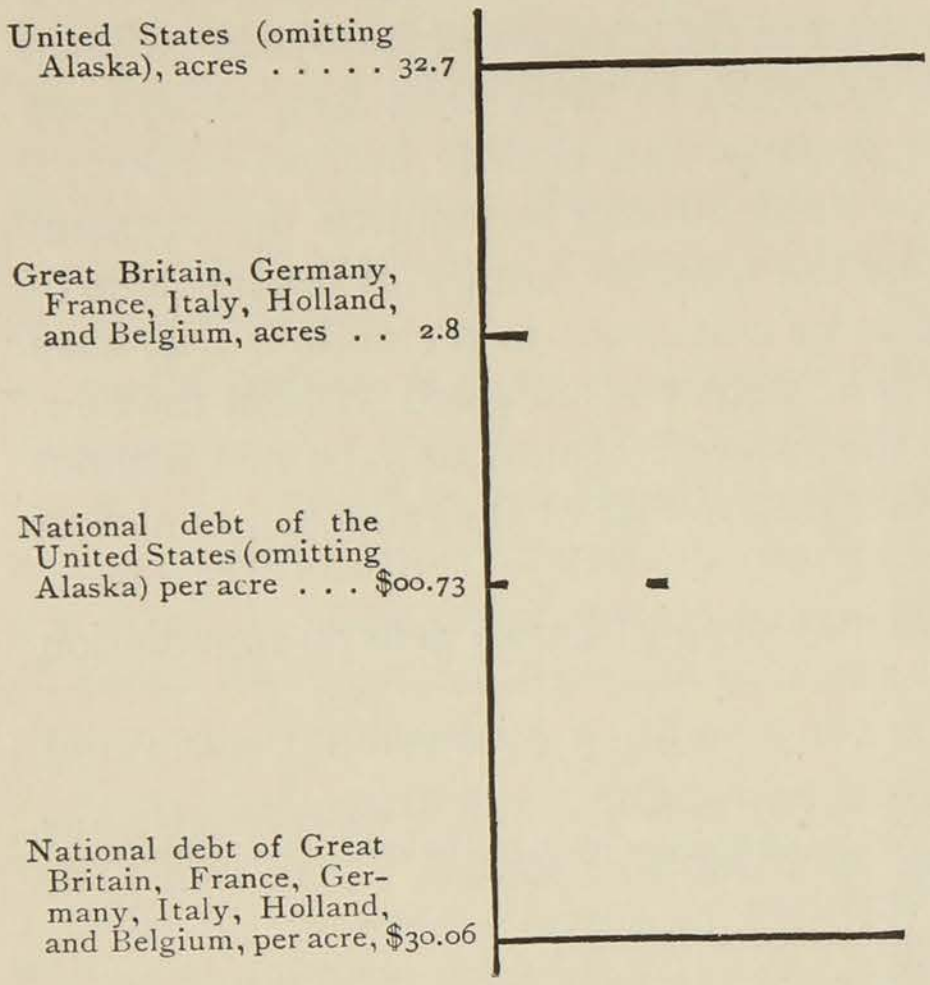


The true burden of taxation may not be measured even by the proportion which the taxes of one country bear to another. The measure of importance is what ratio do they bear to the productive capacity of each nation or state, and for what are they expended. These matters are treated in a subsequent table.

head (or including all State debts, less than twenty-seven dollars). The national debt—now twenty-three dollars—will probably all be paid within one generation from the date when it was incurred.[1]

In the consideration of these various tables it must be borne in mind that the annual product of a nation or state is the source of all wages, taxes, rents, and profits, and that by so much as one element of these charges upon the annual product is greater must some other element be less. No scientific method has yet been invented by which taxes can be made to stay where they are first imposed. As a rule, taxation tends to diffuse itself over all consumption, and cannot be drawn in any large measure from what would otherwise be rent or profit. Hence, when the product is small, the necessary correlative of high taxation is a low rate of wages or earnings. Therefore, low wages in Continental Eu-

ACRES PER HEAD OF POPULATION AND DEBT PER ACRE.



The proportion of men under arms in the commercial and manufacturing states of Great Britain, France, Germany, Italy, Holland, and Belgium is 2,200,431. The cost of sustaining these forces in the last fiscal year was $493,505,520, or at the rate of $223 per man.

The force which is actually under arms, aside from the reserves, is at the ratio of one man to each 200 acres; and the annual tax for his support averages $1.10 per acre.

The average cost per man in the army and navy of the United States, including the cost of ships, fortifications, navy-yards, and all other war expenses, is about $1,600 annually per man. The ratio is one man under arms to each 51,000 acres, and the annual tax for his support and for all other military purposes is a fraction over three cents per acre.

[1] Since this computation was made the reduction of debt has continued, and the amount of the national debt is now (May 1, 1889) $1,101,605,428.

There are some compensations even for political incapacity. The Congress elected in 1888 may prove more incapable of dealing with the subject of taxation than the one whose term expired March 4, 1889; therefore, the surplus revenue, which can only be expended for the reduction of debt, may continue to fall into the Treasury in an increasing measure. The actual burden of taxation by which the surplus is collected would not be any great matter, except for the bad methods and inconsistent laws under which it is collected.

In the interval before the Congress which will be elected in 1890 is called upon to treat the subject, great progress will have been made in the education of the people upon the whole subject of taxation,—then legislation may become possible under which even the present revenues may continue to be collected, but in such a way that the remainder of the debt may be paid in a very short time, without any undue interference with the freely chosen pursuits of the people, whether they engage in agriculture, manufactures, or commerce.

rope give no evidence of low cost of production, but rather indicate that the laborer is deprived of a large and undue share of his product by excessive taxation, chiefly for the destructive purposes of war or of preparation of war.

The debt of all Europe in 1884 and 1885 was	$22,158,000,000
Population	334,000,000
Debt of the principal solvent and commercial states of Europe—Great Britain, France, Germany, Netherlands, and Italy	$13,269,447,000
Population at last census	157,549,817
Debt of the United States at its maximum, August 1, 1865, liquidated and unliquidated, as computed by Hon. Hugh McCulloch, Secretary of Treasury	$2,997,386,203
Population	34,748,000
Debt of the United States, August 1, 1886	$1,380,087,279
Population as computed by E. B. Elliott, Actuary of the Treasury, August 1, 1886	58,670,000

These figures of almost inconceivable millions convey but little idea to any one who is not accustomed to such comparisons ; it is only by considering them in relation to each person of the population, that the true measure begins to be defined.

In the accompanying tables will be found statements of the debt per capita, the annual taxation per capita, the debt per acre, and also the proportion which the present standing armies bear to the population and to the men of arms-bearing age.

Thus far all the facts which have been given have been taken from the " Financial Reform Almanac " of 1886, from the " Statesmen's Year-Book " of 1886, and from the official documents of the United States.

I may now enter upon that part of my treatise which rests upon estimates only. These estimates must be accepted for what they are worth. It is admitted that they are somewhat hopothetical. Are they sustained by facts ?

The true income of a nation is not the money by which it is measured ; it is, in fact, the product of its labor and capital, consisting of the materials for food, for clothing, for shelter, fuel, metals, and the like, converted and reconverted until ready for consumption. These products are measured in money's worth in the process of exchange, and it is important when making use of terms of money to carry with the measure of money the conception of the quantities of substance which money will buy, or which are exchanged for money.

In a very few cases certain countries, like England, possess an income from foreign investments of capital previously saved ; but this is a very small element as compared to the value of its annual product.

In the following tables this increase of income from foreign investments has been considered with respect to the average value of the product per capita assigned to England.

I have attempted to establish a comparison of the product, per capita, of European countries, as compared to this country, at its measure in money. The known factors in the problem are, first, the relative rates of wages paid in the several countries considered, each as compared to the other; second, the relative amount of national taxation per capita.

Another factor which may be deemed to be sufficiently well established for purposes of comparison is the value of the per capita annual product of the people of the United States, estimated at two hundred dollars' worth to each person.

STANDING ARMIES AND NAVIES OF EUROPE AND THE UNITED STATES,

Compared in ratio to the number of men of arms-bearing age, assuming one in five of the population to be of that age.

Standing armies of Europe in actual service	3,854,752
Men in the navies	268,622
Total armed force	4,123,374
Reserves ready for service at call	10,398,163
Total	14,521,537

Substantially one in five of all men of arms-bearing age.

Proportion of men of arms-bearing age in the standing armies and navies, *not* including reserves.

Exempts.	*Proportion to total.*			*Exempts.*
All Europe	1 in	16.13		15.13
Italy	1 "	7.50		6.50
Holland	1 "	11.		10.
France	1 "	13.		12.
Russia	1 "	17.		16.
Germany	1 "	19.50		18.50
Belgium	1 "	23.		22.
Austria	1 "	25.40		24.40
Great Britain	1 "	26.		25.
United States	1 "	322.		321.

Men in active service in armies and navies, omitting reserves:

Russia	1,004,507	Belgium	46,539
Italy	765,820	Sweden	43,174
France	575,959	Denmark	37,725
Germany	462,678	Greece	33,187
Austria	298,501	Portugal	29,920
Great Britain	281,746	Norway	22,250
Turkey	180,404	Roumania	20,572
Spain	116,256	Servia	13,079
Switzerland	113,368		
Holland	77,689		

	4,123,374	or 1 man in		81	of population.
Reserves	10,129,541				
	14,252,915	or 1 "		24	"
United States	36,294	or 1 "		1610	"

The family group in this country consists of a fraction over five persons; the proportion who were occupied for gain was one in 2.90 in the census year, and may be computed as one in three at the present time. Two hundred dollars' worth per head would make the average product of each person working for gain six hundred dollars' worth of product per year.

The writer has himself devoted a great deal of examination to this subject, and his estimate of two hundred dollars' worth per

Since this guarded computation was made, the armies of Europe have been increased, and it has been computed that one man in sixteen upon the continent is either under arms or held subject to arm at the call of the government. The actual force in the standing armies now exceeds the number given in the table after deducting a part of the force assigned thereto in Italy and the whole of the armed freemen of Switzerland.

head has been sustained by many other experts, official and unofficial. Accepting this measure as approximately true to the facts, it is held that the value of the product, per capita, of other countries may be based upon the value of the per capita product of this country, since the product of other countries must bear substantially the same proportion to the rates of wages and the per capita tax of such country as the product of this country bears to these known factors.

In all the principal commercial and manufacturing countries of Europe and in the United States there is now such an amount of available accumulated capital, as to make it certain that if there is any art or industry in which a rate or profit ranging from five per cent. to fifteen per cent. can be obtained, that branch of work will be quickly and surely undertaken.

Hence it follows that if the sum of the wages at the current rate prevailing in each country can be ascertained, as well as the per capita taxes, we may ascertain the average value of the product of such labor by adding to these elements of cost from five per cent. to fifteen per cent. as the corresponding profit. In other words, there must be a necessary relation in the ratios which profits, wages, and taxes bear to each other in each commercial or manufacturing country, according to the respective conditions of industry in that country.

For example, assuming that one person sustains two others in France as well as in this country, we know first that the average wages in France are not more than sixty per cent. the rate of wages in this country. We also know that national taxes are eighteen dollars per head in France and less than five dollars here. We need therefore only to establish the rate of profit which will induce the employment of capital in the arts which can be established in France in order to reach an approximate estimate of the average value of the product of each person employed in productive industry.

We may take as a class any group of skilled mechanics or artisans in the United States who earn two dollars a day or six hundred dollars a year, each one supporting two other persons.

Their net wages each, free of national taxes, would be.....	$585
Their proportion of national taxes for three persons at $5 per capita.....	15
Wages and taxes.....	$600

Now if any one can make ten per cent. upon this sum, capital will be found for the employment of such men, and their product will be sold at such ten per cent. advance, if no more can be had, or at six hundred and sixty dollars.

This would make the final value of the product of such a workman six hundred and sixty dollars: divided into profits, sixty dollars; taxes, fifteen dollars; net wages, five hundred and eighty-five dollars.

We know that the corresponding rate of wages of a French artisan would not exceed, on the average, sixty per cent., or three hundred and sixty dollars, and that the proportion of national taxes due from him and his two dependants would be fifty-four dollars. But the gross product of France being less than it is in this country, it may require a larger proportion of the product to be assigned to profits; we will, therefore, call it fifteen per cent. on three hundred and sixty dollars, which is fifty-four dollars. This sum added to wages and taxes gives a gross value of the French workman's product, four hundred and fourteen dollars.

The ratio in this comparison would be:

Product,	per	workman,	United States..... $660
"	"	"	France..... 414
"	"	capita,	United States..... 220
	"	"	France..... 138

On the other hand, if the average annual product is only one hundred and thirty-eight dollars' worth per head, or four hundred and fourteen dollars' worth for the earnings of one of a group of three by whom the two others are sustained, the reason is not that the work is not equal, but that the quantity of the product to each person is limited by the conditions under which the work is done. The same workman when removed to the United States may produce twice as much as in France with the same labor, if he can adjust himself to his new conditions. The German immigrant actually does so. Does it not follow that wages are the reflex or result of the labor of the workman derived from the sale of the product after profits and taxes have been set apart? Hence all attempts to compare the cost of production of any article by comparing the rates of wages must be entirely fallacious unless all the conditions of production are the same. The rates of farm wages are, on the average, four to five dollars per month with board, in Rhenish Prussia; in the United States they are four to six times as much, but the money cost of producing a bushel of wheat in Prussia is double the cost in many parts of the West, where machinery is used to an extent unknown in Prussia, and almost impossible on account of the very minute subdivision of the land.

The causes of the variation of the product per workman and per capita are, of course, manifold. The principal causes must be variation in:

First. The natural resources of the country.

Second. The efficiency of the workman in respect to mental training and manual or technical dexterity.

Third. The efficiency of the tools or machinery used.

Fourth. The full or deficient nutrition of the body.

Fifth. The freedom from obstruction in exchanging the surplus of one art or industry for what is deficient in another, either one part with another in the same country, or one country with another.

Upon this theory I have constructed the foregoing table, to which reference may be made, and while no claim for positive accuracy in the money estimates can be made for it, it may perhaps be accepted as relatively or proportionately correct. The facts sustain these proportions, and therefore prove the theory to be correct.

Is it not also a matter of common observation that in a country like the United States, in which laborers are perfectly free, the transfer of land and of other property very easy and very promptly made, the use of machinery fully comprehended, and in which any new inventions speedily adopted, the product will be large in ratio to the number of persons employed?

Conversely, if the natural resources of a country are not large in ratio to the population, the transfer of land complex and difficult, machinery inadequate, and improved tools not readily accepted, then the product will be small in ratio to the number of laborers. It follows that if taxation takes a large share of such small product, wages must be very low, and subsistence must be very meagre.

In this country all conditions are favorable to low cost of production, low prices, and high wages, and therefore conducive to a widely extended commerce. Labor is effective, capital ample, and the average burden of national taxation very light. The prices of our great staple products, such as grain, wool, and cotton, are practically determined by competition in the markets of the world. From fifteen per cent. to twenty per cent. of the product of agriculture of the United States finds its market in foreign countries. Therefore the price of all products of agriculture is determined by the price which the surplus will bring for export.

Agriculture represents the largest single industry; and the product being very large in ratio to the number of men employed, because of the fertility of the soil and the use of machinery, it follows that when the low rate of taxes has been set aside and the ratio of profit has been assigned which is required in order that capital may be invested in agriculture, the rates of wages or the earning of farmers in this country are, relatively to other countries, very high. Under such conditions large earnings and high wages are the necessary correlative of the very low cost of the production of the staples of agriculture. One is the reflex of the other.

Up to this time the conditions of and the wages in all other arts in the United States have been practically determined by reference to the condition of and wages in agriculture. All other arts which have been undertaken in this country are therefore governed by corresponding

rules ; namely, by the application of machinery under the best conditions, the largest product is assured with the least expenditure of labor. Therefore in all arts, with few exceptions, after the low rate of taxation and such profit as is necessary to induce the investment of capital have been set aside, the general rate of wages has been very high, because the general cost of production has been low. The same rule, therefore, applies in all arts—that high wages or earnings are the reflex or complement of the large product, so long as labor and capital are left free to work together, and are not subjected to excessive taxation. Hence no comparison of cost can be made by a comparison of wages unless all other conditions are identical.

This fact was very clearly seen by the late Secretary Frelinghuysen, and his successor, Secretary Bayard, begins his instructions to consuls in these terms : "'There are certain natural and artificial conditions which so largely affect the direct conditions of wages as to be entitled to consideration in any analytical examination of the great question of labor. . . . It would be a legitimate field of inquiry to ascertain what are the conditions which enable England to manufacture machinery and other products at less prices than similar goods can be manufactured in France, and at prices equal to those in Germany, while the rates of wages paid to workmen engaged in such manufactories in England are, on the whole, higher than those paid for similar labor in France, and, as a foregoing table shows, more than double those paid in Germany.'

"It is the wish of the State Department to pursue this inquiry in the direction indicated in this paragraph, and for this purpose the following general instructions are given to consuls, reference being made to the specific forms of interrogatory appended hereto, or which will be sent hereafter."

This apparent paradox of high wages and low cost becomes very simple when applied by any employer to his own experience. In a dull time, when it becomes necessary to discharge a part of the working force, which are the operatives first discharged? Are they not those whose wages or earnings have been lowest—not those who have previously earned the most for themselves? Are not the men who earn the most for themselves retained because they are the most effective workmen, and therefore most capable of producing goods at the lowest cost? Conversely, does not the fact which is apparently lost sight of by the proposed "organizers of labor" represent an absolute principle, namely, that the strong, industrious, and well-nourished manual laborer, or the skilful artisan or factory operative, will be substantially sure of continuous employment at the highest possible rates of wages when the less able or competent can find no steady occupation ?

Is not the rule of universal application in civilized countries that there must be a certain ratio between the *sum* of the wages and the

taxes combined, and the profit which may be derived from the several arts and industries of each of the several countries?

It has been admitted that in very poor countries where hand labor prevails in greater measure than the application of machinery, and where the taxes are very heavy while the product is very small, the ratio of profit must bear a larger proportion to the entire product than it does in a rich country where machinery is most fully applied and where taxes are low.

In making the computations of the relative per capita product of the different countries, I have not attempted to cover this variation in the rate of profit, but I assume that, on the whole, any art in which capital can secure ten per cent. profit will be surely undertaken either in the United States or in England, France, Germany, and the Netherlands. Perhaps not in Italy without a higher rate of profit.

Upon this theory, and assuming that the product per capita of the United States may be valued at two hundred dollars' worth; that of England, with its income from foreign investments added, may not exceed one hundred and seventy-five dollars' worth; that of Great Britain and Ireland combined may be assumed not to exceed one hundred and fifty dollars' worth; that of France as not exceeding one hundred and twenty dollars' worth; that of Germany as not exceeding one hundred dollars' worth; that of Italy as not exceeding eighty dollars' worth; such being substantially the ratios which the average rates of wages with the per capita national taxation added bear to each other, and to the wages and taxes of the United States, with corresponding profits added in each case.

In order that this proposition may be made more clear, the table on page 92 is submitted in which the line representing the product of each country is divided off into sections: in the sections on the right will be found the national taxation per capita; on the left, the value of what remains for distribution as wages, profits, and for municipal taxes. In the same table will be found the percentage which national taxes bear to the assumed per capita product.

In considering these remainders after national taxes have been set off, it must be borne in mind that municipal taxation as well as profits doubtless take a larger proportion in the poorer countries than in the richer ones. Hence that part of the product which may be assigned as the wages or earnings of the working people becomes less and less in proportion to the whole product, as the product itself diminishes in quantity and in value. "For he that hath, to him shall be given: and he that hath not, from him shall be taken even that which he hath."

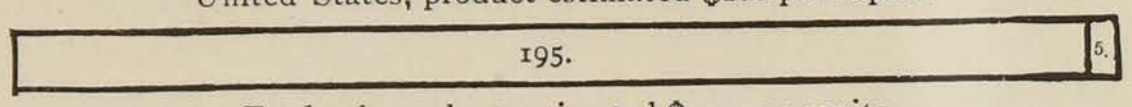
These figures correspond to known facts. In Italy, which is relatively under a heavier burden of armies and taxes than any one of the

countries treated, what is left to the workman, either of his own product or what he can buy with his wages, now appears to be insufficient to

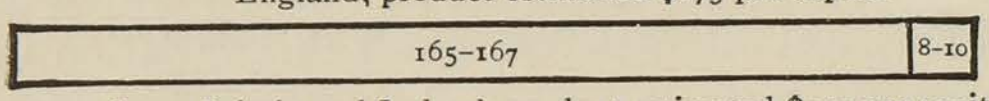
RELATIVE PROPORTION OF THE ASSUMED PRODUCT PER CAPITA WHICH IS ABSORBED BY NATIONAL TAXATION ONLY, ON THE BASIS OF PREVIOUS COMPUTATIONS.

The proportion divided off at the end represents national taxation. The remainder is what is left to be applied to local taxation, rent, profits, earnings, and wages.

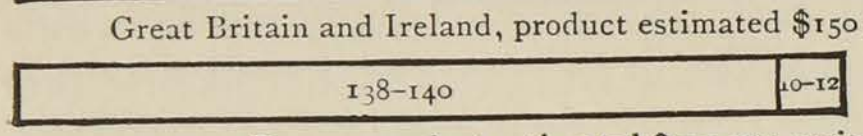
United States, product estimated $200 per capita.



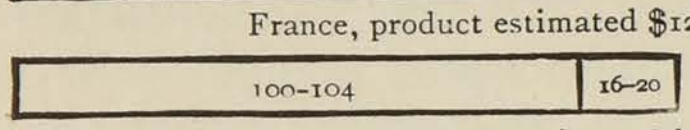
England, product estimated $175 per capita.



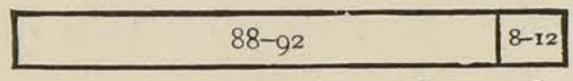
Great Britain and Ireland, product estimated $150 per capita.



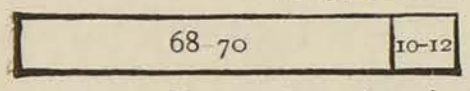
France, product estimated $120 per capita.



Germany, product estimated $100 per capita.

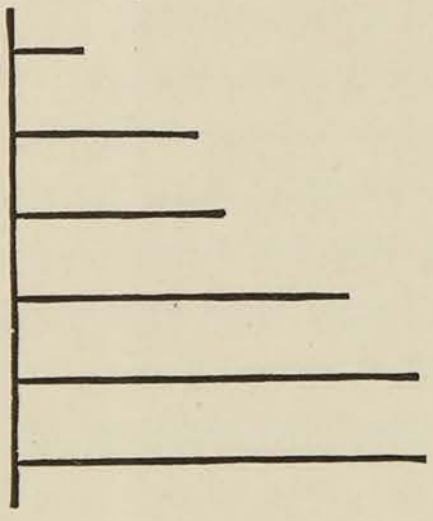


Italy, product estimated $80 per capita.



Proportion of national taxation to estimated product:

United States . . . . . $2\frac{1}{2}$ per cent.
England . . . . . 6.74 "
Great Britain and Ireland. . . . . 7.87 "
Germany. . . . . 12 "
Italy . . . . . $14\frac{3}{4}$ "
France. . . . . 15 "



On revising these articles in April, 1889, for republication in book form, I find no reason to make any material change in the figures of this table. Investigations which have been made in France have proved that the average rate of taxation given for each state was substantially correct, but further investigations in respect to the value of the product per capita in European countries would lead me to reduce the figures of production, except in England. Since the publication of this article the burden of European armies and debts has gone on increasing, and the tendency to revolution and repudiation becomes more manifest as time goes on. Objection has been taken to these comparisons upon the ground that taxation for local and municipal expenditure should also be compared in order to reach just conclusions. In this view I do not concur, because the revenues which are raised by taxation for department, county, city, and town expenditure in Europe and for State expenditure in this country, are mainly used for the support of roads, bridges, schools, police, and for providing water and in many cases gas; all of which are necessary to the organization of society, and are constructive rather than destructive in their nature. On the other hand but a small proportion of the national expenditures are constructive or necessary to the organization of society, the greater portion of such taxes being devoted to the support of armies, navies, and dynasties, or to the payment of interest on debts which were incurred for war, and were imposed by dynastic governments upon the people without their consent. As the time approaches when democratic governments may displace the present dynastic rulers and do away with class privileges, the question may arise by what right these great national mortgages were imposed upon the people of the present day by the rulers of the past. The growth of national debts and standing armies has mainly occurred since the beginning of the present century: the question may well be asked how soon the people of Europe will refuse to bear the load which now seems to be as impossible to be borne much longer as it is incapable of being thrown off except by the most violent outbreak of revolution and by general repudiation.

sustain life in strength and vigor. Is it not also true that portions of the population of the German empire, especially in southern Germany, are living on the edge of starvation, becoming weaker as they become less well nourished ?

In Egypt so much of the miserable product of a rich and productive country is taken away to meet the interest of a bonded debt imposed upon the people without their consent, that starvation exists in the Nile valley, which has once sustained tenfold the present population in comfort. While so-called Christian nations have followed the Pagan example and have again combined "to despoil the Egyptians" by enforcing taxes at the point of the bayonet and the mouth of the cannon, to pay interest upon a debt imposed by a foreign ruler, whose successor has been found incapable of collecting the tax except when sustained by a foreign force, when the oppressed people attempted to resist the wrong !

Is it not true that France has reached its utmost limit of taxation, and the annual deficit is adding to the burden which cannot, perhaps, be borne much longer ? Yet France may be saved from immediate bankruptcy by the richness of its soil and the intelligent economy of its people.

Is not the present burden upon Ireland the burning question in Great Britain ?

May there not be found in these conditions the underlying causes of nihilism, anarchy, socialism, and communism upon the continent of Europe ? As one witnessess the malignant effect of the burden of national debts, and the power which is given to the great financial magnates of Europe to control events for nefarious purposes, one cannot help looking forward to a time, perhaps not very distant, when the power and right of one generation to mortgage the labor of those who come after them for the conduct of wars will be contested, and when the jurists may declare that no debt incurred for purposes of war shall be lawfully binding upon those who come after. When pay as you fight becomes the rule and practice of nations, the power of dynasties to oppress the people will be almost wholly taken from them.

In considering what is left after taxes and profits have been set aside in these several countries, it must be remembered that an equal amount of money will buy a less amount of food in Europe than it will in the United States, and the price of food is much more than half the cost of subsistence to a very large proportion of the working people of Europe ; else we should not be exporting the products of our fields to European countries, and there would be no call for prohibitory laws, or for high duties on grain and pork in a vain attempt to promote an increase of the farm products in Germany and in France by such artificial methods.

The true measure of these burdens upon industry may be, perhaps, more accurately measured in terms of work than when stated in terms of money or of men. The product of every country stands for so much work. In the census year the work of this country, manual, mental, mechanical, and manufacturing, was performed by one in three of the population so far as gain in money was the object of the work, the bread-winners numbering 17,400,000 in a little over 50,000,000 population.

The national and municipal taxes of that year were proportionately higher than they are now ; all taxes, national, State, and municipal, in that year required substantially seven per cent. of the highest estimate of the value of total product to be applied to them. This percentage being applied to persons, represented the year's work of men numbering 1,218,000, whose labor was devoted either to the direct work of government, or in sustaining all the forms of government by way of national, town, city, county, and State taxes.

The national taxes only of the United States are now about two and a half per cent. of the product, and they therefore represent the work of 500,000 persons out of about 20,000,000 workers. This body of half a million persons is either employed directly in the service of the government, or else is occupied in sustaining those who are in such service.

If the burden upon the United States corresponded to the several percentages assigned to other countries, the number who would be engaged either in the service of the government, civil or military, or in sustaining those who perform this work, would be according to the following computation, it being assumed that out of our present population, approaching sixty million persons, twenty millions are at work in various occupations in sustaining the whole body politic :

At the ratio which the national taxes now bear to product in the United States, the actual work required to sustain all the functions of the National Government, directly or indirectly, is that of	500,000 men.
At the ratio which the national taxes bear to the assumed product of England, the proportionate number of men who would be required in support of the functions of government in the United States would be	1,348,000 "
At the ratio assigned to Great Britain and Ireland as a whole	1,574,000 "
" " " " " France	3,000,000 "
" " " " " Germany	2,400,000 "
" " " " " Italy	2,950,000 "

It will be apparent to any one who reasons upon these figures that if either one of these proportionate services in sustaining government, except perhaps that of Great Britain, were in force in this country, it would put a strain even upon our abundant resources that we could scarcely bear. What must then be the burden upon those who are thus loaded ?

The computed product of two hundred dollars' worth per head of our population, after setting aside ten per cent. as the maximum addition to capital, and six per cent. as the maximum of all our present national and municipal taxes, leaves only one hundred and sixty-eight dollars' worth to each man, woman, and child. This being divided by three hundred and sixty-five days in the year leaves but forty-six cents' worth per day for shelter, clothing, and food for each person. A variation of five cents per day to each person from this computed average stands for an additional product worth more than $1,000,000,000 a year.

Let it be assumed for a moment that our two hundred dollars' worth of product, of which two and a half per cent. supports the National Government, were depleted by national taxation to the extent of fifteen per cent., as the product of France now is, a difference of twelve and a half per cent.; then the average sum available to each person per day would be reduced from forty-six cents to a fraction under thirty-nine cents ; not apparently a great variation,—only about the price of a glass of beer,—yet six cents a day comes to over $1,300,000,000 on our present population.

If we assume that one in three of the population of Great Britain, France, Germany, and Italy is occupied for gain, the whole number of workers is a fraction less than 50,000,000 out of a population a little less than 150,000,000.

At the respective ratios assigned to the functions of government, the total number engaged in such functions is now in those four countries 6,067,000, or a fraction over twelve per cent. of the whole working force, thus occupied either as soldiers in active service, as officials in civil service, or in sustaining these classes with bread, meat, and shelter. The actual number of men under arms in these countries is 2,086,000, and they cost two hundred and twenty-five dollars each. It surely takes at least one peasant's or one operative's product to sustain one soldier. If the armies and navies require the services of 2,086,000 men, and if the work of as many more is required to sustain them, then the waste of preparation for war requires the constant work of 4,176,000 men out of 30,000,000 men of arms-bearing age in Great Britain, France, Germany, and Italy, computing one in five of the population of arms-bearing age. This is very nearly one in every seven of the adult men. Deducting this number from the whole number assigned to government service as above, 6,067,000, the remainder is 1,891,000, or proportionately about fifty per cent. more than have been assigned to the support of the National Government of the United States aside from their army and navy. The number needed to earn the interest on the national debts of those countries above the proportion required in the United States would fully account for this disparity.

Do not these facts sustain the approximate accuracy of all the preceding computations? Does not the burden of armaments only require ten to twelve per cent. of the whole number of men of arms-bearing age in those countries, or eight to ten per cent. of the whole working force, if the proportion of working men and women to the population is the same as in the United States; to wit, one in three?

But is such the proportion of men and women who must labor to the utmost for subsistence? When men are wasting their time in camp and barracks, are not the women and children forced to labor in such a way that the physical stamina of the race is deteriorated, and material prosperity sapped at its very foundation?

What must then be the necessary conditions of life when the money's worth to be divided among the families of those who do the actual work of production is only one half as much as it is in the United States? If the product of Germany is only one hundred dollars' worth per head, it will yield less than *twenty-eight cents'* worth per day for all taxes, subsistence, profits, and wages to each person. If the product of Italy is worth only eighty dollars per head, all taxes, profits, and wages must be derived from *twenty-two cents'* worth per day to each person.

If, on the other hand, the average value of the product per capita of these European countries cannot be deduced *a priori* according to the theory presented, then again we must go back to the facts; and we then find in all the various reports upon the condition of a vast body of the population of Europe that they are actually subsisting upon much less than half the income of the working people of this country. The facts sustain the theory, and the theory may explain the facts.

Many records may be found in recent consular reports of the families of German and Italian peasants who are subsisted on only four to five cents' worth of food for each person per day; and even at that price the cost of food is sixty or seventy per cent. of the whole cost of living.

On the other hand, if such are the facts as to common life of great masses of the people, and if we cannot deduce the per capita annual product of each worker in Europe by adding ten per cent. for profit or addition to capital to the average rate of wages and the average burden of taxes,—that is to say, if the product of either country is greater per capita than this measure, then it follows that the privileged classes of Europe are securing to their own use a very much larger share of the annual product than the capitalists of this country can thus secure; and this adds to the danger and complexity of the problem in Europe, rather than rendering it more simple.

What then do these figures and facts mean? Is not the apparent strength of the armaments of European nations a source of weakness

which is now working at and undermining the foundation of the present forms of society upon the continent?

Is not our apparent weakness the very source of our strength?

Are we not stronger *without* expensive fortifications, navies, and other armaments than we should be if we spent our force in constructing them?

May not the time be near at hand when it shall no longer be lawful for one generation to mortgage the labor of the next by any national and perhaps by any municipal debt? When pay as you fight becomes the rule, will not war become almost impossible?

May not the right government of cities be found in more strictly limiting the power of cities or towns to incur debts?

Has not the power of the rings which have plundered our great cities been founded mainly in the abuse of public credit? Could Tweed have stolen the property of the people of the city of New York had he plundered them by direct taxation?

These may be questions which will soon require an answer, and which are perhaps suggested by the figures and the facts submitted in this treatise.

It may be said that the present relative conditions of Europe as compared to the United States require no statistics to bring them into view. Perhaps not; yet when a great bankruptcy occurs or is impending, the first call of the business man is for a trial balance. Such bankruptcies sometimes occur in arts which are most necessary and must be continued. When the settlement has been made after the bankruptcy, the business is reëstablished, but the expensive supernumeraries who had previously lived upon the work of others, are afterward set to work to earn their own living.

In what way the representatives of the dynasties and privileged classes of Europe, or those whose present trade is war, will get their living after a hungry democracy has called for a settlement of accounts will be an interesting problem to watch.

The business of government is necessary and must be continued. How will it be reorganized after the impending settlement of accounts in Europe has been completed?

Many other applications of the statistics of these two studies will suggest themselves to him who can read what is written between the graphical lines or underneath the figures. Except to one who possesses such an imagination, statistics may be but dry bones, and all figures may be mere rubbish.

LOW PRICES, HIGH WAGES, SMALL PROFITS

WHAT MAKES THEM?

LOW PRICES, HIGH WAGES, SMALL PROFITS:—

WHAT MAKES THEM?[1]

THE minds of many persons have been and are greatly disturbed because there has been in recent years a great reduction in the prices of nearly all the leading articles of commerce, the principal decline dating substantially from the year 1873. This decline in prices began soon after the war in the United States, but the general decline in all countries on a specie basis may be dated from 1873.

By whatever standard prices are measured (and there are many carefully compiled tables), the average is found to be lower at the present time than at any period since a date anterior to the year 1850, in which year the great supply of gold from California, and a little later that from Australia, began to affect the volume of the money metals of the world.

In most of the discussions of the money question this great fall in prices has been treated as if it were a misfortune, and it is often held that any measure of legislation ought to be adopted which might tend to check it. Is not this a very partial and one-sided view of the subject?

Some one has wisely and wittily said that "it does not much matter what happens to the millionaire—how is it with the million?"

If it shall appear that out of this great reduction in prices the millions have gained higher wages; that hundreds of thousands of families have gained better homes and greater comfort in life; while those who have suffered temporary loss have been only the rich who have been incapable of adjusting themselves to the new conditions, or the unskilled poor who have been unable to grasp the greater opportunities for welfare which invention has offered them, then may we not come to the conclusion that diminished profits and low prices are merely the complement of higher wages and lower cost, and are, therefore, most certain indications of general progress from poverty to welfare, yet still leaving the problem open, how to help the unskilled poor?

It will be remembered that it has been stated that so far as the great mass of the people of this and of other lands are concerned, about one

[1] Reprinted from *The Century Magazine* for August, 1887.

half the cost of living is the price paid for the materials for food, the cost of food to common laborers who have families to support being as a rule much more than one half their income.

The question of interest to those who assume to be strictly "*the working classes*" is not so much what the price of the necessities of life may be, as it is how many portions of food, fuel, and clothing each one can buy at the retail shops in which they deal, and how good a shelter each one can procure for one day's or one year's earnings. In other words, what is, or what has been, the value of a day's labor when converted into the commodities which are necessary to existence?

If these so-called "working classes" have steadily gained in the purchasing power of their wages or salaries, while farmers, who number (not including farm laborers) 250 in each 1,000, have also prospered during this period when prices have been falling and profits have been diminishing, then the economic history of the last 25 years may be presented in an entirely new aspect. In such case, instead of attempting to check the fall in prices by tampering with the standard of value or by other empirical devices "for making money plenty," it may be expedient to hold on to what has been gained and to fight it out on this line, even if several more years of so-called depression should follow this determination, these recent years of so-called depression having actually been years of greatest progress.

Since the end of the civil war in 1865, and yet more since the so-called panic of 1873, there has been greater progress in common welfare among the people of this country than ever before. It has been the period in which there has been the greatest application of science and invention to the production and distribution of food that ever occurred in any single generation in the history of this or any other country; and food is the prime necessity of material life.

In order to sustain this proposition, it is necessary to establish a standard of subsistence. This can be done with respect to the materials which are required for food, clothing, and fuel. Rent cannot be so surely included in this standard, because the conditions of shelter vary so much in different parts of the country and in different cities.

The cost of the materials for food, of materials for clothing, boots and shoes, and of fuel, probably represents about seventy per cent. of the cost of living on the part of well-to-do mechanics, railway employees, or of other persons in analogous occupations who may be considered in the average position of working people. All these elements of life have declined very greatly in their prices in the period under consideration. In some regions rents have declined, in others they have been stationary; in crowded cities they have either advanced in some small measure, or else the apartments hired for a given sum of money have not been equal to those previously occupied. So far as I

have been able to compare rents, however, either those paid to a landlord or the rental value of premises owned by the occupant, there has not been, on the average, much variation from the rule affecting commodities in the period under consideration.

The standard portions of food, cloth, boots and shoes, and fuel which are made use of in the subsequent computation of the purchasing power of a day's or a year's wages, have been established in the following manner :

FOOD.

By comparing data gathered by myself with other data gathered by several State Bureaus of the Statistics of Labor, it has been fairly established that the average food-supply of mechanics and adult factory

TABLE A.—STANDARD OF A SINGLE DAY'S RATION, with its average cost in 1880, '81, and '82.

½ to 1 lb. meat, poultry or fish, varying according to kind and quality, costing on average..	10
½ to ⅔ pints milk.....	5
1 to 1½ oz. butter.....	
½ to ¾ oz. cheese.....	
1 egg every other day	½
¾ to 1 lb. bread.....	2½
Vegetables and roots.....	2 @ 2½
Sugar and syrup.....	2
Tea and coffee.....	1
Salt, spice, fruit, ice, and sundries	1½ @ 2
	25 cts.

TABLE B.—STANDARD OF 400 RATIONS, or 1 year's supply for 1 adult with 35 extra rations.

200	lbs. corned beef.
100	lbs. salt pork.
100	lbs. smoked ham.
100	quarts milk.
30	lbs. butter.
20	lbs. cheese.
17	doz. eggs.
1	barrel flour.
½	barrel corn meal.
20	bushels potatoes.
80	lbs, sugar.
4	lbs. tea.
8	lbs coffee.
$6	worth assumed at all dates.
$100	

STANDARD PORTION OF CLOTH FOR ONE YEAR :

10	yards medium brown cotton.
10	" standard gingham.
10	" 36. in. bleached shirting.
20	" printed calico.
10	" 4-oz woollen flannel, or worsted dress goods.
5	" 16-oz. cassimere.
5	" Kentucky jean-satinet, or light cassimere.

STANDARD OF BOOTS AND SHOES FOR ONE YEAR :

2 pairs men's heavy boots.

Standard of fuel for 1 year :

1½ tons anthracite coal or its equivalent in bituminous coal or wood.

It is assumed that the prices of meat, fish, and poultry, fresh or salt, will have varied substantially with the variations in salt and smoked meats, and as the prices of the latter are more uniformly quoted, the prices used in making up the general standard are those given for salt and smoked meats. In the same way the price of potatoes has been taken as a standard for the variation in the price of all green vegetable food or roots.

In establishing the average cost of a day's portion of the above, the prices given in Vol. XX. of the U. S. Census, in 10 shops east and 10 shops west of Buffalo, 1860–1880, have been averaged for each year designated. These prices have been verified from other sources of information. Prices of dry goods have been verified fully. Prices for 1885 and '86 have been derived from typical establishments and from market reports. The average of 1885 and '86 was probably less than the estimate used.

operatives in the Eastern and Middle States cost in 1880, '81, and '82 substantially 25 cents per day, and consisted of very nearly the proportions of different kinds of food given in Table A. (page 103).

The consumption of dairy products, sugar, tea, and coffee given, is probably greater than in other parts of the country ; but if a deduction of 2 cents per day be made for this, it then becomes necessary to add 3 cents per day (probably more) to account for the known average consumption of wine, beer, and spirits. (60,000,000 at 3 cents per day average comes to $657,000,000.) Recent computations put the cost of liquor to consumers $700,000,000.

Although the actual consumption of food, cloth, and fuel may not in any single case have corresponded identically with these standards, yet it may be safely assumed that the proportions are correct, and that the variation in the prices of what has been actually consumed will have corresponded to the variation in the prices of these standard articles and quantities.

For convenience in computation the small quantities of the single ration of food have been extended so as to cover 400 portions, which may be taken as the consumption of one year by one adult, 35 rations being added for extras.

CLOTHING.

By a computation made by the writer when engaged in the compilation of the Census of the cotton manufacture of the United States in 1880, it appeared that if all the fibres of cotton, wool, silk, and flax, imported or raised, were carried through the factories and then converted into clothing, carpets, and other forms for final use, with the imports of textile fabrics added, the average consumption of textile fabrics by the people of this country in that year was substantially $30 worth per head, of which about $25 worth was for clothing. It being impossible to set up a standard of the exact cost of clothing, certain quantities of cotton and woollen cloth have been taken which are a little above the average consumption of the whole country. In a final computation, cloth is converted into clothing at the ratio of three parts materials, and two parts for manufacturing and distributing.

In this computation I have made great use of the XXth Volume of the United States Census. It was prepared by Mr. Joseph D. Weeks, and is of the greatest value in statistical research.

BOOTS, SHOES, AND FUEL.

The standard of boots and shoes, and of fuel is of necessity somewhat arbitrary. It has been set at two pairs of men's heavy boots, as the equivalent of a customary supply, and one and one half tons of coal per adult per year ; it being assumed that, as the prices of these quantities have varied, actual use and cost will have varied.

The quantities assigned to this specific standard of subsistence have risen and fallen in the following proportions, the figures representing so many cents per day for each standard portion, and the lines representing the relative variation at different periods :

COST OF STANDARD PORTIONS OF MATERIALS

For Food, for Clothing, Boots and Shoes, and Fuel, per Day, in Each Year as Designated.

Materials for Food.			*Materials for Clothing.*		
1860	$22\frac{88}{100}$ cts.		1860	$4\frac{51}{100}$ cts.	
1865	$38\frac{38}{100}$ "		1865	$10\frac{44}{100}$ "	
1870	$33\frac{34}{100}$ "		1870	$5\frac{07}{100}$ "	
1875	$29\frac{44}{100}$ "		1875	$4\frac{38}{100}$ "	
1880	$25\frac{12}{100}$ "		1880	$4\frac{12}{100}$ "	
1885 } 1886 }	22 "	Est.	1885 } 1886 }	$3\frac{60}{100}$ "	Est.

Boots and Shoes.			*Fuel.*		
1860	$1\frac{50}{100}$ cts.		1860	$2\frac{06}{100}$ cts.	
1865	2 "		1865	$4\frac{87}{100}$ "	
1870	$1\frac{75}{100}$ "		1870	$3\frac{37}{100}$ "	
1875	$1\frac{87}{100}$ "		1875	3 "	
1880	$1\frac{75}{100}$ "		1880	$2\frac{25}{100}$ "	
1885 } 1886 }	$1\frac{60}{100}$ "	Est.	1885 } 1886 }	$2\frac{50}{100}$ "	Est.

It is doubtless true that the goods reported upon in the several shops from whose reports the prices have been derived, may have varied somewhat in quality ; but the questions put by Mr. Weeks were in such form that in nearly every case the prices are given for specific qualities of each kind of food, as for instance: Flour, grade "extra family" ; coffee, "Rio, roasted" ; sugar, several grades—I have selected a medium ; tea, "Oolong, or good black," etc., etc. These prices, taken from 20 shops—10 east and 10 west—have been averaged, and the results compared with other price-lists, many of which the writer has himself procured.

It may be objected that this standard portion is only the one which is customarily consumed by each adult in the families of well-to-do mechanics or factory operatives in the Eastern or Middle States, and that it may not be a fair measure of those who are above this class, or of those who are much below them. This may be admitted ; but nevertheless all prices of the necessities of life must have varied substantially as these standard portions have varied. Moreover this final fall in the prices of products at their final point of consumption could not have occurred had not the prices of the metals, of the machinery, and of the whole mechanism of production and distribution also fallen. Sometimes prices of invested capital have fallen even in greater measure than the prices of the products. It is only here and there that any important article like timber can be found, which having become more scarce, has either maintained its price throughout the period, or is even a little higher now than it was in 1860.

If, then, all prices have fallen and all profits have diminished while wages have risen, each subject to temporary fluctuation and variation,

must we not seek for deeper causes for the changes in the conditions of society and in the relations of men to each other than are commonly assigned in the explanation of such phenomena?

I now submit adequate proof of the facts. The subsequent table gives the purchasing power of wages at different dates, when converted into standard portions of food, cloth, and fuel as established.

The quantities represented in these tables are assumed to have been established on the basis of actual consumption of a well-to-do mechanic in New England in the period of 1880, '81, and '82. If we convert the money assigned to each portion of food, fuel, clothing, etc., into 400 portions corresponding to one year's consumption, with a margin of ten per cent. for extras, we get the following results:

COST FOR ONE YEAR.

ONE PERSON.		FOUR PERSONS.	
Food for one adult	$100	Food for four adults[1]	$400
Materials for clothing	16	Materials for clothing	64
Boots and shoes	7	Boots and shoes	28
Fuel	9	Fuel	36

Gain in the purchasing power of wages, measured by the number of portions of the materials for food, clothing, boots and shoes, and fuel, which one year's work would buy at different periods: 300 working days to one year. Each portion consisting of the same quantities and corresponding to the daily consumption of mechanics in New England and in the Middle States, as determined by close inquiry on the part of Bureaus of Labor Statistics, and of the writer.

CLASS I.—SPECIALLY SKILLED MEN: FOREMEN, OVERSEERS, BOSS BLACKSMITHS, CARPENTERS, ETC., CUSTOMARILY EARNING $3.00 TO $5.00 PER DAY AT THE PRESENT TIME.

Year.	Average, per day.	Average, per year, 300 days.	Cost of day's portion.	Purchasing power in number of portions.
1860	$2.45	$735.00	$30\frac{95}{100}$ cts.	2374
1865	3.57	1071.00	$55\frac{69}{100}$ "	1920
1870	4.34	1302.00	$43\frac{53}{100}$ "	3000
1875	4.14	1242.00	$38\frac{69}{100}$ "	3210
1880	4.14	1242.00	$33\frac{24}{100}$ "	3737
1885 } 1886 }	Probably higher than in 1880.		Est. 30 cts. or less.	Not less than 4000

CLASS II.—AVERAGE MECHANICS: ENGINEERS, BLACKSMITHS, CARPENTERS, MACHINISTS, AND PAINTERS CONNECTED WITH ESTABLISHMENTS REPORTED IN VOL XX. OF THE CENSUS 1865 TO 1880 INCLUSIVE.

Year.	Average, per day.	Average, per year.	Cost of portion.	Purchasing power.
1860	$1.56	$468.00	$30\frac{95}{100}$ cts.	1572
1865	2.34	702.00	$55\frac{69}{100}$ "	1261
1870	2.43	747.00	$43\frac{53}{100}$ "	1716
1875	2.29	687.00	$38\frac{69}{100}$ "	1776
1880	2.26	678.00	$33\frac{24}{100}$ "	2040
1885 } 1886 }	Est. 2.40	720.00	Est. 30 cts. or less.	Est. 2400

[1] Or for man and wife, one child over twelve, and two under twelve.

CLASS III.—ALL THE OPERATIVES, EXCEPT FOREMEN AND OVERSEERS, IN 100 ESTABLISHMENTS REPORTING THE WAGES OF THEIR WORKING PEOPLE UNDER MORE THAN 1200 SEPARATE TITLES: BRICKS, MARBLE, FURNITURE, AGRICULTURAL IMPLEMENTS, TIN WARE, STOVES, BOOTS, HATS, CARS, WAGONS, FLOUR- AND SAW-MILLS, IRON, PAPER, AND TEXTILES, EMPLOYING MEN, WOMEN, AND CHILDREN, FROM 20 TO 2000 IN EACH.

Year.	Average, per day.	Average, per year.	Cost of uniform portions, food, cloth, and fuel.	Purchasing power in number of portions.
1860	$1.33	$399.00	30 95/100 cts.	1290
1865	1.88	564.00	55 69/100 "	1013
1870	1.94	582.00	43 53/100 "	1337
1875	1.77	531.00	38 69/100 "	1372
1880	1.71	513.00	33 24/100 "	1543
1885 } 1886 }	Est. 1.80	540.00	Est. 30 cts. or less.	1800

CLASS IV.—LABORERS, COMPUTED SEPARATELY, CONNECTED WITH ABOVE ESTABLISHMENTS.

Year.	Average, per day.	Average, per year.	Cost of uniform portions, food, cloth, and fuel.	Purchasing power in number of portions.
1860	$1.01	$303.00	30 95/100 cts.	980
1865	1.56	468.00	55 69/100 "	840
1870	1.58	474.00	43 53/100 "	1090
1875	1.38	414.00	38 69/100 "	1070
1880	1.34	402.00	33 24/100 "	1210
1885 } 1886 }	Est. 1.40	420.00	Est. 30 cts. or less.	1400

The portions consist of uniform quantities of the same kinds of food, cloth, etc., and fuel bought at retail prices. The wages from 1860 to 1880, inclusive, are averaged from a large number of returns contained in Vol. XX. of the U. S. Census, compiled by Joseph D. Weeks.

The cost of making and trimming, or of converting the cloth into clothing, would be for converting these specific quantities :

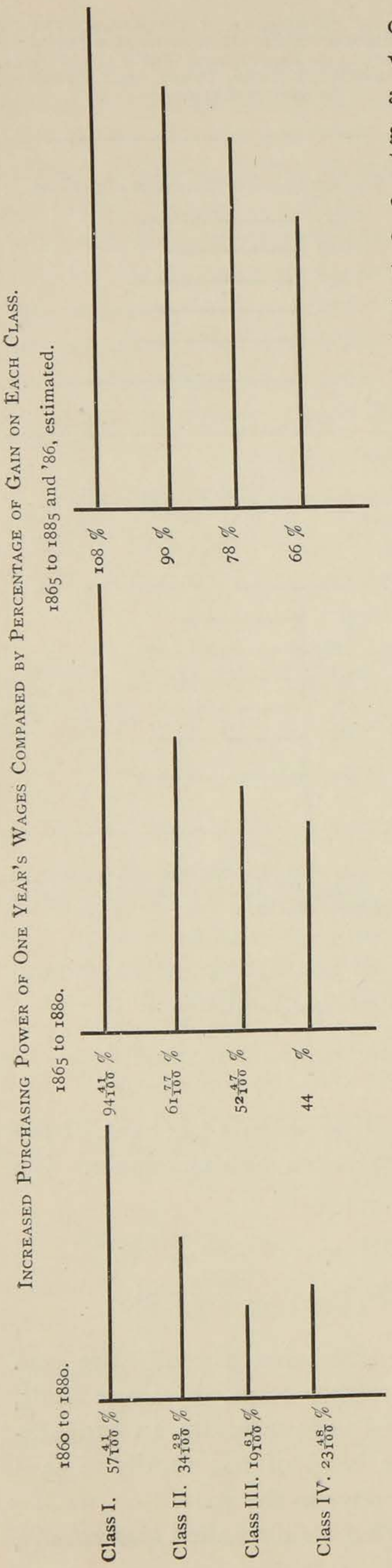
For one adult..... .....$10
For four adults..... 40

These elements constitute on the average seventy per cent. of the expenditure of a family such as has been taken as an example. We may add

For rent.....eighteen to twenty per cent.....	$37.50	$150
For sundries ...twelve to ten per cent.....	20.50	82
Totals.....*per adult*, $200 ; *per family*,		$800

If we take the example of a mechanic sustaining himself, wife, one child over twelve years, and two under twelve counted as one adult, an average family of five persons counted as four adults, an expenditure of $800 per year would call upon the head of the family to earn $2.67 per day for three hundred working days in the year.

It will be remarked that this standard has been reached *theoretically*,



on the basis of facts derived from observations entirely independent of the actual statistics of the family expenditure gathered by Commissioner Carroll D. Wright, as Chief of the National Bureau of Labor Statistics, and until lately also of Massachusetts. On comparing these theoretic estimates with these statistics, they are found to correspond so closely with the actual facts gathered from many families, as to sustain the substantial accuracy of the proportions of the cost of living, the price of food being exactly one half.

In the returns which have been made use of in compiling the tables given in this treatise, there are doubtless reports of prices of goods which do not exactly correspond to others either in kind or quality; but so many returns have been averaged as to eliminate this cause of error. I have made many computations on single returns of prices in special places procured by myself, and I find that the proportional variations correspond so closely to the average of all as to establish the standard conclusively.

In fact, the reduction in the cost of subsistence and the increase in the purchasing power of wages in the East have been greater than in the West, and greater than the average of the whole country, doubtless owing to the equalizing force of the railroads in diminishing the cost of food. I may give one example for which I have collated all the figures myself in order to verify the compilations of the census. In this example I have taken the year 1866 as a starting-point, and a cotton-mill as the example. It is not a fair year to show an average in other arts, because the conditions of the cotton manufacture were very uncertain during that year; and it was also

in the year 1866 that the most malignant effect upon prices and wages, worked by the substitution of legal-tender notes in place of coin, was experienced in the United States. I have, however, selected a year in which the work was continuous during that year as well as during the year 1885.

The average earnings of all the hands in the factory through the year 1866 were..... 83 cents per day.
In 1885..... 103 " " "
The product of each hand in pounds of cloth was in 1866..... 7 pounds per day.
In 1885..... 13.34 " " "
The cost of labor in the pound of cloth was in 1866 ..... 11.85 cents.
In 1885..... 7.67 "

The cost of the standard portion of food, clothing, and fuel (substituting three cords of wood for the customary portion of anthracite coal, because this factory was in a position where wood at that time was cheaper) was :

Daily portion of food, clothing, and fuel in 1866, cost..... 57.82 cents per day.
In 1885..... 30.97 " " "
The purchasing power of 300 days' wages converted into these standard portions was in 1866..... 430 portions.
In 1885..... 1000 "

It will be remembered that the price of food is about one half the price of life to the class of persons represented in this example. Other examples have been computed by myself from private data in respect to the condition of operatives in woollen-mills and machine shops. They show the same law ; but as the condition of the woollen-mill and the machine shop was somewhat better in 1866 than that of the cotton-mill, the ratio of progress is more nearly that of the average of the whole country than is shown in this particular example.

One very curious point is brought into notice by an analysis of the average food ration of the American workman. All the pork could be spared, and yet the daily ration would be more than ample. The waste of this country is an excess of fat rather than an excess of any other part of the food consumed. We have often heard " the American frying-pan " denounced ; but this is, I think, the first time that it has been subjected to a scientific condemnation.

In a rough and ready way it takes five pounds of western corn to make a pound of pork. Even the hogs do not consume their whole ration ; they waste a part of it. The proportion is substantially one thousand pounds of Indian corn to a barrel of pork weighing two hundred pounds. In this conversion nearly all the starch and all the protein are wasted, and the fat which is left is not required for use.

The necessary deduction is this, that the conversion of corn into pork is an absolute and total waste of nutritious food. Far better that

corn should be converted into beef, or even burned for fuel (often a very economical expedient for settlers), rather than to be expended in this way.

A curious question arises in this connection. If the world were convinced that the Jews were right, and that pork ought not to be eaten; or if the American world were convinced that all the pork that is eaten is wasted, what would be the effect on the American farmers?

Having submitted this part of the problem to Professor Atwater, he makes the following remarks thereon:

"Taking your figures for quantities of shelled corn and dressed pork, and the most reliable data I can find for their composition, I obtain the following figures:

GAIN AND LOSS OF NUTRIENTS AND POTENTIAL ENERGY IN CONVERSION OF CORN INTO PORK.

	NUTRIENTS.			POTENTIAL ENERGY.
	Protein.	*Fats.*	*Carbo-hydrates.*	
	Pounds.	*Pounds.*	*Pounds.*	*Calories.*
In 1000 lbs. of corn	100	45	680	16,400,000
In 200 lbs. of pork	18	85	....	3,900,000
Loss or gain	82 loss	40 gain	680 loss	12,500,000

"In other words, the fat is increased by 40 pounds, and to offset this there is a loss of 82 pounds of protein and 680 pounds of carbohydrates. Estimated in potential energy, the loss makes over three fourths of the whole.

"According to the best data at hand, and your ration agrees with them, our ordinary dietaries contain an excess of carbohydrates (sugar, starch, etc.) and a very large excess of fat. The 'condensing of corn into pork,' which we hear of as 'useful to save cost of transportation and handling,' means—

"*First.* Practically throwing away a lot of protein, the most valuable of the food ingredients, and with it a large amount of carbohydrates.

"*Second.* The conversion of part of the other nutrients into fats, so as to increase our already great excess of this material."

This may seem a somewhat trifling matter. Let us see.

Assuming that the product of this country, at its market value for final consumption or export, cannot exceed $200 worth per person, $600 worth for each group of three of whom one is occupied for gain, or $1000 worth for each average family of 5 persons, it may be assumed that not exceeding 10 per cent., or $20 worth a year per capita, can be saved, and added to the capital of the country, however such capital may be owned individually; 5 to 6 per cent., or $10 to $12 a year, must be set aside to meet all forms of taxation—national, State, and municipal. There remains $168 @ $170 a year, which constitutes the wage fund, it being manifest that the source of all wages, earnings, taxes, and profits must be the annual product, whatever that product may be.

If these sums per year be reduced to portions per day, the wages or earnings of each person amount to a fraction over 46 cents per day, or $1.38 for every day in the year, including Sundays, secured by one person in three of the population who constitute the working forces. Profits amount to a fraction under 5½ cents per day; taxes to a fraction over 3 cents. The cost of the excess of fat and sugar in the standard ration is 7 cents out of 25. If this were saved and applied to shelter, the housing of the working people would be solved.

There cannot be more to be divided than all there is. The whole question, therefore, of relative welfare and poverty consists in the manner in which this product is divided.

The only way in which any great gain can be made is by increasing the quantity of product while decreasing the amount of capital and the hours or intensity of the work required in production, or else saving what is now wasted. Any other method of distribution that could be brought about might not very greatly improve the condition of any very large number of persons. This will be made apparent by a few figures.

If the sums given constitute all the money's worth there is to be divided, then by so much as some gain more must others gain less. The limit of all that is produced is the limit of all that can be divided.

The working group of this country, as I have stated, is substantially a group of three. One person in each three is occupied for gain, sustaining two others. If that part of the product which is now saved were divided equally among those who do the work, it would add only about 15 cents a day to the income of each one, or $54.75 each year. In the present population of about sixty million, the number who are engaged in gainful occupation is twenty million. If the whole sum saved and added to capital were divided among this force equally at $54.75 each, it would represent a little more than $1,095,000,000.

Suppose this sum now saved were equally divided,—is it not true with regard to a very large proportion of those who do the work that the measure of their income is also the measure of their expenditure? Could this equal division then be made without leading to an increased consumption rather than to additional savings on the part of the many? If so, the next year's product of the whole country would suffer for lack of capital. It sounds like a paradox, but it may nevertheless be true, that the faculty for "making money," as it is called,—that is to say, the instinct that leads to accumulation on the part of the few,—is absolutely necessary to the comfortable subsistence of the many. Disparity in the possession and direction of capital is apparently necessary to its effective use—a big capital in the hands of a master is like a big steam-engine directed by a competent engineer; each compasses three or four times as much product as the small capital held by many persons, or several small steam-engines each wasting fuel, can accomplish.

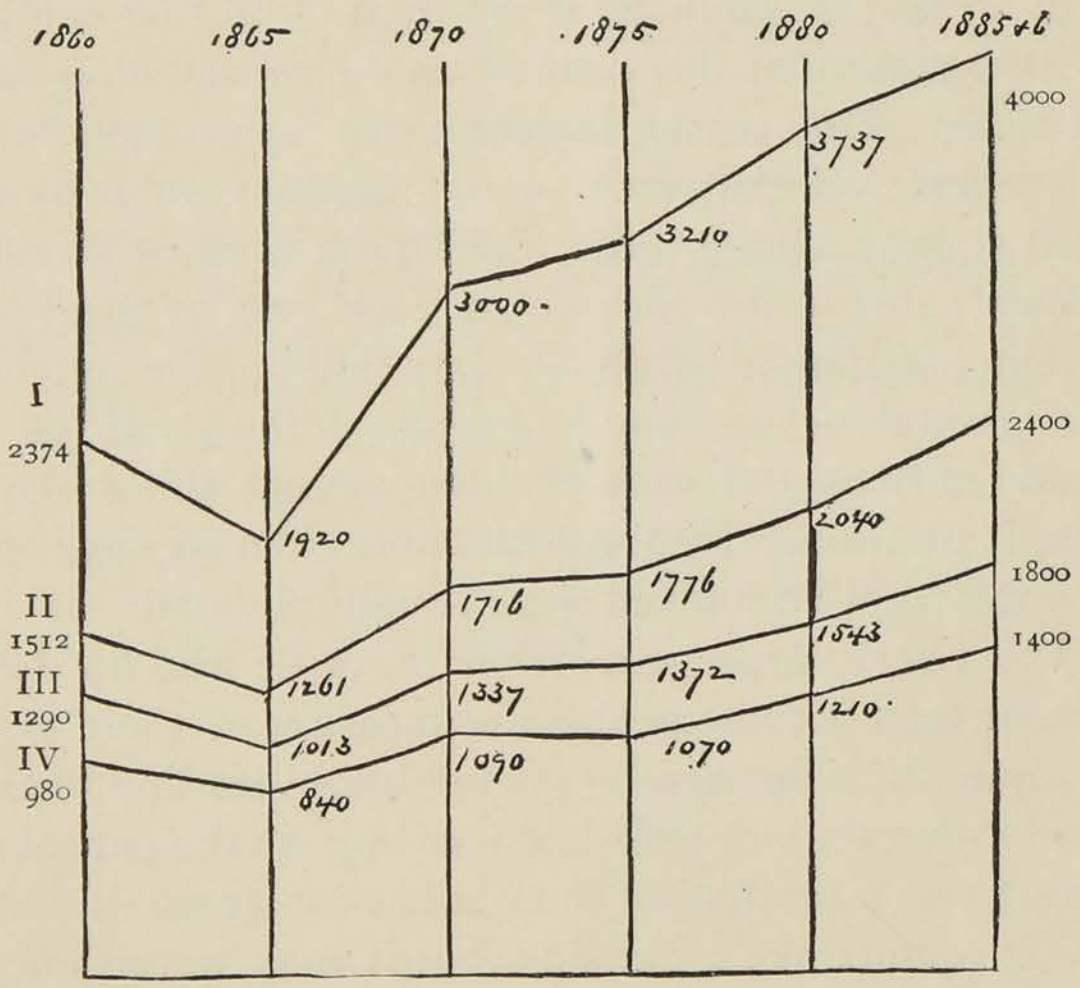
It may not be the disparity between rich and poor which is the sole cause of discontent.

The disparity in the conditions is very much greater, and is increasing more rapidly among those who constitute the "working classes" themselves, in the narrow use of that term, than any possible disparity between the capitalist classes and the working classes can ever be; that is to say, the disparity of the aggregate income, class by class, is greater.

The capitalists are working under an imperative law of diminishing profits. The workmen who do the work intelligently and skilfully are progressing under an imperative rule by which their wages are increased while the purchasing power of their wages is yet more increased.

Is there not perhaps a more subtle but very potent cause of discontent disclosed by the great disparity in the progress of working people themselves to the exclusion of capitalists, than can be found in the disparity of fortunes or in the possession of capital saved?

In the following table the relative progress of four classes whose condition has been fully analyzed is graphically pictured, each class compared to the other by the relative percentage of their gain since 1860.



No. I. Foremen, overseers, boss blacksmiths, and carpenters or other workmen of special skill and aptitude.

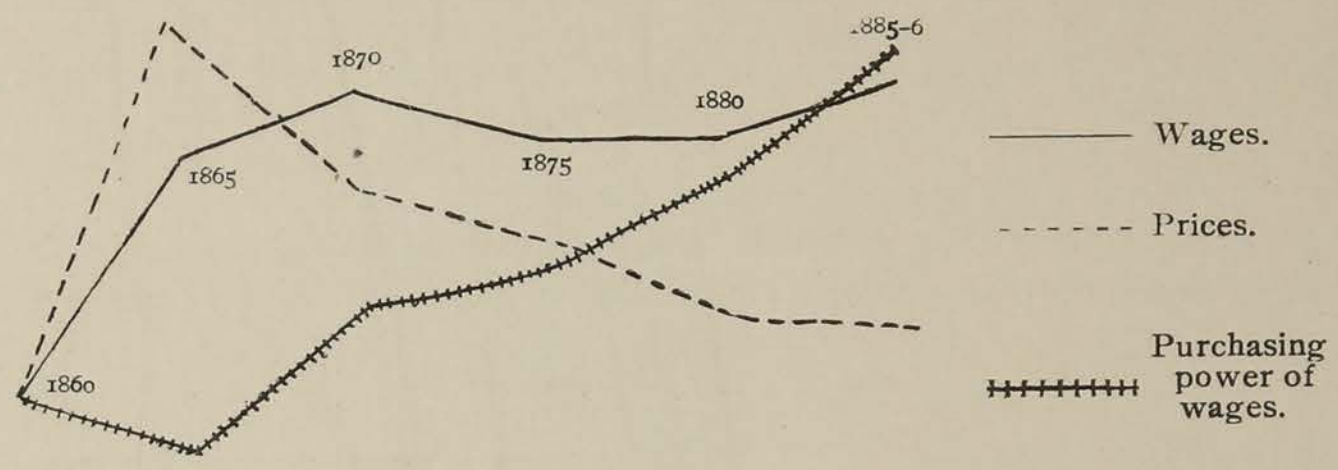
No. II. Average mechanics, engineers, blacksmiths, carpenters, machinists, painters, and the like.

No. III. Average workmen or women, in 100 factories or workshops, listed under more than 1200 titles,—bricks, marble, furniture, tools, stoves, boots and shoes, hats, cars, wagons, textiles, iron-works, paper-mills, etc.

No. IV. Common laborers connected with the same establishments.

The variation in the respective condition in these classes is shown by the number of portions of food, fuel, boots, and materials for cloth-

ing which one year's earnings would purchase in each of the years designated. The actual working of these changes can be better observed by a different form of diagram which gives the facts in relation to all the mechanics covered by class II :



The malignant effect of war and paper money is shown by the rapid rise in prices, while wages slowly followed. After the war wages fell slowly, but prices fell rapidly. On the resumption of specie payments, wages again began to rise—prices continued to fall, and in 1885–6 the purchasing power of a day's work was greater than it ever had been before.

In order that the full import of these figures may be comprehended, the table on page 114 is given, including a computation of rent on the best data which can be found.

It will also be observed, however, that while work has been continuous since 1873 or 1865 for all men of special skill and aptitude (with very rare exception for some short and exceptional period), and while work has also been continuous and well paid for every intelligent mechanic or artisan who has chosen to control his own affairs and to make his own bargains, it has been much less continuous for many classes of factory operatives of a lower grade, and it has been absolutely intermittent with respect to great numbers of common laborers. One of the penalties which society must pay for the application of science and invention to the useful arts is this temporary displacement of unskilled laborers from the occupations in which their work had been previously required, but which is no longer required when some new machine or improvement renders it unnecessary.

On the other hand, without these applications of science to agriculture and to manufactures, the normal increase of population would without question tend to outrun the means of subsistence. It therefore follows that by their application, while the few are for a time left behind in the race, the many gain in welfare ; the means of subsistence rapidly outrun the increase of population, and the many are thus enabled to enjoy better and better conditions of life.

Thus the problem of " progress *and* poverty " marches alongside the actual progress *from* poverty. This problem of " progress *and* poverty "

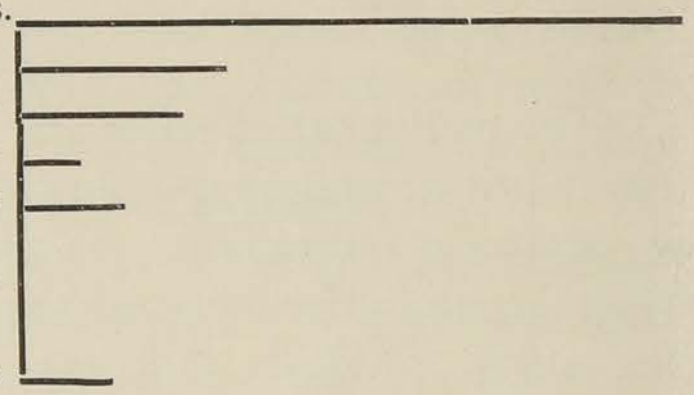
calls for the urgent attention of the student and the statesman in order to abate the great disparity of condition which becomes more conspicuous the more the general progress is assured. This special branch of the subject cannot be treated within the limits of the present treatise, but may be taken up at a future day.

THE FOOD, CLOTHING, RENT, FUEL, SUNDRIES.—RELATIVE IMPORTANCE OF EACH.

By a comparison of the average of all these elements of the cost of living, rent being also computed on the most adequate data which are available, and estimating "sundries" at 10 per cent. of the whole, the relative importance of each element may be comprehended.

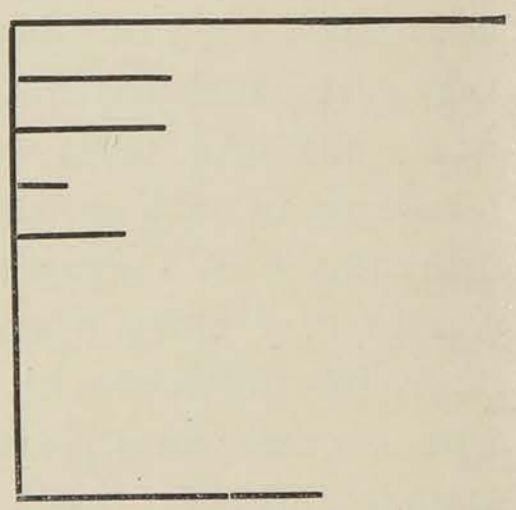
1860 to 1880 inc. census data verified by other authorities.

Food, per day	$22\frac{88}{100}$	@	$38\frac{38}{100}$,	aver.	$29\frac{83}{100}$	cts.
Clothing, per day,	$7\frac{50}{100}$	"	$16\frac{61}{100}$	"	$9\frac{77}{100}$	"
Rent, per day	$6\frac{60}{100}$	"	$8\frac{47}{100}$	"	$7\frac{73}{100}$	"
Fuel, per day	$2\frac{25}{130}$	"	$4\frac{87}{100}$	"	$3\frac{11}{100}$	"
Sundries, per day					$5\frac{60}{100}$	"
Total					$56\frac{04}{100}$	"
Proportion of rent paid on land, assuming house and land equal value					$3\frac{86}{100}$	"



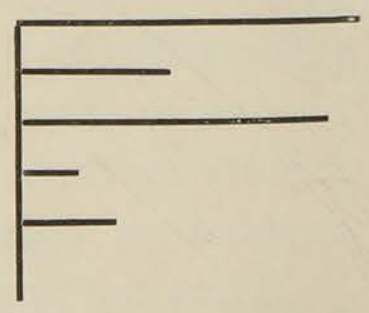
Elements of the cost of living in New England in 1885 and 1886, based on the prices of the same quantities of the same articles computed above, mainly from census figures. Prices ascertained by the writer on a narrower field than that covered by the census.

Food, per day	22	cts.
Clothing	$6\frac{64}{100}$	"
Rent	7	"
Fuel	$2\frac{50}{100}$	"
Sundries	$4\frac{24}{100}$	"
Total	$42\frac{38}{100}$	"
Average, 1860 @ 1880, inclusive	$56\frac{04}{100}$	"
Estimate, 1885 and 1886	$42\frac{38}{100}$	"
Total reduction in 1885–86	$13\frac{66}{100}$	"



According to Prof. Atwater's analysis, the ration of food made use of in the above computations is 40 per cent. in excess of what is needed. All the pork, and one half the sugar, or one half the potatoes could be spared. This reduction in the quantity of food would reduce the present cost of this ration from 22 to 15 cents per day. If the sum thus saved in food were expended for shelter, the whole question of providing better dwelling-places might be solved. On this basis the proportion would be:

Food, per day	15	cts.
Clothing, per day	$6\frac{64}{100}$	"
Rent	14	"
Fuel	$2\frac{50}{100}$	"
Sundries	$4\frac{24}{100}$	"
Total cost of subsistence per day	$42\frac{38}{100}$	"



The importance of the food question could not, I think, be more clearly enforced.

We will now take up some of the theories which have been set up in the endeavor to explain the fall in prices since 1873. Subsequent to the year 1850, and either accompanying or perhaps caused in part by the very sudden and very great addition of gold to the volume of the money metals of the world, there was a great advance in the prices of all the necessities of life, subject, of course, to temporary fluctuations. This period of general advance in prices culminated in the years 1872 and 1873, reductions in the prices of cotton and of some other articles having begun before. Since 1873 a great and general reduction of prices has taken place the world over. What has been called depression has been more common than activity in commerce. These long periods of depression have affected nearly all commercial and manufacturing countries alike, without much apparent regard to their system of taxation ; to their standard of value, whether it has been based on gold only, on silver only, or on both metals ; or whether the standard of value has been a paper substitute for true money.

It happens that during this period, dating from 1873, all the important changes in legislation respecting legal tender have occurred, yet the great international commerce of the world has proceeded in its customary way, because it is not possible to apply acts of legal tender to international exchanges ; therefore this branch of commerce has been conducted on a solid basis of a given weight of the metal gold. But notwithstanding the stability of the gold standard of international commerce, great fluctuations have occurred, and periods of depression have affected international commerce as well as the domestic commerce of many countries.

Since 1873 Germany has displaced silver from its function of legal tender ; the Latin Union soon ceased the coinage of silver ; the United States have resumed specie payment upon a gold basis ; Italy has also resumed specie payment. All these changes have doubtless tended to the use of gold as the unit of value of full legal tender among the so-called civilized countries of the world. Yet all these changes combined have required the substitution of gold for other forms of money only in the bank reserves of Germany and in the sub-treasury of the United States. Silver has not been demonetized anywhere. It is still money in a true sense in England, Germany, and France, as well as in India, Africa, and South America. The only change brought about by legislation has been in the substitution of a single kind of money as full legal tender, for two kinds.

But it has been assumed by many writers of repute that these changed conditions in acts of legal tender must have caused a steady and slow, but unceasing appreciation in the value of gold as compared to all other commodities, silver included.

On the other hand, it is held by many writers of repute that the vast store of gold which has been added to the money metal of the world

since 1850 has not only actually depreciated gold, but has also caused a yet greater depreciation in the value of silver, under the well-established rule that a substitution of a better article for common use may displace a substance of a poorer kind, and may cause the latter kind to lose a part of its value, even if the product of the latter be very much less in proportion than that of the former.

Such are the facts in regard to gold and silver. The addition of gold since 1850 has been vastly greater than the addition of silver.

The computed production of gold, 1849 to 1884, inclusive, has been $3,882,975,000. That of silver, $2,250,375,000.

This reference to the money metals is secondary to the main purpose of calling attention to an entirely different class of price-making factors. Under the conditions which have been presented, the battle of the standards has been waged with great virulence ; but, perhaps, in consequence of this contest too little attention has been given to the really great forces which have been in action, and which have caused the reduction in prices which are so apparent.

The discussion of what I call the price-making factors will be mainly limited to the conditions which prevailed in the United States. For this reason, since 1865 there has been no war and no great preparation for war to alter the influence of the forces which make for peace and plenty. In Europe, on the other hand, actual wars, or enormous preparations for war, have altered all the conditions.

The change in prices in this country since 1860 must, of course, be in part attributed—

First. For a limited period to the forced circulation of paper substitutes for money which depreciated in value.

Second. To the restoration of the value of the previously depreciated paper to the standard of the only legal unit of value in this country,—to wit, the dollar made of gold.

No writer or observer of any repute has ever contested the fact that the rapid substitution of legal-tender notes for coined money always causes the depreciation of such notes and an increase in prices.

This sudden change in the standard of value is very different from the slow and steady addition of a very small annual percentage of precious metal to the previously existing stock, however large the volume of such addition of metal may appear to be when computed separately, year by year.[1]

In the tables which I have given, the malignant effect of the substitution of depreciated legal-tender notes for true money is made apparent by the much more rapid rise in prices than in wages or earnings

[1] It has been for many years about half per cent. of gold and half per cent. of silver, which has been added year by year to the existing volume according to the estimates of Henri Cernuschi.

from 1860 to 1865, thereby greatly diminishing the purchasing power of labor. Since that difficulty has been surmounted in part or wholly, the purchasing power of labor has greatly increased, gaining steadily the nearer the specie standard has been attained, and gaining yet more steadily the more closely it has been adhered to.

It may well be asked, if the reduction in the prices of the necessities of life could be attributed to a scarcity of gold, would not wages or earnings—that is, the price of labor—have been reduced in the same proportion ?

May it not be held that labor in the concrete form of commodities, or, as we might say, in the *passive* form of commodities, could not be reduced in price by any such cause as a scarcity of gold without labor in the *active* form of work in the production of commodities being also reduced in price ? If the true cause of the reduction in prices has been an appreciation or rise in the value of the metal gold, would it not of necessity have happened that the price of labor would have been affected in the same way ? Would not the price of real estate have also been affected in the same way ?

Again, if the cause of the reduction in prices had been an increased scarcity of gold, would not capital, when measured by the gold standard, have been able to secure to itself a constantly increasing rate of interest or income ?

Now it happens that, in the United States, in so far as the specie standard of value has been departed from has the purchasing power of labor become less, while the earning power of capital has become greater ; conversely, in the exact measure that the specie standard has been adhered to and sustained has the purchasing power of labor become greater, and the earning power of capital less.

Important as the settlement of the contest between those who sustain the double standard of gold and silver with the advocates of the single gold standard admittedly is, yet it is held that the battle of the standards cannot be settled without a full consideration of all the other factors which tend to alter prices to which reference is made in this article.

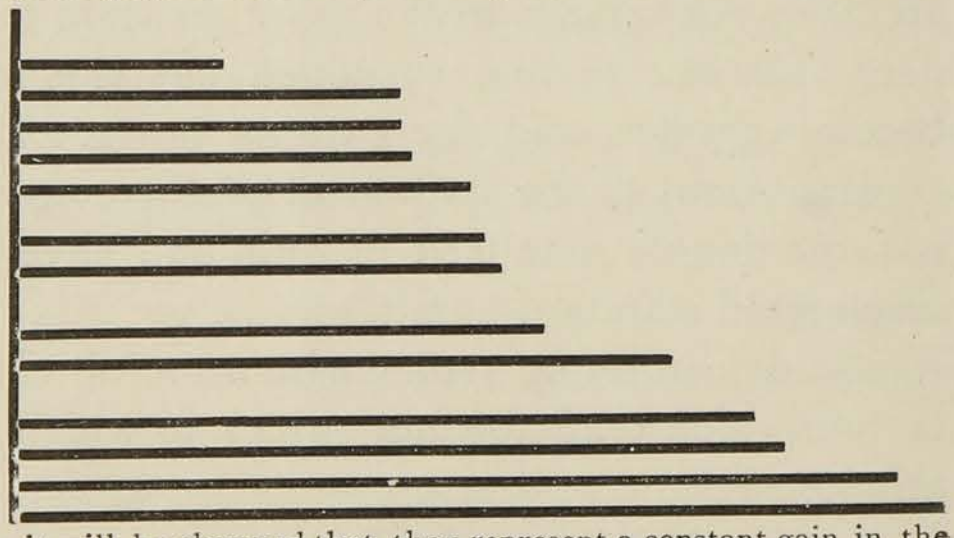
Although the war of the Rebellion required the work directly or indirectly of one in three of all men of arms-bearing age throughout the country, yet during this period there was no decrease in the production of articles necessary to subsistence, with the single exception of cotton. This fact gives evidence of the vast progress which must have been made in the application of science and invention to all the useful arts. The abnormal demands of war counterbalanced in some degree the malignant influences of the substitution of paper promises for true money ; yet the prices of all commodities advanced very rapidly, while wages advanced much more slowly.

After the war, production gained immediately and enormously on population in respect to food, fuel, metals, and fibres. Wages ceased to advance in rates by the measure of money, but the money ceased to depreciate. The armies of both parties in the conflict were absorbed in the pursuits of industry within less than a year from the end of the war. In spite of this increase in the supply of labor, as soon as the policy of the government began to tend toward the resumption of specie payments, on or about 1870, although the prices of both commodities and labor began to decline in their nominal rates, yet, on the other hand, the purchasing power of wages—that is, the absolute wages of labor—began to increase with great rapidity. The value of a day's labor to him who exerted it, yielded more and more of the necessities and comforts of life as the years went by. Presently wages began to advance again, but prices continued to decline.

In a previous number of *The Century*, I have given a table showing the increased product of railway mileage and of property insured against fire between 1865 and 1885.[1] Objection has been taken to the date of 1865 as the starting-point, upon the ground that in that year the country had not surmounted the difficulties and retardation of the Civil War. In the year 1870, however, all the causes of retardation growing out of the war had been removed, and the country was fairly headed toward the resumption of specie payments, which took place on the 1st of January, 1879. A table showing our progress since 1870 is therefore given now :

GAIN IN POPULATION, PRODUCTION, WEALTH, AND SAVINGS 1870 TO 1885 AND ON SOME ITEMS TO 1886.

To		
1885	Population	48
1885	Production of grain	85
1885	Consumption of cotton	86
1885	Consumption of wool	88
1885	Production of hay	100
1885	Deposits in savings-banks of Massachusetts	102
1885	Production of cotton	108
1886	Deposits in savings-banks of Massachusetts	115
1885	Production of iron	143
1885	Insurance of property against loss by fire	160
1885	Miles of railroad	168
1886	Miles of railroad	192
1886	Production of iron	200



In considering these relative gains, it will be observed that they represent a constant gain in the means of subsistence over population—that with the exception of the increase in personal wealth, which is indicated by the increase in the amount of property insured against loss by fire, they represent the progress of the million in the means of common welfare rather than of the millionaire in personal wealth, and that they give testimony to the beneficent law of progress *from* poverty.

While wages have risen, the earning power of capital has decreased. The actual reduction in the earning power of capital, considered simply by itself, may be represented by the current rate of interest; the discount on the very best commercial paper at four or six months' date at different periods may be taken as a standard of the actual earning power of capital.

[1] See pages 58 and 66 of this work.

Prior to the financial panic of 1857, almost all the staple manufactures of the country were sold on 6, 8, 10, and sometimes 12 months' credit. After the commercial panic of 1857, and up to 1861 at the opening of the war, the current credit was four months. During the war, and up to about 1870, the traffic of the people was mainly conducted on a cash basis, personal credit being rendered very uncertain by the variation in the value of paper substitutes for money. The instruments of exchange consisted of the depreciated notes of the United States. Bills of goods were rendered on ten to thirty days; but commercial notes disappeared almost wholly from the market.

Since 1870 there have been many variations in the customs of trade. In some kinds of business, notes have been given for actual purchases; in others none such have been given, but money has been borrowed in other ways; as, for instance, the large manufacturing corporations of the east have borrowed their working capital upon notes of the corporation, indorsed or guaranteed either by their officers or by the commission houses selling their goods, such notes being negotiated in the open market at four or six months, or placed in savings-banks.

From 1848 to 1860 the writer kept a record of transactions by himself or by his associates in manufacturing corporations. The average rate of discount paid in the open market by the corporations enjoying the highest credit during this period was eight per cent., subject to very considerable fluctuations. From 1860 to 1869, inclusive, the rates of discount varied greatly with the circumstances of each case. The war and the continued issue of legal-tender notes rendered any standard of little moment. Railway corporations issued bonds at long date, at rates of interest from 7 to 8 per cent.; even as high as 10 per cent. was paid by railroad corporations of great strength and sound credit. In 1870 the slow restoration of specie payment began. Up to 1873, the year of panic, the rate of interest on the best manufacturing notes was on the average six and one half per cent.

After the panic of 1873 ended, up to the 1st of January, 1879, five per cent. was the rate. Since the restoration of the specie standard at the latter date, down to the present time, the fluctuations in the rate of discount on the very best commercial notes have been 3 to 5 per cent.; and by the actual record of a broker doing a very large business, they have averaged 4 per cent. on 6 months' paper.

By the kindness of Mr. Lyman J. Gage, of Chicago, I have obtained the rates of discount on commercial paper at that point. They are about the same in their proportion, having been reduced from an average of 10 per cent. or over, to an average of 5 per cent. or less between the dates 1860 and 1886. On Western farm mortgages the change has been much greater. Twenty-five years ago rates as high as 25 per cent. were paid on mortgages of Western land, on what has proved to be ex-

cellent security. The rate now charged is seven per cent. and even less.

This immense abundance of capital seeking investment, and the equalization of the rates of interest between the East and the West, may be attributed more to the railway service and to the reduction in freight charge than to any other single factor affecting the interest of capital. The whole country has become a close neighborhood, each part sustaining the other, so that the distribution of capital has become more and more uniform throughout the country, except in States whose public credit is still bad. So long as the public credit is bad in any community, the rate of interest on private capital will be very high.

The effect of changes in the railway service is witnessed by the subsequent table.

In considering this reduction in the charge on railways, it must be remembered that a very large portion of these railways built since 1865 have taken the place of wagon roads, or of what are known in the West as "dirt roads," so that the saving to the people of the United States by the mere existence of the new roads, whatever they may charge, is much greater than the mere reduction of their charges since they came into existence; but the latter saving is so big that any thing else may be disregarded.

Reduced to the unit of the individual, the saving in the cost of railway service amounts to $13.67 per head of the population each year, or a fraction under $60 a year for every family of 5 persons. This sum would have paid all the taxes which have been assessed throughout this period by the people of the United States for national, State, county, city, and town expenditures, including that part of the taxation which has been applied to the reduction of debts, whether national, state, or municipal.

Or we may put this in another way. A sum, representing the saving of the last four years only, as compared to the rates of 1865–68, would doubtless have sufficed to cover the cash cost of the construction of the 100,000 miles of new railway built between January 1, 1865, and January 1, 1887, at an average cost of $30,000 per mile.

In a previous article in *The Century* it has been demonstrated that all our present crops, or products from land which is under the plow, omitting those which are derived from pasturage, have been derived from a little over 300,000 square miles of land.

Now between the dates January 1, 1865, and January 1, 1887, more than 100,000 miles of railway have been constructed. If we lay out a strip of land only 5 miles in width, alongside each of these new lines, it would cover an area of 10 miles by 100,000, or 1,000,000 square miles of land,—three times as much as is now under the plow, of which every acre has been brought within less than five miles of a railway since the year 1865.

As this is one of the most important lines of investigation I venture to repeat certain tables which were printed in my report upon Bimetallism in Europe made in October, 1887, to the President of the United States (Executive Document, No. 34, Government Printing-Office). These tables bear witness to the paramount influence of the railway system of the country in enabling the government to resume specie payments and in reducing the price of food to consumers (pp. 122, 123, 124). While these great price-making factors have been working out their just results in the United States, the charge for moving food across the sea by steamships has been reduced in almost as great a measure. The substitution of the screw for the side-wheel, the construction of large vessels made of steel, and the use of the compound engine of two cylinders, now supplemented by the triple compound, the opening of the Suez Canal, and other new forces applied to distribution, have altered all the conditions in Europe as well as in this country.

Only a passing reference can be made in this article to other price-making factors. This department has been very fully treated in a recent pamphlet by Mr. Wm. Fowler, LL.B., whose article upon the alleged appreciation of gold, lately published by the Cobden Club, is one of the most satisfactory treatises yet issued.

Among the other forces which have tended to reduce prices during the last twenty-years, is the Bessemer process for making steel, since supplemented by the "basic process," which latter process has brought the phosphoric iron mines of Germany into full production, previously almost useless ; the application of gas for fuel ; the use of natural gas for the same purposes in this country ; improvements in agriculture in the use of the buggy-plow, the gang-plow, etc., the self-binder attached to the reaper ; such improvements in all the textile arts that one operative now performs all the textile work that could be done by two or more twenty-five years ago ; the improvements in the use of machine tools applied to all arts ; and the like.

In point of fact, it is not too much to say that one half as much capital as was required to do the general work of life in 1865 will now suffice to aid labor in compassing the same amount of product. That is to say, it took twice as many dollars' worth of capital to accomplish a given product twenty or twenty-five years since as is now needed.

On the other hand, the owner of the capital is now compelled, whether he will or not, to be satisfied with one half the income on each unit or dollar's worth of the present capital, if he trusts only to his capital for his means of living.

Even in the matter of the use of gold, reference might be made to the economy brought about in banking and exchange ; the use of the telegraph and the like ; the saving of time in the transportation of commodities ; all of which subjects are fully treated in Mr. Fowler's essay.

THE FOOD PROVIDERS.

Pennsylvania, Pittsburg, Fort Wayne and Chicago, New York Central and Hudson River, Lake Shore and Michigan Southern, Michigan Central, Boston and Albany, New York, Lake Erie, and Western Railroads. Graphically compiled by Edward Atkinson, from a pamphlet by Henry V. Poor.

Year.	Tons moved.	Tons moved one mile.	Charge per ton per mile.
1865	11,151,701	1,654,324,000	2.900
1866	12,099,426	2,044,412,000	2.546
1867	15,594,454	2,258,220,000	2.306
1868	17,467,693	2,651,575,000	1.951
1869	20,556,155	3,159,559,000	1.715
1870	21,456,135	3,744,110,000	1.585
1871	25,098,953	4,341,127,000	1.478
1872	28,634,347	5,181,259,000	1.475
1873	32,817,327	5,782,059,000	1.470
1874	32,899,152	5,879,658,000	1.342
1875	32,956,655	5,937,240,000	1.161
1876	36,166,865	6,739,524,000	.983
1877	36,134,676	6,536,994,000	.971
1878	39,124,612	8,853,397,000	.807
1879	48,585,226	10,120,776,000	.725
1880	53,937,397	10,544,831,000	.840
1881	62,616,014	11,659,998,000	.759
1882	64,948,002	11,189,000,000	.665
1883	66,695,608	11,141,726,000	.842
1884	64,397,566	10,719,518,000	.740
1885	66,521,152	11,331,306,000	.636

These railway lines carried somewhat less than one quarter of the tons moved 1 mile in 1885.

This traffic of 1885, at the charge of 1865, would have cost.....$328,607,874

Actual charge. 72,138,792

Difference..$256,469,082

Illinois Central, Chicago and Alton, Chicago and Rock Island ; Chicago, Burlington, and Quincy ; Chicago and Northwestern, and the Milwaukee and St. Paul Railroads.

Year.	Tons moved.	Tons moved one mile.	Charge per ton per mile.
1865	4,032,166	513,421,459	3.642
1866	4,803,205	576,886,638	3.459
1867	6,303,783	768,171,050	3.175
1868	7,064,305	893,856,984	3.154
1869	8,071,568	1,054,559,835	3.026
1870	8,540,579	1,234,678,291	2.423
1871	9,391,684	1,233,058,058	2.509
1872	10,592,414	1,437,038,063	2.582
1873	11,958,467	1,719,499,690	2.188
1874	12,637,729	1,851,645,824	2.160
1875	12,662,768	1,914,937,377	1.979
1876	13,488,204	1,994,712,255	1.877
1877	13,364,721	2,211,021,475	1.664
1878	15,705,226	2,822,885,886	1.476
1879	18,806,956	3,470,822,877	1.280
1880	24,215,307	4,544,469,655	1.266
1881	28,076,047	4,435,202,005	1.420
1882	29,851,868	5,041,330,034	1.364
1883	31,663,979	5,768,173,429	1.308
1884	32,573,518	5,940,110,011	1.251
1885	34,348,684	6,287,346,541	1.200

These lines carried almost exactly one eighth of the tons moved 1 mile in 1885.

This traffic of 1885, at the charge of 1865, would have cost.....$228,985,161
Actual charge 75,307,684
Difference..$153,677,477

A graphical statement, showing the effect of the reduction in the charge for moving provisions long distances at the lowest possible rates, in enabling farmers to sell grain and meat for export which could not otherwise have been sold at all, thereby bringing about the restoration of specie payments. The balance of exports over imports for ten years has consisted wholly of farm products.

Year.	Exports exclusive of specie.	Excess of exports.	Railroad charge per ton per mile. To Chicago.	Railroad charge per ton per mile. From Chicago.	Excess of imports.	Imports exclusive of specie.	Year.
			Cents.	*Cents.*			
1866..	$348,859,522		3.459	2.546	$ 85,952,544	$434,812,066	1866
1867..	294,506,141		3.175	2.306	101,254,955	395,761,096	1867
1868..	281,952,899		3.154	1.951	75,483,541	357,436,440	1868
1869..	286,117,697		3.026	1.715	131,388,682	417,506,379	1869
1870..	392,771,768		2.423	1.585	43,186,640	435,958,408	1870
1871..	442,820,178		2.509	1.478	77,403,506	520,223,684	1871
1872..	444,177,586		2.582	1.475	182,417,491	626,595,077	1872
1873..	522,479,922		2.188	1.470	119,656,288	642,136,210	1873
1874..	586,283,040	$18,876,698	2.160	1.342		567,406,342	1874
1875..	513,442,711		1.979	1.161	19,562,725	533,005,436	1875
1876..	540,334,671	79,643,481	1.877	.983		460,741,190	1876
1877..	602,475,220	151,152,094	1.664	.971		451,323,126	1877
1878..	624,865,763	257,814,231	1.476	.807		437,051,532	1878
1879..	710,439,441	264,661,666	1.280	.725		445,777,775	1879
1880..	835,638,658	167,683,912	1.266	.840		667,954,746	1880
1881..	902,377,346	259,712,718	1.420	.759		642,664,628	1881
1882..	750,542,257	35,902,683	1.364	.665		714,639,574	1882
1883..	823,839,402	100,658,488	1.308	.842		723,180,914	1883
1884..	740,513,609	72,815,916	1.251	.740		667,697,693	1884
1885..	742,189,755	184,662,426	1.200	.636		557,527,329	1885

Merchandise traffic of all the railways of the United States in 1885; authority, "Poor's Railway Manual," 1886:

Tons moved		437,040,099
Tons moved 1 mile		49,151,894,469
Charge for service		$519,690,992
Rate per ton per mile	cents.	1.057

Twenty-seven trunk lines which, separately or in combination, centre in Chicago from the West, or connect Chicago with the Eastern seaboard:

Tons moved		185,320,709
Tons moved 1 mile		25,125,076,247
Charge for service		$219,872,732
Rate per ton per mile	cents.	.875

All other lines:

Tons moved		251,719,390
Tons moved 1 mile		24,026,818,222
Charge for service		$299,818,260
Rate per ton per mile	cents.	1.248

Measure of this service per head of population and per family:

Lines.	Tons per person per year.	Distance hauled.	Charge per person.	Charge per family of five persons.
		Miles.		
Twenty-seven trunk lines	3.252	136	$3.68	$18.40
All others	4.420	95½	5.26	26.30
Total	7.672	111½ Average.	$8.94	$44.70

The average charge per ton per mile on the 27 trunk lines in the years 1865 to 1868, inclusive, exceeded that of 1885 by 1.635 cents. At this rate of excess, applied to the whole traffic of the United States, all other lines having made a greater reduction, so far as the data can be had the sum saved in the year 1885 was $803,633,477.

The whole service of all the railroads in 1885 consisted in moving 42 pounds a day of food, fuel, fibres, and fabrics, a distance of 111½ miles for each man, woman, and child of the population, or 1,470 pounds a week for a family of five. The average charge to each person was a fraction under 2½ cents per day, or 87½ cents per week for each family of five.

The 27 trunk lines treated in the foregoing tables perform about one half the freight service of the United States. The average charge per ton per mile on those lines, 1866 to 1873, inclusive, was ..... 2.315 cents per ton.
1874 to 1885 ..... 1.196 " "

Difference ..... 1.119 " "

Had the actual traffic of those lines from 1874 to 1885 been charged the difference, the amount of such additional charge would have been over $1,756,000,000

The excess of exports over imports in this same period was $1,574,021,528

It thus appears that the reduction in the railway charge taken by itself without regard to other reductions in the cost of production and distribution, sufficed to enable this country to resume specie payment in 1879.

In fact, if all the changes which have been worked by the elimination of time and distance from the conduct of affairs were to be considered, it would require a volume instead of an article to picture them.

It thus appears that, while the purchasing power of a day's or a year's labor has increased since 1860 from 40 to 70 per cent. according to the grade or skill of the workman, and from 66 to 108 per cent. since 1865, and while the earning power of capital, considered without regard to the skill of its owner, has diminished absolutely one half and relatively at least 75 per cent. since 1860, there have yet been periods when it has been difficult for many workmen to find work, when also capital could not find employment, and when there was want in the midst of abundance.

Can these faults in the present forms and methods of society be remedied by legislation, by coöperation, by profit-sharing, or by the state assuming more and more the control and direction of the forces of capital? These are questions which demand an answer.

That there has been grave discontent on the part of labor, and a want of that true comprehension of what may rightly be called "the claims of labor" on the part of many capitalists, may not be denied.

What are some of the causes of this discontent, and how shall admitted wrongs be righted?

It is a matter of common knowledge that the application of machinery in special arts often causes the displacement of the craftsman, the hand-worker, or the common laborer who has been trained in that art, and who finds it difficult to adjust himself to new conditions. This fact, which has been a matter of common observation in single arts, has affected nearly all the arts of life in the last twenty-five years more profoundly than ever before. There have been single great inventions, like the application of steam, which have gravely altered the conditions of society; but there have probably never been so many applications of science and invention to the common arts of life as have been applied in the present generation, nor has any single one ever been so potent in modifying and changing all the conditions of society as the sinking of time and distance in the fraction of a cent a ton on a mile of railway.

In this country, where these great new forces have been more free to act than in any other, there are certain facts which must be admitted by every one competent to observe. Leaving wholly out of view the transfer of property already saved from one person to another in the gambling operations of the stock exchange, such incidents being of no material consequence except to those who engage in them, we may observe:

First. That the direction and use of capital are becoming more and more a matter of scientific training, as the margin of profit in every art comes to a less and less fraction of the product made or distributed. The merchant adventurer has gone the same way with the craftsman and his apprentice—he has disappeared with the removal of the mysteries of trade.

Second. Although great fortunes have become more conspicuous, their number is very small, and their aggregate amount is yet smaller in proportion to the amount and great number of moderate fortunes which are not conspicuous but which are steadily increasing.

Third. Adjacent to every city are suburbs or neighboring towns which are filled with comfortable dwellings of moderate size, which give evidence of comfort and welfare steadily increasing on the part of an increasing portion of those who perform the practical work of the country. These are the dwelling-places of their respective owners or occupants, who are not capitalists in any sense, but who have assured to themselves an abundant subsistence, a home, and a safe position in the community.

Fourth. While great bonanza farms are conspicuous, they are also few in number ; the increase in small farms is very rapid ; and perhaps the increase has been yet more rapid compared to what it had been before agricultural machinery, science, and invention had come nearer to the farm.

Fifth. By comparison with this rapid progress not only of those who are in a position of wealth, but of the vast number who, although not making great savings, are living year by year more comfortably, better housed, better clothed, and better fed, the bad condition of the very poor, and the more uncertain position of the common laborer whose opportunity for work is intermittent, becomes more apparent and therefore demands urgent attention.

If such are the facts which are disclosed by the actual observation of the conditions of men, and confirmed by the deductions drawn from them in this and other cities, do we not find in the very gain in the purchasing power of wages a cause of an increasing disparity in the conditions of those who class themselves as "working people," in a limited sense ? and may not this be one of the grave causes of discontent, even though all have made some progress ? Is it not apparent that while the very poor are proportionately no more numerous, and the ratio of common laborers to others is no greater, yet within the lives of men who are not yet beyond middle age, great numbers among the workmen themselves have seen those who started on nearly the same plane, and who in 1860 could earn but little more than their fellows, yet in 1885 and '86, raised far above them in their condition, although still classed as fellow-workmen ?

To him who has had the capacity, either mental, mechanical, or manual, to take advantage of the opportunity afforded by science and invention, has been given the greatest progress ; while from him who has not the mental or manual aptitude to adjust himself to the new conditions, has been taken even the opportunity for common labor which he enjoyed before.

Do we not witness in the various organizations of labor, so called, an attempt to equalize this growing disparity? It is often claimed that "equal work is entitled to equal pay"; but the difference in the quality of the work may not be overlooked. The attempt is made to control the hours of labor by various artificial methods. In respect to minors, and possibly in respect to women so long as they do not vote, such laws may be necessary. Other attempts are made by establishing stated lists of prices, by limiting the quantity of work to that done by any one man, by limiting the number of apprentices, and by other similar methods, to equalize the material conditions of men. But all these efforts fail wholly or partly. An equal quantity of work measured only by the time devoted to it or by the actual amount of work required in it, never has and never will secure equal results. It is not in the nature of things. It is the efficiency of labor that tells, not the quantity or time. One man will waste more leather in a given time by want of aptitude or skill in its use than another man will convert into good and useful boots and shoes. Profit may be defined as the margin which mind gains over muscle. This is as true of the higher gain in skilful work when done by the piece as in the use of capital already saved.

The result of all these artificial methods to control conditions which rest upon individual capacity, when even partly enforced, is to level down the earnings of the industrious and the capable to the plane of the unskilful or lazy.

When this truth dawns upon the mind of the discontented, then the trade organization or association soon changes its course and begins to promote the development of individual capacity; it becomes a common school in social science; its members soon find out what a really beneficent force may be developed by organizing labor.

I have endeavored to present the great price-making forces which have been evolving progress from poverty during the present generation, and I may again repeat what I have often had occasion to state. The necessary conclusions to which we are led are:

First. When organized capital is placed at the service of labor, it becomes more and more effective, while in amount it diminishes in ratio to product. It therefore secures to its own use a diminishing portion of, or profit from, an increasing product. This is the economic law, so called, of diminishing profits.

Second. Organized labor, when each member is left free to avail himself of every opportunity which capital, science, and invention place at his disposal, secures to itself an increasing share of an increasing product or its equivalent in money.

Third. As capital and labor become more under the control of common intelligence they cannot help becoming more closely allied;

under these conditions high wages or large earnings in money, or in what money will buy, become the necessary result or reflex of the low cost of production.

Fourth. A low cost of production accompanied by high wages is most fully assured by the application of science and invention to all the arts of production and distribution. Pauper labor so called, may be dreaded only by those who possess pauper intelligence. The competition which is really to be courted and emulated is that which is represented by the art schools of France, the weaving schools and the like of Germany, the trade schools and the industrial schools which have spread more rapidly in England in recent years than they have in this country. Skill and intelligence, free from the burden of standing armies and of war taxes, may command the commerce of the world.

The present population of the globe is computed at about 1,400,000,000 ; of these only about 400,000,000 belong to what may be called the machine-using nations. One billion do their work by hand, or by the use of rude tools guided by the hand.

In a peaceful contest for commerce with these nations, who will win? Certainly that nation will *not* win which obstructs the import of the crude products which are all that these non-machine-using nations can give in exchange for what they need, by imposing heavy taxes upon such products when they enter the ports of our country.

But when all has been accomplished which can be done by law or by association, or by the repeal of obstructive acts, there will still remain centres of pauperism in our cities ; they exist mainly among those of foreign birth who cannot adjust themselves to the new conditions to which they are subjected. There will also continue to be periods when common laborers will find it difficult to obtain work. How shall we meet these admitted faults? Is there any other way than by adapting the methods of common-school education more nearly to the necessities of life? If it is true that one cannot permanently help either men or women who cannot help themselves, is it not equally true that classes in society in considerable numbers cannot be raised from a state of dependence upon others, except by the development of each member of such class to a knowledge of some art by which he can sustain himself, even if it be only a training in the application of the hand itself to useful work?

Nine tenths of the occupations of the people of this country in point of number still depend upon the individual capacity, the mental development, the mechanical aptitude, or the manual dexterity of each person. Only one in ten is occupied in a great factory where the conduct of the work depends upon the minute subdivision of labor.

Does not this fact bear witness to the necessity of promoting the

development of the individual in order that common welfare may be attained by every man, woman, and child in the community ?

What can the state do for its citizens in helping them to obtain subsistence, if the people who constitute the state are themselves incapable of sustaining their own families under present conditions ?

Neither the state nor the nation possesses property. The state only controls the property of its citizens by right of eminent domain. It can take property under the due process of law for public use, with compensation to him who owns it. It can tax all property in order to maintain governments. It may tax all property in order to perform certain useful functions which, by common consent, the state can perform in its corporate capacity better than the citizens can in their individual capacity. But the state as state has no productive power, and it is upon the annual product that all depend alike.

In this country at the present time there is and can be no lack of most abundant product. We waste every year enough to sustain another nation half as numerous, if not equal in number. The mechanism of distribution is more than ample ; yet there is want in the midst of plenty.

Progress *from* poverty is the common rule. "Progress *and* poverty" is the marked exception, conspicuous and dangerous. In one sense every man is his brother's keeper. If he neglects his duty and cares not for his neighbor, the tax-gatherer, at least, will find him out and will compel him to do at the greatest cost what perhaps he might have accomplished at the least cost, had he himself realized his own responsibility.

There is one thing no man can invent, and that is a form of society in which the rights, whether of the rich or of the poor, shall not be accompanied by corresponding duties. He who treats these economic problems without taking the moral and ethical side of life into consideration may rightly be called a representative of "a dismal science." But it by no means follows that we must seek to reconstruct humanity in our effort to form society. The subject of economic science is man as he now is, with all his faults, his selfishness, and his failings. It was said of old time that "surely the wrath of man shall praise thee." Might not the prophet of the present affirm with equal insight : "The power which makes for righteousness compels not only the enlightened self-interest of man, but his very selfishness, to work out the progress of humanity ?"

The commerce of the world now turns from one side of the globe to the other on a margin of a cent on a bushel of grain, a dollar a ton of metal, a quarter of a cent a yard on a textile fabric, or the sixteenth of a cent a pound on sugar. The cube of coal, as I have before stated, which would pass through the rim of a quarter of a dollar, when used

in connection with the compound engine, will drive a ton of food and its proportion of the steamship two miles on its way from the producer to the consumer; by the invention of the triple compound, one fourth even of this fuel has been saved.

The profit or loss of this great nation turns on the price of a daily glass of lager beer.

When this article is read, five cents a day, more or less, to each inhabitant of the country, will represent $1,095,000,000 worth of product, which may be either saved or wasted according to the measure of the intelligence of each person. The profit which might be represented by this sum of money may be diminished one half by the ignorance of legislators who take no cognizance of the facts of life when framing the statutes by which they undertake to regulate and control an organism which yet makes its way steadily onward with greater or less effort, whatever may be the system of laws by which its progress is either helped or hindered.

These computations are submitted for what they are worth. They are probably as near to the facts as it would be in the power of any private student to bring them, whose opportunity for study or for treating these questions is very limited.

In the attempt to comprehend the laws of social science by reading and studying treatises upon political economy, the writer long since met the difficulty which would be apt to occur to a business man,—to wit, the necessity for a statement of accounts and a trial balance. In the attempt to make such a statement and to balance the accounts of one class with another, and of one branch of industry with another, he has himself come to certain conclusions which coincide very closely with the modern teaching of political science.

The science of life does not consist in *laissez faire*, or letting alone. There are many objects which may be better attained by the state, town, or city undertaking them than they could if left to individual or corporate enterprise. There are many others which it is often proposed to have the state assume, which are utterly beyond the functions of the state in its corporate capacity to manage.

Among the prime factors which make or mar material prosperity there are grave differences. The conclusion of the writer is, like that of all the economists whose works have any standing among men, that tampering with, or debasing the standard of value is the most malignant fraud which the government can perpetrate. The cost of substituting paper notes for true money under the stress of war added without question to the cost of the civil war as much as the whole sum of outstanding debt yet unpaid. The most beneficent factor in the lowering of prices and in raising wages has been the extension of the railway system and the reduction in the charge for the service. Vanderbilt

was the typical railroad man of his day; he was also the great communist of his time, because he reduced the cost of removing a barrel of flour a thousand miles to so small a sum that it can hardly be measured in a loaf of bread, at a margin of profit to himself and his associates which is now less than the value of the empty barrel at the end of the line. The heavy taxes which we are now paying are but a slight burden upon the people; so long as they can be applied to the payment of the public debt, they may be justified, however unscientifically and injudiciously the acts for collecting them may be framed.

EXAMPLES OF REDUCTIONS IN PRICE—REDUCTION IN COST OF LABOR—RISE IN RATE OF WAGES AND INCREASE IN PURCHASING POWER OF WAGES.

STANDARD COTTON SHEETING.

Year.	Price per yard.	Cost of labor per yard.	Earnings per year.	Purchasing power in food, cloth, and fuel.
1860	8.17 cts.	0.095 cts.	$207.00	669
1865	50.61 "	1.501 "	234.00	420
1870	14.33 "	1.425 "	275.00	632
1875	9.79 "	1.314 "	280.00	721
1880	7.40 "	0.093 "	260.00	782
1885	6.55 "	0.095 "	284.00	1014

SUIT OF FURNITURE FOR A BEDROOM.

Year.	Price per suit.	Cost of labor	Earnings.	Purchasing power in food, cloth, and fuel.
1860	$35.00	$12.00	$456.00	1473
1865	55.00	18.00	678.00	1217
1870	33.00	11.00	687.00	1578
1875	28.00	10.00	723.00	1868
1880	20.00	8.00	723.00	2175

ONE DOZEN STEEL AXES, DAY WAGE, RATIONS FOOD ONLY PER DAY.

Year.	Price.	Cost of labor	Day's wage.	Rations food only.
1860	$11.00	$2.28	$1.70	6.25
1865	20.50	3.12	2.27	5.39
1870	14.50	2.93	2.35	6.41
1875	11.50	2.46	2.17	6.00
1880	8.50	2.04	2.26	8.76

In this example the prices of food in the same county have been computed as a standard.

A HORSE-RAKE.

Year.	Price.	Cost of labor	Day's wage.	Rations food only.
1865	$35.00	$3.36	$1.93	4.53
1870	32.00	2.87	2.12	5.54
1875	28.00	2.53	1.90	5.92
1880	24.00	2.10	1.76	7.01

Compiled from Vol. XX. U. S. Census by Joseph D. Weeks; computed by Edward Atkinson, and verified by comparison with other authorities.

Could space be spared, examples of the same kind could be added from almost every industry to which modern machinery has been applied, but these must suffice.

Whatever may be the opinions or theories of each reader upon these various problems upon which every voter in a free country must pass whether he will or no, it is held that there can be no true solution unless it is based upon facts. It has been the purpose of the writer in this series of *Century* articles to give these facts rather than to present his own theories ; to ask questions rather than to attempt to answer them.

It may be suitable to submit a very few examples, which will be found on the preceding page, proving how the rule of diminishing prices, decreasing profits, and diminishing cost of labor has been consistent with the general rise in the rates of wages and in their purchasing power. This principle would of necessity be deduced from all the tables which have already been submitted ; but a few specific examples may be a matter of curious interest, and will fully sustain it.

THE DISTRIBUTION OF PRODUCTS

THE DISTRIBUTION OF PRODUCTS.

I.

HOW CAN WAGES BE INCREASED?[1]

AS my book upon "The Distribution of Products," which consists mainly of an essay on "What Makes the Rate of Wages?" is now passing to its fourth edition, and is attaining a wide circulation, I am very glad to find it reviewed by Mr. Frederick B. Hawley, in the *Quarterly Journal of Economics* for April, 1888, published for Harvard University. If there are any important errors either in the theory or in the figures which are presented in this essay, I greatly desire to correct them. From this review and from some previous notices of the book I have been led to believe that I have not made the reasons for my conclusions as plain as I might have; I therefore beg to repeat the main propositions which I have attempted to sustain, and to give more conclusive proofs, if I may do so, that these propositions are correct.

The fundamental idea of the book is as follows: the annual product, or the product of each series of four seasons, is, and must be in the nature of things, the source of all rents, profits, interest, wages, salaries, and earnings. This product is the result of the joint application of labor and capital. It therefore follows:

1. That in this product, or in its distribution or consumption, all persons take some part who are engaged in gainful occupations, numbering in the census of 1880 a fraction less than one in three of the population, and listed under the respective heads of professional and personal service, trade and transportation, manufacturing, mechanical, and mining pursuits, and agriculture. By far the larger proportion of each of these classes is now, and must continue to be, either in the position of small farmers, who work harder than their hired men and who outnumber the hired men engaged in agriculture, or of wage-earners, or of persons who are in receipt of small salaries; nearly all, with the exception of the farmers, are in the position of the employed rather than of the employer. The gains or savings of these working classes, which may be added to the capital of the country, amount to a large

[1] Reprinted from the *Forum*.

sum in the aggregate; but, with few exceptions, they are small in amount in each individual case. The lives of the great majority are mainly spent in getting a living.

2. These "working classes," so called, constituting by far the greatest proportion of all who are occupied for gain, now secure for their own use and consumption substantially ninety per cent. of the total annual product of this country; consequently, that part of the annual product which is, or can be, in an average year, secured by capital for its service, whether the capital be owned by the rich, the well-to-do, or in part by the wage-earners themselves, cannot exceed ten per cent. on the average. This is the increment which can be set aside for the maintenance and increase of the capital of the nation.

3. The working classes, making use of that term not in the broader but in the narrowest sense in which it is customarily applied, have been, and are still, securing, for their own use and enjoyment, for consumption or savings, decade by decade, subject to temporary fluctuations in each ten years, an increasing share of a constantly increasing product or its equivalent in money, and will continue to do so as long as the competitive system is the rule in commerce, in production, and in distribution.

4. Under the relatively free conditions of society in this country as compared to all others, the members of the three classes, *i. e.*, the so-called working classes, the well-to-do, and the rich, are constantly changing in their respective conditions. On the one hand, the prosperous classes are constantly receiving recruits from the working class; on the other hand, as has been well said, "it is rarely more than three generations from shirt-sleeves to shirt-sleeves."

No one could have been more surprised than myself when these conclusions developed themselves from the facts of life. I have but little time for the reading of books, and I am not aware that the attempt has been made by any one else to measure the proportions which may be assigned to each class in the community by first computing the subject of the division, *i. e.*, the annual product at its final measure in money when disposed of for final consumption. It may be that this method is one which cannot be applied with sufficient certainty to justify the conclusion; of that each one must judge for himself as my processes are developed.

Many exceptions have been taken to these proportions in the division of the annual product, but they have usually been, on the whole, of a somewhat superficial character, like the review to which I now propose to make a rejoinder; they assume that I have intended to state that the proportion of the annual product which falls in the first process of distribution to capitalists, landlords, manufacturers, and men of business, in the form of rents, profits, or interest, is the same

in amount and proportion as that which constitutes the net profit or savings of the nation as a whole, which can be applied to the maintenance or increase of the capital of the nation. I am probably myself responsible for this confusion of thought, by my want of clearness and precision in the preparation of a treatise which was dictated in the intervals of a very busy life, and published without that careful revision which was due to the importance of the question which I have treated under the title, "What Makes the Rate of Wages?" I may not have discriminated sufficiently between the income of individuals and the net profit or savings of the nation. I therefore take the opportunity offered me by my critic to present anew some of the reasons which led me to the conclusions given as to the relative shares of labor and capital in the annual product.

On one point I fully agree, to wit: if the workmen or laborers, or if the classes consisting of laborers, receivers of small salaries, small farmers, and the like, who now constitute the great majority of the community, do now actually obtain for their own use and consumption ninety per cent. of the gross annual product, then there is little margin for improvement in their condition except through an increase of the product itself. Or if, as the reviewer says,

> "the complete success of co-operation combined with nationalization of land or with the establishment of an ideally perfect system of socialism would augment laborers' incomes within the limit of only eleven per cent., and that only provided as much were produced under the new conditions as under the old, then such a percentage of gain would be wholly insufficient to raise the recipients' wages to any condition materially superior to their present one."

That is the very conclusion to which my own mind has been brought by my special investigations and by the observation of some curious facts. For instance, in a recent strike, in which a very large number of men were engaged in a special employment whose earnings averaged $500 a year, I found that, had they secured for their own enjoyment the entire profit of the business at the time of the strike, it would have increased their wages but five per cent. or $25 per year. It was an art in which the capital required was very small in proportion to the annual product. The strike failed, and the business continued as before.

The reviewer alleges that the proposition that ninety per cent. of the product is gained by those who do the work of life, and only ten per cent. goes to capital, "is so evidently false as to constitute a *reductio ad absurdum.*" If he would enter upon the line of investigation which I have followed, without any *a priori* conceptions or prejudices in his own mind, he might be more successful in attempting to analyze the figures on which my conclusions have been based; until then it would be prudent to repress such dogmatic conclusions as the above.

There are two sorts of discontent among working people, either of which may be promoted by a discussion of economic questions ; one kind is wholesome, the other is baneful. If my conclusions can be proved, a wholesome discontent with the admittedly narrow conditions of life may be directed to the promotion of greater abundance, higher wages, shorter hours of work, and better conditions of life. Such progress can be brought about only by hearty co-operation between workmen and their employers or between labor and capital, and, in my judgment, only under the competitive system. If, on the other hand, the reviewer is right in alleging that capital is grasping a share of the annual product to which it is not entitled in compensation for any service rendered, then the discontent of the workmen may take a dangerous, violent, and disastrous direction. It is this conception which promotes strikes.

If, then, my conclusions are based on facts, and the view which is held by my critic and others who have attempted to break the force of my figures is wrong, but is yet presented under the guise of truth, a very great responsibility rests upon him and his coadjutors who speak without knowledge and with more zeal than discretion, thus aggravating the very evils which they undertake to remove.

I will first consider the basis of my estimates. My critic's first error is as follows : he cites a copy of one of my tables, in which the commercial product of the United States, or that part of the product which was bought, sold, and exchanged in the year 1880, was estimated at $9,000,000,000 worth. He says : "This commercial product is estimated by Mr. Atkinson from the census returns" ; and he adds : "It is a difficult matter to reach a true result from these census figures, as in these returns many values are found twice or more." I did not derive my estimate of the commercial product from the census returns, as any one may see who uses common care and discretion in reviewing my treatise. On page 31 of my book these words appear :

> "The writer had reached his own conclusions by very different methods from those used in the census department, and he had satisfied himself that if there be added to that part of the annual product which is sold, and which is therefore reduced to terms of price in money in the markets of the world, for domestic consumption upon farms and in factories $1,000,000,000, then the total value of the annual product would not exceed $10,000,000,000 in the census year at the retail price for final consumption."

This comes to about two hundred dollars' worth of product *per capita*, including the domestic consumption of farmers and others, which does not enter into the commercial product.

I have given in my book the same reason which is cited by my critic for not making use of census figures except as a means of checking the estimates arrived at by entirely different methods. Whatever errors, however, my critic may have made in misrepresenting my

method, he yet reaches the conclusion that my estimate of ninety per cent. of the commercial product of $9,000,000,000, to wit, $8,100,000,000, was the wage and salary fund of the United States in 1880. "Although wrongly arrived at," he says, "it must be nearly correct." He does not give his own method of reaching concurrence of opinion on the subject; it is therefore impossible for me to say whether his results were wrongly arrived at or not; suffice it that on this point we agree. The point of difference between us is as to the sum remaining over this wage and salary fund, which passes to capitalists and property owners, to be added to the capital of the nation. I computed this at ten per cent. of the entire product, or at $20 *per capita* of the population, on an average product of $200 worth of all commodities in a normal year, such as the year 1880 happened to be. The rate of accumulation may possibly yield a somewhat larger sum in a year of great prosperity, and doubtless diminishes to a less sum in years of adversity. The basis of computation in 1880 was made upon the assumed product of 50,000,000 people, of whom about one in three was occupied in gainful work of some kind; with an increase of population the average sum of the product and the average amount added to capital may increase, while the proportion *per capita* may not vary.

In attempting to prove that I am in error in this, my critic alleges that "there were in the census year 4,074,238 working people engaged in rendering personal and professional service, the value of whose labor does not appear in the value of any material production." He then assumes that these four million persons sell their service at an average of $300 per year each; "therefore," he says, "this would leave a sum for personal service amounting to $1,200,000,000, to be added to the gross value of the material product." He next makes a hypothetical estimate as follows:

> "Horses and other animals, hired or kept for pleasure; railways and telegraph companies, to the extent to which they are utilized for other than business purposes, together with service performed for us by various other forms of accumulated wealth, which would probably add enough to this sum to make it, in round figures, $800,000,000. Adding this to the computed value of persons engaged in personal and professional service, we have $2,000,000,000 of annual income which Mr. Atkinson fails to account for."

This passage is very obscure, but it is the turning-point of the whole question. If I catch the meaning of the reviewer, he finds $2,000,000,000 worth of service rendered by professional men, by domestic servants, by men of wealth and others, also by horses used for pleasure, by railways when not occupied for business purposes, which, as he says, "have no material basis." If they had no material basis, from what source was the money derived? He proposes to add the value of these services to a sum of products already established, and

having thus added $2,000,000,000, he assigns that additional amount to profits or to the capitalists as an addition to their proportion of the total product as computed by me. This method would warrant a very queer conclusion, which might be given in the following terms: Uncle Sam gets $10,000 a year out of his estate; he spends $9,000 a year, and saves 10 per cent., or $1,000 worth of his product. "Oh, no," says the objector; "that is not a fair statement of his savings. Uncle Sam has five servants in his employ, whose services are worth $300 a year each; there must, therefore, be added $1,500 to the $10,000. His true income is $11,500, and he makes $2,500 a year above what he spends; it is too much; he ought not to have so much." One would like to learn the secret of how to make a profit from the services of servants, from driving pleasure horses, and from riding in palace cars. Now, the very proposition which I have attempted to sustain is, that the entire production of the census year could not have exceeded in value $200 worth *per capita* on the average of population, including the very classes whose earnings he proposes to add. From that part of the production, whatever it may be, which enters into commerce, computed by me at 90 per cent. of the whole, all wages, all taxes, all profits, and the compensation for all services or earnings must be derived, including the payment made for professional and personal service and the service of wealth as well—unless the capital previously accumulated in other years enters into consumption in a given year without being reproduced, which would, of course, be disastrous.

In my computation the sum of $8,100,000,000 is given as the wage and salary fund, the compensation of the small farmer, and the share of those who may be called the hard-working classes in the community in the year 1880; this being divided by the number, yielded an average to which my critic assents. In my further computation, the domestic consumption of the farmers is estimated at $1,000,000,000, and the share of the product assigned to the maintenance and increase of capital is put at 10 per cent. of the whole. If, then, this last assignment is underestimated, an additional product must be found before it can be increased. In other words, my critic must prove conclusively that I have omitted 20 per cent. of the total product in my computation before he can contest the sums assigned to each specific class of population or justify his own figures. I have always hoped that some thoroughly competent student would take up this line of investigation, as it seems to me fundamental. I am aware that my own work is insufficient, but I can find no evidence of product exceeding $200 worth *per capita*, or of an increment to capital exceeding 10 per cent. of that average.

My critic and others who have contested these figures have not made this complete investigation. He himself sets up a mass of

figures, which are his own, and then bases a criticism of my results on his own guesses at the sum of the products. In this he is like many other teachers and preachers whose zeal is greater than their knowledge, and who may do more harm in promoting discontent of a malignant kind the more sincere they are in their convictions.

The fundamental principle which I have endeavored to present in the treatment of "What Makes the Rate of Wages?" is this: the fixed capital, so called, must, of course, be carried over, increasing from year to year with the population, in order that it may be made use of in co-operation with labor in the production of the wage, salary, and profit fund of the year, to wit, the total product. A small portion of each year's product, commonly called quick or active capital, is also carried forward, to be immediately consumed or expended in the next year to start upon, as a small portion will be carried forward to the subsequent year to start the work of that year upon; the remainder of the product, whatever it may be worth, is the only source of all profits, income, wages, and taxes in that series of four seasons. There is, and can be, no other soure of revenue to any one, unless the fixed capital previously saved be converted into a consumable form and impaired in a bad year. I have reached the somewhat appalling conclusion that this total product does not yield to each person of the population, now or in 1880, more than what fifty to fifty-five cents a day will purchase, including not only the commercial product, but the product consumed upon the farms. Therefore, by so much as some have more must others have less. How can the *haves* justify themselves to the *have-nots?* The method by which this conclusion has been reached is described in the book, and the statement of the method should have rendered it impossible for my critic to have put his exceptions to the work in the form in which he has presented them. He has not read the book with the care which is due from a reviewer who has a serious purpose in view. It would be entirely free to him or to any one else to reject the whole treatise as unworthy of criticism; but, in the line of economic investigation, whoever undertakes to review either figures or the conclusions which are based upon them, should at least qualify himself to present the subject of the review itself consistently and correctly.

If this theory is a true one, to wit, that all wages, profits, and taxes which are liquidated in money must of necessity come within the limit of the salable value of that part of the product which is bought and sold, it follows of necessity that "neither the earnings of those persons who are engaged in personal and professional service, nor the support of horses, railways, and telegraph companies used for other than business purposes, nor the services performed for us by various forms of accumulated wealth" can be added to a sum which already

covers the entire value of every thing produced. The whole question, therefore, is, Did the commercial value of the annual product of 1880 exceed $9,000,000,000, or $180 *per capita* of the population—$20 being added for consumption on farms—or does it exceed $200 worth *per capita* now?

The family group numbers five, but one in three is at work. Is the average income or product of all at work, rich and poor alike, worth only $600 a year, to be distributed as wages, profits, and taxes at the present time?

I reached that estimate by the following method:

1. I computed the wheat crop in quantity by bushels; I then found the value of the wheat exported; I next converted the remainder into bread, and priced it at the average market price of bread, taking an average rather than a maximum; I computed the corn crop and its product in meat and dairy products at retail prices. I treated all food-products.

2. I made a careful analysis of all the fibres produced and imported, computed their value, and being familiar with the cost of manufacturing both fabrics and and clothing, carpets, cordage, and the like, I converted the crude materials into their final value at the retail prices at which these commodities were sold.

3. I went through the same process with metals, timber, and other commodities, and footed up the result. Of course I could reach only approximately correct results; but having reached the total amount of the probable value of these products at retail prices in this way, I then reversed my method, and proceeded from the expenditure of the individual to the gross sum of their expenditure.

I took large averages of consumption in all its details from the reports of the bureaus of statistics, and large averages of the wages earned from these reports and from the census figures; then worked back from the unit of the individual to the gross product consumed, class by class, by the population. I next ascertained what were actually the gross average profits of business in very many lines; I estimated every thing consumed in two or three large branches of industry, and by many other methods I checked off the original figures. I was myself very much surprised at the close agreement of the various methods which I applied *before* I attempted to prove my conclusions by the final check from the census of the United States. I should have been tempted to join my critic in pronouncing the conclusion almost a *reductio ad absurdum*, had not subsequent investigation and analysis confirmed the substantial accuracy of my first results. Great masses of capital impose upon the imagination and disguise the true relations of capital and the proportion of profits to production.

The error into which my critic and others have been led is this: they have confounded the profits, savings, or addition to the capital of

the nation as a whole, with the individual incomes of capitalists, middle-men, merchants, manufacturers, and the like. Mr. Hawley has entirely overlooked this distinction, to which I call attention, in these words :

"It will be observed that the measure of the savings of a nation is something quite different from the measure of that which would constitute the profits of individuals ; for instance, the manufacturer or merchant may make a very considerable profit out of his work, but he then distributes a very large proportion of this profit in his family expenses, thereby sustaining a large number of persons who are included among the so-called working classes or wage-earners. The final end or contribution to the capital of a nation is, therefore, a very much less sum than the apparent aggregate profit which accrues to individuals from the rent of real estate, from interest, or from the income derived by the individual owners from manufacturing, railroads, or other investments, or from business."

A man may receive an income of one million dollars a year, but he costs only what he consumes. The richest man rarely consumes more than a small part of his income in what may be called unproductive consumption ; what he and his family cost the country is the measure of their actual consumption in their own persons ; what they spend constitutes the income or share of the annual product of those among whom it is spent. Every capitalist is a distributer as well as a consumer. There is, doubtless, much wasteful expenditure ; but the question may well be asked : What class wastes the most, the rich in their luxurious personal expenditure, or the mass of the people who spend a sum variously computed at $700,000,000 to $1,000,000,000 a year on spirits, beer, and tobacco ? So far as any computation is possible, in my judgment, the annual product, *i. e.*, the wage and profit fund, is impaired more seriously by the waste of the poor and ignorant, not only in drink, but in the purchase of bad food worse cooked, than by all the luxurious expenditure of the rich. This is an individual question, beyond the reach of governmental action, co-operation, socialism collective industry, or of any other empirical method. The right method of saving the waste of products must be developed from within. It is personal to each individual, and cannot be imposed from without.

It is, doubtless, true that in the distribution of products more than ten per cent. of the whole passes from those who do the actual, direct, productive work of the country on farms, in mines, forests, and factories, to others who become consumers of a part of these products in the employment of the rich, the well-to-do, the capitalists, the middle-men, under the direction of employers who are not commonly included among the working classes in the narrow interpretation of that term and who distribute products among those whom they employ. But the persons to whom they—the capitalists, merchants, and middlemen—serve as distributers of these products are themselves wage-

earners or persons working for small salaries, although they are not directly the producers of the necessities of life. It is in this way that a very large proportion of those who are engaged in professional or personal service secure their share of the annual product. It follows, of necessity, that if this portion of the product, which is now distributed by way of rent, profit, interest, or by any other method under which it comes within the control of the capitalists or the well-to-do classes, should be withdrawn from them by those who do the actual work of production, then the employment would be withheld from a very large number of wage-earners who had previously derived their share through the intervention of these capitalists serving in the function of distributers. This large class, when thus deprived of their employment, must at once take to directly productive pursuits, in order to sustain themselves, in place of working for the well-to-do classes for whom they had previously worked. But since the product of the actual necessities of life is now very apt to exceed the possible consumption of the year, and since it is becoming more and more difficult to find a foreign market for this excess of the actual necessities of life, might not this change in the form of distribution work more harm than good? For instance, a large number of the most skilful mechanics of this country are occupied in making pianos. Pianos are not necessities of life. The earnings of these mechanics reach them by way of the capitalists, or well-to-do classes. As yet there is no other market for the greater part of the pianos except in the supply of persons whose incomes are such as to remove them from the category of the "working classes," in the narrow sense of that term. The piano-makers are, therefore, consumers; they add to the wealth of the well-to-do rather than to the capital of the country; their product is not reproductive. They are consumers of products in the reproduction of what may be called wealth, but which is not capital, or labor saved for reproductive purposes.

Now, if the annual product of the nation is the only source of wages, profits, and taxes, then it follows that, by so much as the piano-makers enjoy any share, or more than an average share as compared to other working-men and women, some other working-men and women must enjoy less. What, then, is the justification for this diversion of a part of the annual product, through the intervention of the capitalist, to unproductive consumption in the form of a piano? If such a diversion cannot be justified, then the high-priced mechanics who make the pianos may have no right to exist in that way. It is not the capitalist who actually consumes the food, fuel, clothing, and shelter which they enjoy; he is only an agent who has diverted a part of the product from the less adequately paid laborers on the farms, in the mines and the forests and the factories, or from the producers to the use of these

aristocrats among workmen, who convert rosewood and mahogany into the pianos which are merely for the enjoyment of the richer classes in society.

Again, there are many families of five persons who employ five servants, each of whom consumes some other man's product. The capitalist working as a distributer diverts the production of five productively working people to the consumption of five persons in his own employment. By what right? There is only so much to be divided, and by so much as some have more others must have less. All consumption must come out of all production: by so much as the few who produce nothing by their own personal labor become the consumers of the products of the many who produce every thing, so do the latter sustain the former. Where is the compensation? That is the cause of discontent. Many an honest workman now sincerely contests the equity of distribution by way of capitalists. What is the true answer? There is, and can be, but one reply to this question. Labor does not produce the entire product; it only shares in the work as it shares in the product. Without capital labor alone would be almost incapable of sustaining those who constitute the mere working classes in the narrowest sense. Capital is a force, and capitalists are those who direct this force. By the direction which the owners or the administrators of capital give to this force, which requires mental work of the most uncommon kind, the joint product of labor and capital is so much increased that, even though the capitalist secures to his own use a large part of the joint product, what is left to the working-man is more in quantity and in value than he could otherwise have attained by his own unaided efforts. In all commerce, in all manufactures, in all industries, in all work of every kind, the forces of labor and capital must cooperate, and must render mutual service to each other. This law cannot be impaired by either without disaster to both. The capitalist adds more, by his service, to the joint product than he can possibly take away or divert to consumers in any form of rent, profit, or interest.

If all labor, including that of the piano-makers, of domestic service, and of all other consumers, and if all capitalists also were deprived of the force of capital, and were obliged to get their own living by their own manual or directly productive work, all would of necessity be forced to work for the mere necessities of life. If all did so work in this country, and were not deprived of the use of improved tools, methods, and inventions, now controlled and applied by capitalists, this country, at least, would "be smothered in its own grease"; all might fatten alike upon the gross product of mere animal necessities, without mental development or progress of any kind.

The higher law which I have endeavored to develop in the treatise under consideration is this: that under just institutions those who con-

stitute the working classes are, in fact, securing for themselves, decade by decade, for their own use and enjoyment, an increasing share of a constantly increasing product, and this is mainly due to the capital used in their service, while capital, strive as it may, can secure for its own use, direction, or control only a diminishing share of an increasing product. Yet such have been the vast benefits conferred by inventors and applied by capitalists to material production that this lessening share secured by capital from the present enormous product amounts to a larger aggregate of wealth than was ever before attained by any nation. We can afford to convert the luxuries of one generation into the comforts of the next, and perhaps the necessities of the third, and we do so. The standard of material welfare is, in fact, constantly rising, and he only is left behind who does not qualify himself to grasp the ever wider opportunity for comfort and for welfare which is open to him in the exact measure of his own capacity and aptitude.

I admit that these problems are of the very greatest difficulty. The attempt to convert the whole annual product of the nation into terms of money, and to measure with more than approximate accuracy the relative average share which each person can obtain, is perhaps beyond the power of economists and statisticians. I admit that only an approximate estimate can be made; but I point out that when we work from the unit of the individual to the gross product of the nation, and *vice versa*, we may possibly be surprised at the concurrence of our estimates, for the reason that an error of five cents a day comes to over $1,000,000,000 a year; therefore such an error may not be difficult to detect in the gross and to correct in the detail.

I am of opinion that my critic, or any other investigator who takes hold of this subject at the right end, will have great difficulty in finding products made within the limits of the United States in a normal year, the gross value of which would come to more than $200 *per capita* of the existing population. The gross amount would now be $12,500,000,000 at that rate. My own conviction is, that such an estimate is too large rather than too small. If any one can find more than 10 per cent. added to capital, or applied to the maintenance or to the increase of capital, he will do more than I have been able to do.

There is another method of testing the accuracy of the estimate of additions to capital, which I will present, although it may be considered somewhat visionary. Imagination is a considerable factor, even in dealing with figures; except for the play of the imagination they would be very dry bones. The average population of this country for the last century has been substantially 30,000,000; we now number over 60,000,000. Doubtless my critic and all other students would admit that there must have been every year, during the last century, an annual consumption, *per capita*, approximating what would have

cost, at market prices, twenty-five to twenty-seven cents per day for each person, $90 to $100 worth per year of food, fuel, shelter, and clothing. Let any one consider what can be had now, and how little could have been had in the last century, for twenty-five cents in food, fuel, shelter, clothing, and sundries, and it will then be apparent that such an expenditure or measure of consumption must have been made on the average of the century in order to sustain life; hence, it would follow that the average price of life for 30,000,000 people each year has been about $100 a year. This would come to an average of $3,000,000,000, by the measure of money for the average population of 30,000,000. Multiply this by one hundred years, and we find the cost of subsistence to have been the visionary sum of $300,000,000,000, a sum which conveys little idea to the mind, but which is suitable for purposes of analysis. What would be 10 per cent. upon this sum? Would it not be $30,000,000,000? If, then, a sum equal to 10 per cent. of this assumed measure of the cost of subsistence had been set aside during the last century, we ought to find the latter amount of accumulated capital or wealth in existence in addition to the valuation of land. But there are no figures in the census, or anywhere else, which indicate any such amount of the product of labor now in existence in a salable form, aside from the value of the land itself. I do not attach any great authority to the computations of the value of the property of the United States, either in the census or elsewhere; the superintendent of the census himself and the special experts give the reason why these figures are approximate estimates rather than statements of fact; but there would be at least some sign of a quantity of capital, aside from or upon the land, measured as above, if it were in existence. Where is it?

What I have endeavored to prove is this: that not exceeding ten per cent. of the product of any year is, or can be, set aside, accumulated, or maintained; it will vary from year to year. If the average cost of subsistence of all the people who have inhabited this country for a century, including rich and poor, high-priced mechanic and low-priced laborer alike, has been only what twenty-five cents a day would represent in the form of food, fuel, clothing, and shelter, then the sum of the capital, aside from the value of land now in existence, would be close upon $27,370,000,000. If the measure of the cost of subsistence for a century has been thirty cents a day, and ten per cent., or three cents a day, has been set aside for the maintenance and increase of capital, we should now have a capital, aside from land, of $32,750,000,000. Where is it? On the basis of figures which I have given, or on an assumed cost of living of twenty-five to thirty cents per day, there is no capital in existence which would represent ten per cent., or three cents a day, saved for each unit of the population inhab-

iting the country one year, year by year, for the last century. Our present population is computed at about 60,000,000 ; if only three cents a day were now saved, the aggregate would be a little less than $670,000,000 worth in a year ; but the average production of each person cannot now be estimated at much less than double the average of the century ; therefore ten per cent. upon our present product, six cents per day or $21.90 per year, set aside, *per capita*, would come to $1,340,000,000. Can any one find any more ? I cannot. This would be $10\frac{72}{100}$ per cent. on an annual product valued at $12,500,000,000.

My critic and others imply that whatever is saved is secured by capitalists as a separate class, to the exclusion of others ; he alleges that "wage-receivers, on the whole, save little or nothing," the only apparent exception to this being the farmers, who, he says, are classed as wage-receivers in the census. I should be glad to have a citation of authority on this point. What proof is there that wage-receivers save little or nothing ? This statement is, in my judgment, wholly erroneous. I think that wage-receivers, small farmers, or those who are in the position of the employed rather than the employer, on moderate or small salaries, have saved at least one half of all the capital which has been saved. The other half may perhaps be traced to the capitalists or to the middle-men, in whose hands it is the most potent force in production ; but there are no data within my knowledge by which to prove this hypothesis. It may appear, however, to any close observer, that the distribution of wealth in this country differs very greatly from that of any other country ; it is much more widely and more evenly shared. It would be a most interesting subject of research of students in post-graduate courses of study.

If the propositions presented in this treatise can be sustained, it follows that the great and admitted disparity among the so-called working classes cannot be attributed to any large or increasing share of the product of the country being secured by capitalists and added to their own accumulations. By analyzing the rates of wages as well as their purchasing power, it is proved that since 1860, subject to temporary reduction in the purchasing power of wages during the period of war and paper money, the constant tendency of wages or earnings has been to rise both in rate and in purchasing power. By selecting the rates of wages given in Vol. XX. of the Census of the United States, compiled by Mr. Joseph D. Weeks, and assorting these rates by classes, the data being taken from over 100 establishments, I find that there is an increasing disparity among those who constitute the working classes in the strictest sense. Given a standard of the average consumption of food, fuel, and materials for clothing, rent being omitted because it varies so much in different parts of the country, it is apparent to any one who will devote sufficient time to a thorough inves-

tigation of the whole subject, that since 1865 the wages of foremen, overseers, boss-blacksmiths, specially skilled cabinet-makers, and the like, have advanced 108 per cent.; average mechanics, engineers, carpenters, machinists, and the like, 90 per cent.; factory operatives and all persons engaged in the ordinary arts of making stoves, boots, hats, cars, wagons, and the like, 78 per cent.; and common laborers only 66 per cent. Now, if these gains of the better class of workmen could be averaged in money and multiplied by the respective numbers of workmen in the several classes, I think it would appear without question that the aggregate of the larger share of the annual product secured by class 1 and class 2, as compared to classes 3 and 4, would come to a greater sum than that which is or can be added to capital by capitalists in any one year. Therefore it follows that, even if the share of the annual product which is now secured by capitalists to be added to their own capital, were evenly distributed among all who do the work, as great a disparity would continue to exist in the conditions of the working classes as exists at the present time. If it were unevenly distributed the disparity among the working classes would be greater than it is now. I think it follows of necessity, from this process of reasoning, that the only logical agitator of the present day among the so-called labor reformers is the communist who objects to the whole existing method of distribution. The tradeunionist is entirely illogical, his object being to secure to the particular trade to which he belongs a larger share of the annual product than now comes to the members of that trade. He can only accomplish this at the cost of some other trade. He cannot attain any large advance in the customary rate of compensation at this particular trade at the expense of capital, because capital will quit the art unless it can earn the average of profits in other occupations. Does it not follow, from whatever point of view the distribution of products is taken up, that the measure of subsistence, shelter, and luxury which a man may obtain must, in the long run, be measured by the service which he renders to the community as a whole? That is to say, the measure of each man's income or share of the annual product is determined by his own capacity to supply each demand of the community. The demand may be for rum or it may be for wholesome food; as to what the demand shall be each member of the community judges for himself. Each consumer pays his fellow workmen, his employer, or the capitalist to whose capital he gives life and force, not for their benefit, but because he decides for himself that in such purchases he can serve his own needs better than he could in any other way. A larger measure of comfort and luxury, shorter hours of work, better conditions of life are, therefore, elements of individual character to which legislation can only give more or less free play. Hence it follows that

most of the restrictive acts of public legislation and most of the restrictive by-laws of the private legislation of trade-unions, knights of labor, and the like, retard rather than promote the development of general comfort and welfare. In the last analysis each man fixes his own rate of wages by the measure of his individual capacity.

In conclusion,[1] let it be observed that if the accumulation not only of capital, but of all forms of wealth, reproductive or otherwise, during the last century has not exceeded three cents a day *per capita*, or ten per cent. upon a consumption measured at thirty cents per day, then the present value of all our national wealth, aside from the valuation put upon land, would be nearly three times the computed and probably large valuation which I have put upon the present annual product. I think it is a well-established fact that such an accumulation can be reached only in the richest and most prosperous State. I made an analysis of the wealth and product of Massachusetts in 1875, with

[1] The writer was led to prepare this article by a review of his book upon "The Distribution of Products," contributed by Mr. F. B. Hawley, to the *Quarterly Journal of Economics of Harvard University*. When writing this first article of the *Forum* series it did not occur to him that it would be the first of a series of ten ; hence the controversial form in which the subject is treated in this first number.

In the *Forum* for May, 1889, Mr. Hawley published a rejoinder under the title of "Edward Atkinson's Economic Theories," in which he again contests the accuracy of the computation made by me in respect to the annual product of 1880. He admits or accepts the substantial accuracy of the estimate of that part of the annual product which had been assigned by me as the sum of all wages, small salaries, or of the earnings of the small farmers, whom he classed with their hired men among those who earn little more than the cost of living, computed at $8,100,000,000. But Mr. Hawley believes the portion, or share, of the annual product assigned by myself to profits, or to rent or interest, or under whatever other title the share of the capitalist and of the man who is not in a strict sense a wage earner may be called, to be altogether too small.

He estimates the share falling to the owners of property as the measure of increase at thirty-nine hundred million dollars, in place of nine hundred million dollars computed by myself, a difference of three thousand million dollars. But Mr. Hawley does not undertake to estimate the value of the annual product itself ; he does not show where there was any material substance or product of 1880 to be added to my computation, although he fully accepts the principle that *the annual product or the product of each series of four seasons is or must be in the nature of things the source of all rents, profits, interests, wages, salaries, and earnings.* He says, in respect to this principle : "Nothing can be more clearly stated than this proposition, to the exact truth of which I cordially assent."

So far as I can comprehend the somewhat obscure methods of reasoning on the basis of which Mr. Hawley contests my estimates, it is on the ground that the "*services of wealth*" must be compensated in somewhat the measure which he has assigned thereto ; and he appears to hold, if I comprehend his position, that *services* of any kind for which compensation is made are to be classed as products. I confess to a great difficulty in the treatment of criticisms based on such a definition.

If the annual product of food, fuel, fibres, and fabrics of all kinds is the source of all wages, profits, etc., it must also be the source of the compensation for all services.

the aid and criticism of Carroll D. Wright, and we could then barely find a sum of wealth equal to three years' product in what is probably the richest State *per capita* in the Union.

If, then, we cannot find in existence any form of capital or wealth aside from the valuation of land, even including, as in the census estimates, public property which is of the common wealth—and my critics, who doubt my estimates or my distribution of the annual product should find an annual product of much greater value than my estimate,—then it would follow that *less* than ten per cent. has been or can be saved in a normal year to be applied to the maintenance and increase of capital. It would then be proved that want treads closer on the heels of plenty than even I have ventured to suggest.

In the last analysis it will appear that there is no such thing as fixed capital; there is nothing useful that is very old except the precious metals, and all life consists in the conversion of forces. The

Now if there was no additional product in the year 1880 to be found anywhere, equal to the sum assigned by Mr. Hawley as compensation for the services of wealth—and if the sum assigned by me from the product to wages, earnings, and salaries is correct, how can the service of wealth be compensated in any greater measure than by the remainder of the annual product at the measure which I have assigned, *if* my computation of the gross product is approximately correct?

I can only submit to Mr. Hawley, and those who concur with him in his criticisms of my estimates, that they must take these estimates for what they are worth. My computation was at least an honest attempt to solve a difficult problem, and it has been sustained by many subsequent computations. Any determination of the respective shares falling to capital and labor must be of little value until the subject of division, which is shared, to wit, *the annual product*, shall be proved to be greater than my computation. I fully admit the possibility of error, but I admit only a small margin for error.

I cannot agree, however, with Mr. Hawley in his conception that a *service* for which compensation is made is the same as a *product*, and should be classed with products. For instance, there are two classes of boot-blacks—one who will black my boots at the corner of the street at a charge of five cents, the other who will black my boots in the office of a hotel at a charge of ten cents; I pay either sum for the service as I may choose, and the boy who receives the money spends it in order to secure his share of the annual product—food, fuel, clothing, and shelter, on which he exists. This is one of the minor services, rendered by the relatively poor to the relatively rich, which Mr. Hawley treats. In this form of service the boot-black obtains his share of the annual product.

On the basis of Mr. Hawley's reasoning, however, the boot-black at the corner of the street who renders the service at five cents adds five cents to the annual product of the country, while the boot-black who renders the service in the office of the hotel at ten cents adds ten cents to the annual product, and, therefore, to the wealth which is to be divided. If this view is correct, it would be incumbent upon Mr. Hawley always to have his boots blacked in the hotel rather than at the corner of the street, as he will thereby add to the sum of services which, he says, must be classed as products, and he would thereby increase the annual product of the people of this country which is subject to division by ten cents' worth every time he has his boots blacked.

only capital which is of permanent value is immaterial, the experience of generations and the development of science. It is not given to material capital to save any one generation from the work of getting its own living; all that it can accomplish is to lighten the labor; the condition on which it attains its own income is, that it shall render full service for all that it receives and that it shall also render the general struggle for life less and less severe.

II.

MUST HUMANITY STARVE AT LAST?[1]

IN a review of my analysis of the distribution of products, in the *Quarterly Journal of Economics*, published for Harvard University, to which I made a rejoinder in part in the July number of the *Forum*, a much wider issue is raised than the mere question of the accuracy of my figures of distribution. Having treated some of the questions of fact which are at issue, a short treatise on the theory of wages may be timely.

My critic says: "Mr. Atkinson's results will not be so readily accepted when his very inadequate comprehension of the theories of Malthus and of Ricardo are called to mind." Again he says: "Among economists, especially among those who believe that statistical investigation can rarely be fruitful of any valuable results except in the hands of an investigator well grounded in economic theory, Mr. Atkinson's results will not be readily accepted." In this latter statement my critic presents an example of the danger to which the student of books is exposed in becoming a mere interpreter of the hypotheses of writers who may have failed to adopt a true inductive method, or who may not have been capable observers. Possibly Malthus and Ricardo may have applied great ability to false theories, by which a vast deal of mischief has been done, and it may not be consistent with true economic science to adopt their hypotheses.

It may be fully admitted that in the physical sciences some of the most brilliant results have been attained by deductive methods based on hypotheses or *a priori* concepts, but one may well distrust such methods in economic science. If the *a priori* concepts of Malthus and Ricardo are to be received as demonstrations of science, then of what use are all our efforts to prevent war, to stop famine, to alleviate poverty, or to save life from disease and pestilence? The more we accomplish for the present generations of men the more must posterity suffer, the more urgent must the struggle for life become, the more fearful must be the anarchy when the whole art of living can consist only in securing a sufficient subsistence for the few by any method of force or

[1] Reprinted from the *Forum*.

fraud, even at the cost of those who starve. In other words, if human passions and human nature lead to a disproportion of population in ratio to the means of subsistence, or if the mind of man applied as a factor to production cannot provide for this tendency of population to increase without resort either to violent or to purely artificial methods for checking it, then indeed does political economy become a "dismal science"; and may we not as well "eat and drink, for to-morrow we die," without taking any thought for the future of our race?

The fault of these hypotheses may be that their proponents had not taken cognizance of the human mind as a factor in material production. They were based on very narrow observation, and when they were put forth the science of statistics had little more than an elementary existence. One may well ask whether so acute a reasoner as either Malthus or Ricardo would have ventured to present either hypotheses, had either one conceived that within a short period ironstone would be converted into food for man and beast, by grinding into powder the phosphoric slag which is the waste product of the iron furnace under the basic process of making steel and using it as a fertilizer.

I have ventured to doubt the validity of the hypotheses of Malthus and Ricardo, whether I comprehended them or not, because they have not yet been sustained either by experience, by observation, or by statistics. The hypothesis of Malthus is very simple; it may be stated in a very few words, to wit: "*there is a tendency of the population of the world to increase faster than the means of subsistence.*" He even held that, while population might increase in a geometrical ratio, the means of subsistence might increase only in an arithmetical ratio. The hypothesis of Ricardo in respect to rent is also very simple; *he holds that economic rent is the margin of product of the better or the more accessible land over and above the returns which can be obtained from the poorer or more distant land, of which the product will only repay the cultivator for the cost of production.* Both these hypotheses rest upon the so-called law of diminishing returns from land, under which it is held that land may fail to yield an equal increment of product in ratio to equal increments of labor and capital expended upon it. If these hypotheses are pushed to their logical conclusion, and if there is no countervailing force which may ultimately bring land and life, or population and production to an equilibrium, does it not of necessity follow that all our humanitarian or philanthropic efforts may only make the final catastrophe so much the greater?

Admitting that a century or less is quite insufficient to warrant absolute inductions from experience, yet it may well be considered that there has not been a single decade, since the hypothesis of Malthus was first presented, in which the means of subsistence have not gained very rapidly upon the population of the world.

What are the facts with respect to the hypothesis regarding rent presented by Ricardo?

First. Experience proves that a given and limited area of land of high fertility, when cultivated for a series of years in a certain manner, will doubtless yield diminishing returns in proportion to the amount of labor and capital expended upon it. Such land may finally cease to yield a profit sufficient to pay the cost of cultivating it, in which case there can be no economic rent, and the land may for a time go out of cultivation, until the pressure of population reduces the standard of living to such an extent as again to compel its cultivation even for the most meagre returns. Such is the fact in regard to considerable areas of land in England to-day.

The present condition of Great Britain, under the system of large entailed estates which have been cultivated for a comparatively short historic period to the present time, mainly by tenant-farmers under leases which prevent free use, gives one example of the failure of land to yield adequate returns for the kind of labor and the method of directing the capital expended upon it. The failure may not happen for lack of abundant product, but because the product is of high cost and not suitable to present conditions. It does not follow that some other method would not yield adequate returns. Again, the present condition of many parts of the continent of Europe under the system of forced subdivision of land, by which the parcels have become too small for application of machinery to them, affords another example of the limited truth of the hypothesis of diminishing returns.

But both in Great Britain and on the Continent examples may be found of such exceptions to this supposed law as to invalidate the rule; while, again, the whole area in which this alleged rule apparently finds limited support constitutes so small a fraction of the surface of the earth as to make any deduction from the results obtained from it a mere exception, or else a result attained under such exceptional conditions as to be of no force whatever in sustaining a universal law supposed to cover general production.

Secondly. A given area of land of high fertility may be divided into parts by a line. On one side the cultivation may be carried on as in the foregoing examples, and the land may be finally exhausted, so far as that kind of cultivation is concerned. On the other side of the land of the same quality, treated by different men, or by a succession of men of a different or more intelligent type, or working under better institutions, may yield a larger and larger product through a period of at least a century. This has been proved in the history of this country. A fair example may perhaps be found in the relative conditions of the central part of the State of New York, as compared to some of the more fertile portions of the land of Lower

Canada inhabited by the French population. In the one case a steadily increasing product may be found in proportion to the capital and labor ; in the other, diminishing returns in ratio to population, accompanied by the forced migration of the French *habitans.*

Land of the same original quality, in the same field, divided only by a line, may, therefore, on the one hand, prove the law of diminishing returns and may be cited as an example of the entire loss of economic rent ; while on the other side of the line, under a better mode of treatment, a law of increasing returns and of higher rent may be proved. Of course there may or must be a final limit, and by admitting a final limit it may be held that the hypothesis of Malthus is so far justified ; perhaps, however, at so remote a period as not to be entitled to present consideration, if ever.

Thirdly. It may be asked, Where is the man who can yet measure the potential of an acre of land anywhere, or where is there an acre of land of which it may be positively affirmed that it cannot yield a larger product than it has ever yet done, in ratio to the labor and capital which may be put upon it ? Who can say that there is not some other limit to the increase of population than the violent methods which have heretofore been held to be the principal retarding forces in the case ? May it not be held that the *a priori* concepts of Malthus in regard to population and of Ricardo in respect to rent are, to say the least, not yet proven ? No man can venture to define the point at which the equilibrium between life and land or between population and production may be destroyed, or the utmost limit at which it can be maintained ; for the reason that no one can yet venture to limit the applications of science and invention to the subsistence of man. It is not necessary to assume that there must be artificial restrictions upon the increase of population. Just as the most grasping and penurious money-getter accumulates capital and applies it to uses benefiting the community, while he costs only what he himself consumes, working almost automatically and without any knowledge of his own functions or utility in the social order, and thus becoming a conservator of the force of capital, so may there be laws for the conservation of that form of force which constitutes human life of which science has as yet no comprehension. Land itself may be exhausted when treated as a mine ; it may be maintained when worked as a laboratory. Its potential in the increase of fertility and production, when used as a tool or instrument for diverting nitrogen and carbon from the atmosphere and converting these elements into food for man and beast, is as yet an unknown quantity.

In support of these views, and in answer to the question whether the soil is not to be considered as a laboratory rather than as a mine, I am permitted to give the following extract from a letter by Prof. W. O.

Atwater, than whom no one has done more excellent work in developing the resources of fertility, or in the application of science to the use of land as an instrument of production :

"It is right to consider the soil as a laboratory and not as a mine, responding in just proportion to the intelligence and work put upon it. Of course there is a limit to the possible production, but it transcends all ideas that ever occurred to people in Malthus' time. The soil is the place of growth of the plant and the source of part of its food. Given plenty of water and food and proper temperature, and the amount of produce in a given area is immense. Professor Nobbe, a German experimenter, raised a single plant of buckwheat eight feet high and bearing nearly eight hundred perfect seeds, and this not in sand at all, but in water containing proper plant-food. Similar results are obtained with other plants. Our common ideas of area and soil-product are based upon the experience in which the factors promised in future progress are left out of account. The possible production of a given area is far outside our usual calculations.

"The problem of the world's future supply is conditioned upon two things: one is energy, power for manufacture and transport of plant-food, and transport of water; the other is the supply of nitrogen. With the unmeasured energy of wind, flowing water, and tide, and the possibility of storage, transfer, and use of energy by electricity and other agencies, we may hope that the science of the future will provide the power. Late research makes an abundant nitrogen supply probable. Leaving out of account the question of present pecuniary cost and profit, the conditions of transport of plant-food, cultivation of soil, and water-supply for the maximum production are theoretically capable of being provided. Science and discovery have already found in the earth practically inexhaustible stores of all the ingredients of plant-food but carbon and nitrogen. The atmosphere supplies an abundance of carbon to plants from its constantly replenished store of carbonic acid. This reduces the problem of ultimate supply of plant-food to one of nitrogen supply. Four fifths of the air are nitrogen, but the question is whether this can be made available to plants. For a number of years the current doctrine has been that it cannot, but late experiments indicate that certain plants do have the power of assimilating atmospheric nitrogen in large quantities. Aside from investigations in this country (my own of which you already know), a number have lately been made in France, and particularly in Germany, which bring the most direct and convincing evidence that legumes, including, probably, clover, have this power of obtaining nitrogen from the air. It will interest you personally to know that we are just commencing a new series of experiments here on this subject, with pea, alfalfa, cow-pea, clover, maize, and other plants. . . . Viewed from this standpoint, the prospect for the future of the race is not one of Malthusian dreadfulness, but full of exalting inspiration."

The *a priori* objection to which the hypotheses of both Malthus and Ricardo are subjected in my own mind is, that they tend to promote a contest between labor and capital; to antagonism between the haves and the have-nots; to ultimate destruction rather than to the conservation of life; and they lead to the conclusion that the struggle for life must inevitably become more difficult and more violent, and must inevitably fail.

In all problems in what is called political economy, which are commonly regarded as relating wholly to the production and distribution of the material substances constituting wealth or necessary to

material existence, one is inevitably brought back to the immaterial or metaphysical. The mind of man when applied to the direction of natural forces is the principal agent in material production, in fact, the controlling element. Those who claim that labor is the source of all production are utterly misled because they do not admit this fundamental principle. May it not, therefore, be more consistent with the concepts of an enlightened faith of any type in which order is recognized in the universe, to present an hypothesis or *a priori* theory that, as the mental faculties of man are more developed and are more intelligently applied to the conversion of the forces of nature into material products, the general struggle for life will become less and not greater ?

War, pestilence, and famine have devastated the world and have diminished the means of subsistence, during the last two centuries, far more than they have rendered the subsistence of the remaining population, whose increase has been retarded by them, more easy and adequate. On the other hand, where peace and order have reigned production has been increased, and the interdependence of men has been more fully acknowledged. As it has become more and more fully admitted in political science that each man, each race, each state, each nation serves the other by exchange, the pressure of want has been diminished, and one can dimly foresee the time when the prophecy of the poet may become a living truth, when

> "Down the dark future, through long generations,
> The echoing sounds of war grow fainter and then cease."

Have the orthodox English economists since Adam Smith ever overcome the insular quality of their work, or sufficiently counted upon the mind of man as a factor in material production ? Perhaps these questions would occur only to one who has studied economic problems by the observation of the facts of life rather than in the treatises on which our economic reasoning has heretofore been based. Is it not desirable that more attention should be given to the method of Adam Smith than to the dogmas of Malthus, Ricardo, and Mill ? If so, then the facts which are now being gathered by statisticians, especially in this country, may hereafter serve to give a broad extension of the narrow and insular habits of thought which the students of political economy have derived mainly from English writers. Let it not be supposed for an instant that I assume that there can be an American system of political economy as distinguished from an English system. Such a conception would be utterly inconsistent with any true idea of science. Yet, is it not true that habits of thought are unconsciously controlled by the environment of the writer ? Witness the broad extension of the English commercial system and the very narrow and

limited view which still obtains in respect to the local institutions of Great Britain. Witness the incapacity of Parliament to conduct a centralized system of government, especially in respect to Ireland, while the members of Parliament appear to be equally incapable of grasping the idea of home rule and local self-government under the central sustaining power of a great nation.

On the other hand, have not the people of the United States developed the broadest system of mutual service and support in respect to their internal commerce and the conduct of their home affairs? home rule and local self-government being maintained in the strictest sense, backed by the whole power of the nation; while the ideas of the people as well as of their legislators are distinctly provincial and limited in all that relates to the great commerce among nations.

When the day dawns in which the English-speaking peoples of the world may become united under a system which shall give to every man the utmost liberty consistent with the rights of his fellow-men; when national prejudice is abated, and the whole great body moves onward in its effort to benefit the people of the world by mutual service, the word will then go forth to all other nations, Disarm or starve. The Statue of Liberty which stands at the mouth of the great harbor of our country may then, in truth, enlighten the world. This is the vision which lies back of the dry columns of figures, and which brings the imagination into play on the part of him who can read between their lines.

I venture to believe that although the province of statistical science has been held subordinate to that of political economy or political science, it may yet become of paramount importance to the development of either branch of study. Doubtful as statistics may be, much as they depend on the sincerity of purpose and integrity of him who compiles them, and easy as it is for them to become twisted and confused, even by the unconscious bias of the observer or compiler, they may yet become a necessary foundation for any true inductive method in political economy, and must, therefore, be placed on an even plane, to say the least, in the estimation of the student.

For this reason it might well be that travelling scholarships should be established in universities as prizes in the department of political economy, in order that wider and more accurate investigations may be entered upon, whereby the *a priori* concepts of most of the writers of the text-books may be tested, and may be either sustained or put aside, as they are found to be consistent or otherwise with the facts of human life. The real man can be observed; has the economic man, who would bring into action all the processes conceived by writers of the type of Ricardo and Mill, yet been discovered? Is he not also an hypothesis? It would, of course, be futile to attempt to do more than

to present the elements of this problem within the limits of a short essay; but it ought now to be observed that most of the causes of antagonism between labor and capital, as well as the basis of most of the undertakings of the socialist, the anarchist, and the communist, find their justification in one or the other of the hypotheses of Malthus or Ricardo.

The abstract nature of the concepts of political economy may perhaps be more fully comprehended by a consideration of the deplorable results which have ensued from the general adoption of false theories in respect to trade. The folly of the mercantile system attained its most pernicious result in the attempt of Great Britain to control the trade of the colonies of America for the supposed exclusive benefit of her own people. Had the "Wealth of Nations" been written fifty years earlier, and had it attained the influence in 1760 which it began to attain in 1824, under the lead of Huskisson, there might have been no violent separation of the colonies of America from the mother country.

The so-called "iron law of wages" developed by Lasalle and Carl Marx, under which it is assumed that the rate of wages will be kept down to the limits of a meagre subsistence, is accepted by the anarchists and communists of Europe and their few representatives in this country. It is an absolute fallacy except in dynastic states overburdened with armies and debts. The misconceptions of fact in respect to the progress from poverty, on the part of the great body of working people in this country, and the acceptance of Ricardo's theory of rent, lie at the foundation of the fallacious reasoning of Henry George respecting the private ownership of land; and so one might go on throughout the list of misconceptions in regard to abstract theories or hypotheses which have been the occasion of more wars and greater misery than all other causes of violence combined, not even excepting the conflict of creeds.

If the function of government were admitted to be to give each man an equal opportunity to make use of the benefits which science and invention place at his disposal, and to do, through the intervention of government, only such actual work as can be done by society in its corporate capacity better than individuals can do it for themselves, most of the obstructions which legislation has placed in the way of mutual service would soon be removed, and the true law of human progress would then develop itself. Wages would then increase to the maximum within the limit of a product attained under the most favorable conditions.

III.

PROGRESS FROM POVERTY.[1]

THE purpose of the present article is to bring once more into notice certain facts which the writer has given in other publications, which are not only wholly inconsistent with the hypotheses of Malthus and Ricardo, but which must be disproved by Henry George and other writers of his class, who attribute the admitted poverty that is to be found in the worst quarters of our great cities wholly to faults in the government and in the laws, before their empirical methods of abolishing poverty can be entitled to any serious consideration. In recent discussions these statements have been cited as authoritative alike by the advocates of free trade and of protection, of paper money, of the single gold standard, and of the limited coinage of silver. As yet no one has contested the substantial accuracy of the conclusions which I have drawn from these data. The only exception taken to them has been that they are partial and limited and have not covered as wide a field as they ought. In presenting them I have myself always said that they might be incomplete, and that their purpose was rather to give a direction to the line of future investigation than to present conclusions. That direction has been given in the establishment of the National Bureau of Labor Statistics, and in the resolutions which have been passed by Congress instructing its officers how to proceed in their inquiries. Of their sufficiency each student must judge for himself.

It has long been apparent that the circulation of a depreciated promise of the government, issued in time of war for the collection of a forced loan, as well as the pressure of the war itself in its effect upon prices, had vitiated all deductions by which the condition of men at one period as compared to another could be determined. No true comparison of conditions can be made in terms of money, when the money itself varies in value ; therefore some other standard must be adopted in order that just conclusions may be reached in regard to these relative conditions. The mere rate of wages, given in terms of money, has proved to be as fallacious a standard by which to measure

[1] Reprinted from the *Forum*.

the relative conditions of working people in this country during the last twenty-five years, as it now is when made use of for comparing the conditions of workmen in this country with those of other countries. The rate of wages in itself constitutes no standard whatever for the comparison of conditions, even when the same money standard is in force, because the cost of labor cannot be determined by a mere comparison of price or rate of wages. I have therefore endeavored to establish a multiple standard for the comparison of the relative conditions of workmen and capitalists in this country at different dates during the last twenty-five years. This multiple standard consists of equal quantities of the same kinds of food, fuel, and materials for clothing, corresponding to the average daily consumption of an adult workman in the Eastern or Middle States.

I first entered upon the investigation of the statistics of the consumption of food by quantity. I ascertained the average quantity and cost of each of the different elements of food consumed in the factory boarding-houses of New England and of the Middle States, such supplies being usually purchased with due economy and used with fair regard to preventing waste. Having established this food standard, measures were next taken to bring the subject to the attention of the Chief of the Bureau of Labor Statistics in Massachusetts, Commissioner Carroll D. Wright, and at a later period of the Chiefs of the Bureaus of other States. The result of these various investigations has been that the average ration or portion of food such as actually constitutes the daily supply of an average artisan, mechanic, or other workman, has been well established in all its elements. It varies a little in different parts of the country according to the relative conditions. This average daily ration was next submitted to Professor W. O. Atwater for analysis. The respective proportions of the nutrients, so-called, *i. e.*, of starch, fat, and protein or nitrogenous material, were found to be much above the normal standard of good subsistence. The elements of this average daily ration are given in a subsequent table.

I next computed the average annual consumption of the materials for clothing, of boots and shoes, and of fuel. Having reached a certain standard in yards and quantity, I multiplied this standard by the population of 1880, counting two children of ten years or under as one adult, and found that the result of this computation more than exhausted the entire product and import of textile fabrics and other necessities of life treated in that year. The proportion assigned would, however, be warranted by the conditions of life in the Northern and Middle States as compared to the Southern or extreme Western States.

I next attempted to establish a unit of rent or shelter, but the conditions in different parts of the country were found to be so variable as to make this attempt impracticable. It became apparent, however,

that the standard of rent or cost of the dwelling-places occupied by working people had varied since 1860 in substantially the same proportion as the cost of the materials for food, for fuel, and for clothing.

The proportions of these elements of life, namely, food, fuel, and materials for clothing, which are assigned to a day's or a year's supply in the subsequent table, corresponding to the average consumption in the Eastern and Middle States, are doubtless above the average consumption of the whole country, especially in respect to tea, coffee, and sugar ; but although such is the fact, and although the actual consumption of food, clothing, and fuel may not in any single case have corresponded identically with this multiple standard, yet it may be safely assumed that as the prices of the necessities of life which are included in this standard have varied, so have the prices of the actual quantities consumed also varied.

It may also be remarked that in the northern parts of this country the price paid for the materials for food amounts to about one half the annual expenditure in the family of an average workman ; in the family of the common laborer the price of food is more than one half the annual expenditure. If to the cost of food be added the price of fuel and materials for clothing, then the several elements included in the multiple standard correspond substantially to about seventy per cent. of the total cost of living in the family of an average workman. If it be admitted that as the cost to the workman of these necessities of life has varied, so has the cost or price of rent or shelter and sundries varied, we then have in this multiple standard a fair gauge by which to test the variation in the purchasing power of paper money as compared to specie at different periods, and also the purchasing power of a day's or a year's earnings in time of peace or war, or under the changing conditions which were first brought about by the depreciation of paper money and subsequently repeated during the long struggle for the restoration of the specie standard.

I had made great progress in providing data for this multiple standard before the pubtication of the twentieth volume of the United States Census on Prices and Wages, compiled by Mr. Joseph D. Weeks ; I was therefore in a position to make use of this volume and to check off the data contained in it. I could verify many of the tables from my own knowledge of the facts governing many of the establishments named therein. It is also plain to any one who is accustomed to the examination of statistics that very many of the returns in this volume are correct, while a few testify to want of care in their compilation. The latter may be readily set aside. I was also in a position to add to the data of this volume, which came down only to 1880, inclusive, corresponding figures for the years 1885 and 1886, derived of course from a much narrower circle of establishments.

In making selections from this volume for the comparison of the purchasing power of wages by the use of the multiple standard, I have selected arts or occupations which have been in substantially continuous operation during the whole period under consideration, that is, subject to very few stops or none. I am aware that the adverse comment on this method will be that during this period, since 1860, there has been greater variation in the supply of and demand for labor than at previous dates or periods of economic history. Such stupendous changes could not have occurred in a single generation without giving some support to this criticism. Space will not permit me to treat this branch of the subject; suffice it to say that my own observation has led me to the conclusion that in each period of commercial panic, namely, 1866, 1873, and for a few years of alleged depression subsequent thereto, as well as in the recent period of alleged depression, from 1881 to 1886, the number of the unemployed has been very much exaggerated. In my judgment, compulsory idleness has hardly existed at all, except in connection with the alternate periods of cessation and of great activity in the construction of railways, and has mainly affected the workmen employed in that branch of industry, reacting of course in a limited measure upon others.

It may also be apparent from the data that I have submitted, that this period of steady reduction in prices since the end of the Civil War has been in fact a period of the greatest progress in material welfare ever witnessed in this or in any other country. The temporary difficulties, local distress, and congestion of labor, limited mainly to some of our great cities, have been mere incidents in the adjustment of society to new conditions of an assured abundance such as were never before achieved. It has happened that there has been temporary want in the midst of general plenty and welfare; but this want has been limited to a very few conspicuous points, where it has perhaps attracted more attention than its porportion called for.

With this explanation I submit the subsequent diagram or object lesson (page 170) in illustration of the various changes which have occurred in the relations of labor and capital since 1860, first giving the elements of the multiple standard.

In 1887 prices fell a little lower than in 1886, and in 1888 they have begun to rise in some small measure, while there has been no substantial variation in general wages since 1885. A decline has occurred in a few arts, mainly those which are dependent on railway construction, but there has been a moderate advance, or tendency to advance, in other directions. It is commonly assumed, and may be admitted, that wages in agriculture exert a powerful influence upon those in other departments, and that farm labor may be taken as a standard. In the last official report of the Department of Agriculture, No. 51, May,

1888, Mr. J. R. Dodge, the Statistician of the Department, says that "the result of the May investigation of the wages of farm labor is almost identical with that of three years ago; the changes are very slight, though local differences occur, the averages of several sections or groups of States being changed very little."

MULTIPLE STANDARD.

TABLE A.—A SINGLE DAY'S RATION, WITH ITS AVERAGE COST IN 1880, 1881, AND 1882.

TABLE B.—400 RATIONS, OR 1 YEAR'S SUPPLY FOR 1 ADULT WITH 35 EXTRA RATIONS.

It is assumed that the prices of meat and fish (fresh or salt) and poultry, will have varied substantially with the variations in salt and smoked meats, and as the prices of the latter are more uniformly quoted, the prices used in making up the general standard are those given for salt and smoked meats. In the same way the price of potatoes has been taken as a standard for the variation in the price of all green vegetable food or roots.

A.—One Ration per Day.		B.—400 Rations.
½ to 1 lb. meat, poultry or fish, varying according to kind and quality, costing on an average.	10	200 lbs. corned beef. 100 lbs. salt pork. 100 lbs. smoked ham.
½ to ⅔ pint milk..... 1 to 1½ oz. butter..... ½ to ¾ oz. cheese.....	5	100 quarts milk. 30 lbs. butter. 20 lbs. cheese.
1 egg every other day	½	17 doz. eggs.
¾ to 1 lb. bread.....	2½	1 barrel flour. ½ barrel corn meal.
Vegetables and roots.....	2 @ 2½	20 bushels potatoes.
Sugar and syrup.....	2	80 lbs. sugar.
Tea and coffee.....	1	4 lbs. tea. 8 lbs coffee.
Salt, spice, fruit, ice, and sundries	1½ @ 2	$6 worth assumed at all dates.
	25 cts.	$100

STANDARD PORTION OF CLOTH FOR ONE YEAR:

10 yards medium brown cotton.
10 " standard gingham.
10 " 36. in. bleached shirting.
20 " printed calico.
10 " 4-oz woolen flannel, or worsted dress goods.
5 ' 16-oz. cassimere.
5 " Kentucky jean, satinet, or light cassimere.

STANDARD OF BOOTS AND SHOES FOR ONE YEAR:

2 pairs men's heavy boots.

STANDARD OF FUEL FOR ONE YEAR:

1½ tons anthracite coal or its equivalent in bituminous coal or wood.

In establishing the average cost of a day's portion of the above, the prices given in Vol. XX. of the U. S. Census, in 10 shops east and 10 shops west of Buffalo, 1860–1880, have been averaged for each year designated. These prices have been verified from other sources of information. Prices of dry goods have been verified fully. Prices for 1885 and '86 have been derived from typical establishments and from market reports. The average prices of 1885 and '86 were probably less than the estimate used.

The following table presents the sectional averages from 1866 to 1888. It will be observed that from 1866 to 1879 wages were rated in depreciated paper money gradually approaching the specie standard, and that while wages were nominally less in rate after resumption, their purchasing power was much greater. See subsequent table :

Sections.	1888.	1885.	1882.	1879.	1875.	1869.	1866.
Eastern States.....	$26.03	$25.30	$26.61	$20.21	$28.96	$32.08	$33.30
Middle States.....	23.11	23.19	22.24	19.69	26.02	28.02	30.07
Southern States.....	14.54	14.27	15.30	13.31	16.22	17.21	16.00
Western States.....	22.22	22.26	23.63	20.38	23.60	27.01	28.91
California.....	38.08	38.75	38.25	41.00	44.50	46.38	35.75
Average U. S.....	18.24	17.97	18.94	16.42	19.87		
Average Eastern, Middle, and Western States, excluding Southern States and California.....	23.79	23.58	24.16	20.09	26.19	29.04	30.76

These are the wages per month of farm laborers hired by the year without board, the workmen boarding themselves. The average of 1888 of the whole country, with board, is $12.36. The day wages in harvest time in 1888, without board, averaged $1.38 ; with board, $1.02. The day wages of ordinary farm labor other than harvest hands averaged, without board, $0.92 ; with board, $0.67. The average of the whole country is, however, somewhat delusive, being greatly affected by the low rates of wages prevailing in the Southern States, especially among the negro population. If we take two States as examples of agricultural communities devoted mainly to wheat and corn, for instance Minnesota and Iowa, we find the average wages per month of hands hired by the year in those States to have been, without board, in 1885, $25.40 ; in 1888, $25.67 ; with board, in 1885, $16.87 ; in 1888, $17.41.

In harvest time the day wages were as follows :

Minnesota, in 1885, $2.29.
" " 1888, 2.20.
Iowa, . . " 1885, 2.00.
" " 1888, 1.81.

The urgency of the demand for labor in harvesting wheat is greatest in Minnesota, whereas in Iowa maize or Indian corn is the chief crop, on which the demand at harvest time is not so urgent. The day wages of ordinary farm labor in Minnesota and Iowa, with board, were practically one dollar a day both in 1885 and 1888, and from $1.25 to $1.30 without board.

I now submit the rates of wages in the manufacturing and mechanic arts, compiled from the twentieth volume of the Census and from data gathered by myself for 1885 and 1886.

CLASS I.—SPECIALLY SKILLED MEN : FOREMEN, OVERSEERS, BOSS BLACKSMITHS, CARPENTERS, ETC. CUSTOMARILY EARNING $3.00 TO $5.00 PER DAY AT THE PRESENT TIME.

Year.	Average per Day.	Average per Year. 300 days.
1860	$2.45	$735.00
1865	3.57	1071.00
1870	4.34	1302.00
1875	4.14	1242.00
1880	4.14	1242.00
1885 } 1886 }	Probably higher than in 1880.	

CLASS II.— AVERAGE MECHANICS, ENGINEERS, BLACKSMITHS, CARPENTERS, MACHINISTS, AND PAINTERS CONNECTED WITH ESTABLISHMENTS REPORTED IN VOL. XX. OF THE CENSUS, 1865 TO 1880, INCLUSIVE.

Year.	Average per Day.	Average per Year.
1860	$1.56	$468.00
1865	2.34	702.00
1870	2.43	747.00
1875	2.29	687.00
1880	2.26	678.00
1885 } 1886 }	2.40	720.00

CLASS III.—ALL THE OPERATIVES, EXCEPT FOREMEN AND OVERSEERS, IN 100 ESTABLISHMENTS REPORTING THE WAGES OF THEIR WORKING PEOPLE UNDER MORE THAN 1200 SEPARATE TITLES: BRICKS, MARBLE, FURNITURE, AGRICULTURAL IMPLEMENTS, TIN-WARE, STOVES, BOOTS, HATS, CARS, WAGONS, FLOUR AND SAW MILLS, IRON, PAPER, AND TEXTILES, EMPLOYING MEN, WOMEN, AND CHILDREN, FROM 20 TO 2000 IN EACH.

Year.	Average per Day.	Average per Year.
1860	$1.33	$399.00
1865	1.88	564.00
1870	1.94	582.00
1875	1.77	531.00
1880	1.71	513.00
1885 } 1886 }	1.80	540.00

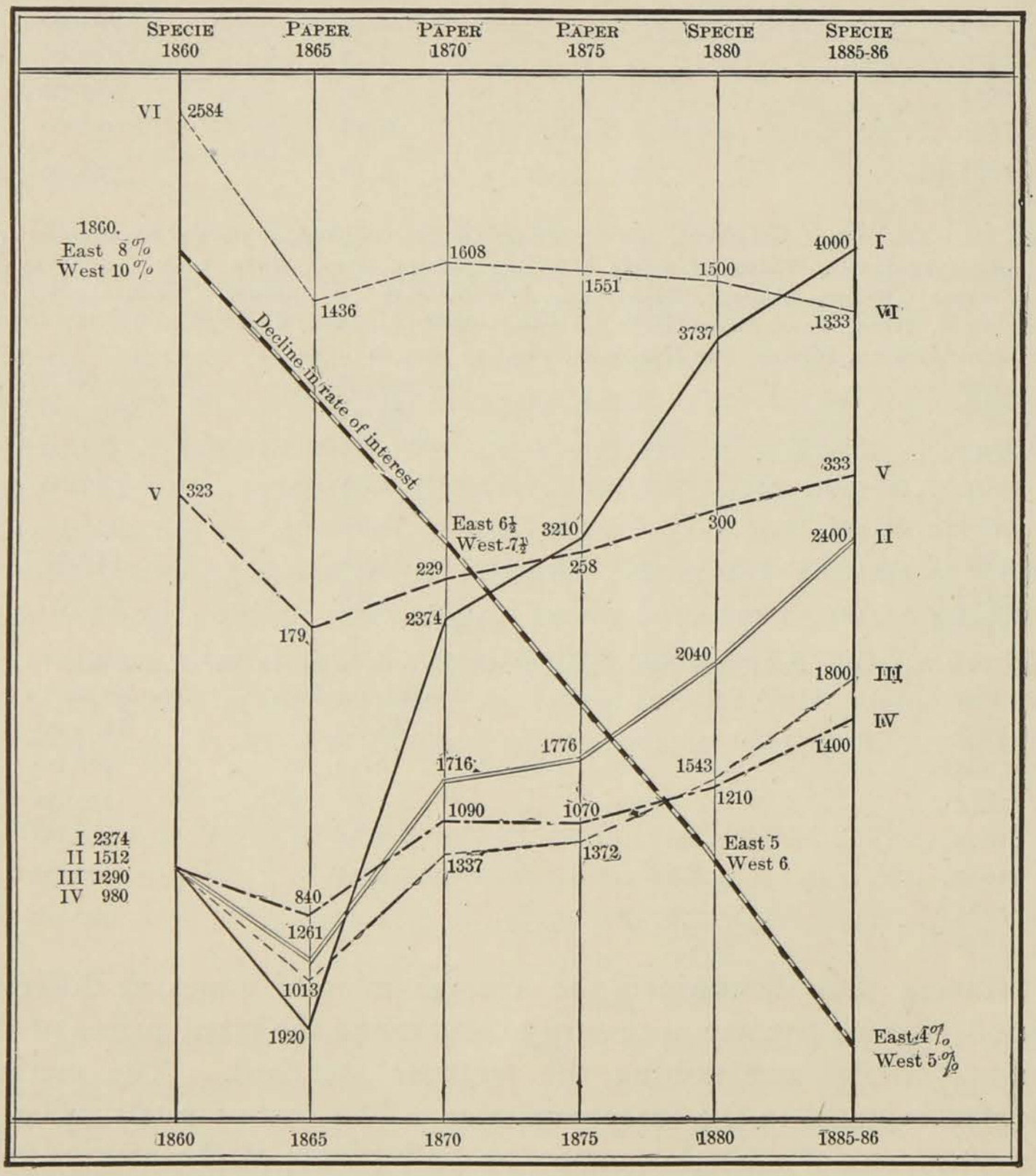
CLASS IV.—LABORERS, COMPUTED SEPARATELY, CONNECTED WITH ABOVE ESTABLISHMENTS.

Year.	Average per Day.	Average per Year.
1860	$1.01	$303.00
1865	1.56	468.00
1870	1.58	474.00
1875	1.38	414.00
1880	1.34	402.00
1885 } 1886 }	1.40	420.00

Having thus determined the average rates of wages at different periods, it next became necessary to determine the retail prices of the various articles constituting the multiple standard. The method adopted is stated in the foregoing table. The cost of retail price to the consumers of a single portion or daily supply of the articles constituting this multiple standard, computed for equal quantities of the same kinds of food, fuel, and materials for clothing, has been as follows, the average of each year being given as stated from twenty returns, the average computed on twelve months' prices, month by month :

1860	$30\frac{95}{100}$	cents each portion.
1865	$55\frac{69}{100}$	" " "
1870	$43\frac{53}{100}$	" " "
1875	$38\frac{69}{100}$	" " "
1880	$33\frac{24}{100}$	" " "
1885 and 1886	30	" " "

For the latter years, 1885 and 1886, having less adequate data than for the preceding years, I have adopted a maximum of thirty cents. In point of fact the average price combined of the respective articles was less than this, and probably did not exceed twenty-eight cents. In order that the true relation of these figures may be comprehended the accompanying diagram is submitted.



In this diagram the classes of workmen are indicated by the Roman numerals I., II., III., and IV. The number of portions which each year's earnings would buy is given on the vertical lines under the respective dates. The relative progress of each class of workmen is

indicated by the lines projected from left to right, I., II., III., and IV. The line indicated by the numeral V. gives the purchasing power of $100 of lawful money at the several dates in portions of the multiple standard. The line which passes diagonally from left to right, marked "Decline in rate of interest," indicates the loss in the purchasing power of capital. The line at the top, indicated by the Roman numerals VI., indicates the purchasing power of the *income* yielded by an investment of $10,000, at the respective dates. Let us now glance at the relative conditions of labor and capital disclosed by this diagram.

The gain in the purchasing power of wages, measured by the multiple standard of food, fuel, and cloth, has been from 1860, as compared to 1885 and 1886, as follows :

Class I.....	70 per cent.	Class III.....	40 per cent.
Class II.....	59 per cent.	Class IV.....	43 per cent.

The gain in 1885 and 1886, as compared to the year 1865, when paper money and war had exerted their utmost effect, was as follows :

Class I.....	108 per cent.	Class III.....	78 per cent.
Class II.....	90 per cent.	Class IV.....	67 per cent.

The line indicated by the numeral V. gives the purchasing power of one hundred dollars of lawful money, in specie in 1860, in depreciated paper currency up to 1879, and again in specie in 1880, 1885, and 1886. In 1860 one hundred dollars of coin would buy 323 portions of food, fuel, and materials for clothing. In 1865 one hundred nominal dollars of depreciated paper would purchase only 179 portions, a loss of 44 per cent. in the power of the money, which was partly compensated to workmen by a moderate advance in the rate of wages. In 1885 and 1886, one hundred dollars of coin would purchase 333 portions at the estimate assumed by me, 30 cents per portion, but in fact, nearer 350 portions of the same kinds and quantities of the necessaries of life at a somewhat less price, say at 28 cents. The line sloping diagonally from left to right shows the reduction in the earning power of capital as demonstrated by the fall in the rate of interest on the best classes of securities.

From 1848 to 1860 the writer kept a record of transactions by himself or by his associates in manufacturing corporations. The average rate of discount paid in the open market by the corporations enjoying the highest credit during this period was eight per cent., subject to very considerable fluctuations. From 1860 to 1869, inclusive, the rates of discount varied greatly with the circumstances of each case. The war and the continued issue of legal-tender notes rendered any standard of little moment. Railway corporations issued bonds at long dates, at rates of interest from 7 to 8 per

cent., but there was little recourse to credit in ordinary transactions. Commercial paper wholly disappeared and all traffic in goods assumed the nature of barter, no one holding money longer than was necessary. In 1870 the slow restoration of specie payment began. Up to 1873, the year of panic, the rate of interest on the best manufacturing notes was on the average six and one half per cent.

After the panic of 1873 ended, up to the 1st of January, 1879, five per cent. was the average rate. Since the restoration of the specie standard at the latter date, down to the present time, the fluctuations in the rate of discount on the very best commercial notes have been from 3 to 5 per cent.; by the actual record of a broker doing a very large business, they have averaged 4 per cent. on 6 months' paper in this section of the East.

By the kindness of Mr. Lyman J. Gage, of Chicago, I have obtained the rates of discount on commercial paper at that point. They are about the same in their proportion, having been reduced from an average of 10 per cent. or over, to an average of 5 per cent. or less, between the dates 1860 and 1886. On Western farm mortgages the change has been much greater. Twenty-five years ago rates as high as 25 per cent. were paid on mortgages of Western land, on what has proved to be excellent security. The rate now charged is seven per cent. and even less.

In order to determine the actual earning power of capital safely invested, it becomes necessary to combine the several factors: first, rate of interest; secondly, income of a given sum at that rate; thirdly, purchasing power in portions of the products included in the multiple standard. Assuming $10,000 invested, yielding the average rates of interest given above, we get the following results in the income and purchasing power:

1860	Income	$800	spent at	$30\frac{95}{100}$	cents	per	portion....	2584	portions.
1865	"	$800	"	" $55\frac{69}{100}$	"	"	....	1436	"
1870	"	$700	"	" $43\frac{53}{100}$	"	"	....	1603	"
1875	"	$600	"	" $38\frac{69}{100}$	"	"	....	1551	"
1880	"	$500	"	" $33\frac{24}{100}$	"	"	....	1500	"
1885–86	"	$400	"	" 30	"	"	....	1333	"

I have chosen Eastern rates rather than Western. In 1865 rates fluctuated greatly, but I assume no average change from 1860.

If capital could only secure by its income one half as many portions of food, fuel, and clothing in 1885 and 1886 as in 1860, and if in the meantime the productive power of labor had become one third more effective, which is a moderate estimate, does it not follow that labor now secures the service of capital on better terms than ever before? I submit this problem in economic mathematics to the officers of the Anti-Poverty Society.

It is because these facts are consciously or unconsciously comprehended, that the agitation of what is called the labor question affects but a small fraction or fringe of the working population, and that the special efforts of the leaders to change the relations of workmen and employers last so short a time and have such slight results. On the other hand, the more the workmen organize and discuss these problems, the more fully will the true relations of labor and capital become defined.

Now, while I cannot claim positive accuracy for these formulæ by which I have attempted to present the problem of distribution, I can feel well assured that the margins for error would balance each other, and that even if the figures are not absolutely true, the curves by which the relative condition of laborers and capitalists are indicated are so near to absolute truth as to make any error in detail of no appreciable effect upon the general result. May it not therefore be held that, in a free and substantially homogeneous country like the United States, society adapts itself to whatever conditions may be brought into effect by war, by paper money, or by fiscal legislation?

In order that society in a broad sense may exist, the division of labor and the exchange of product for product or of service for service is an absolute necessity. In the distribution of products, in which the exchange of service mainly consists, there may be more or less friction. When the standard of value or money of the country is tampered with, there will be a greater margin of profit secured by capital as against labor, in order that capital may insure itself against loss from the depreciation of the money in which it is rated. Yet good or bad as the money may be, or costly, unscientific, and ill-adjudged as the system of taxation may be, the discoveries of science and the labor-saving inventions applied to productive industry bring forth or produce, if they do not create, a huge abundance where scarcity had been the rule. Under the higher law which governs society, the direction of which can be but little changed by legislative interference, the benefit of this abundance is ultimately distributed, to the end that those who do the work of production and who are classed as working men and working women, secure to their own use an increasing share of a constantly increasing product. This product is divided among themselves in the exact proportion to which their relative capacity and ability entitle them. On the other hand, the owners of capital, or those who direct its force, secure to their use or enjoyment a diminishing share of this same constantly increasing product. Yet such has been the enormous gain of the last twenty-five years by the application of numerous inventions, that this smaller share of a vastly increasing product represents at this time a larger aggregate of wealth than was ever attained by any people of any country at any previous period of the history of the world.

The prime factor in the progress of the people of the United States, both in personal wealth and in general welfare, has been the development of the railway system. The service of the railways has continued to increase with great rapidity during the last two years, while the price of that service continues to be reduced. The twenty-six great systems of railway which centre in Chicago from east and west received in the last four years a little less than $640,000,000 for moving food, fuel, materials for shelter, and clothing, at the rate of less than a cent (0.854c.) a ton a mile. The charge for the service of these same railways from 1866 to 1873 averaged 2.315 ; the reduction in the rate of the last four years has been 1.461 cents a ton a mile. Had the traffic for these four years been charged this difference, or been charged what was considered a reasonable rate in the former period, the cost would have been $1,091,000,000 more than it actually was. The service of these trunk lines constitutes thirty-five per cent. of the whole railway service of the country ; the reduction in the railway charge on all lines has been as great or greater than on these (in all more than $3,200,000,000) for the last four years. While the mass of the people have thus gained in the aggregate more than $800,000,000 a year in the cost of distribution in recent years as compared to the period previously named, the construction and operation of the railways have been the source of many of the phenomenal fortunes of recent years. Of some of these fortunes it may be truly said that every dollar which has been gained by their owners is but a token of the service which they have rendered to their fellow-men ; of others it may be as truly said that each dollar of their gains is but a token of theft, fraud, and corruption. It may be that some of the most conspicuous representative men in the railway system, having corrupted the judge of a high court, are now in the position of outlaws, incapable of being trusted, and subject only to the execration of their fellow-men ; yet good or bad as may have been the origin of these great fortunes, the railways themselves, under the higher law which controls all the exchanges of men, and in spite of injudicious and restrictive legislation, continue to do their work with ever-increasing benefit to those who consume the products which are moved upon them.

I have thus endeavored to show how the great economic forces which have so recently come into action are steadily working out a greater equality in the distribution of the abundant product which they have brought into existence ; yet great as this progress is, it doth not yet appear what it shall be even in the near future. A wholesome discontent now pervades all classes of the community, from which true progress will be evolved in spite of the obstructions of the anarchist and the socialist and the empirical devices of economic quacks and agitators.

Steam and electricity have profoundly changed all the relations of men. The old order of personal intercourse between master and workman is gone. The small self-contained community in which there were none very rich and none very poor has almost disappeared. The new forms of society are not yet shaped or moulded. The one thing most needed now is that the rich men shall know how the workmen live, and the workmen shall know how the rich men work.

IV.

THE PROGRESS OF THE NATION.[1]

IN the three previous articles in the *Forum* I have endeavored to present facts which prove :

First. How small a proportion of each year's annual product is or can be added to the capital of the country ; not exceeding ten per cent. in a normal year.

Secondly. How rapidly this annual product has been increased in recent years both in quantity and in gross value, accompanied by a wider and cheaper distribution, resulting in a constant advance in the standard of common welfare and of common comfort.

Thirdly. I have given the *data* tending to prove that although the additions to capital or wealth constitute a diminishing share of an increasing product, yet such has been the rapidity in the increase of this gross product as to have brought the accumulated wealth of this country at the present time to an amount greater in proportion to population than it ever was before, small in proportion to the total product as the annual increment of added capital may be.

Fourthly. From these facts I have deduced proofs of the proposition, that as capital becomes more effective it secures to itself either in the form of rent, interest, or profit, a lessening proportion of the increased annual product ; or, to put the case in another form, as capital becomes more abundant, as well as more effective, it is placed at, or worked in, the service of labor for a lower rate of compensation, or for a diminishing share of the joint product of labor and capital.

Fifthly. As labor becomes more skilful and therefore more effective, and is at the same time more intelligently directed in its application to production, workmen secure to themselves an increasing share of a larger and larger product ; or, in other words, workmen attain larger earnings by their ability to make goods or to perform services of any kind at a constantly diminishing cost. This gain in efficiency and therefore in earning power, is attained by workmen in just proportion to the development of the individual capacity of each man or woman. The condition on which individual capacity leads to personal welfare

[1] Reprinted from the *Forum*.

is, of necessity, that all men and adult women shall retain their personal control over their own time and their own work. If they are restricted in making their personal agreements or bargains either by State laws limiting the freedom of contract or by the by-laws of associations in disposing of their time, or if they are restricted in the personal control of their own methods of work, the earnings of the most skilful may be reduced to the average of the least capable.

It also begins to be apparent that since the wage fund is that part of the annual product, or its value in money, over and above the lessening proportion which may and must be devoted to the remuneration of capital or to taxation, the power of the workman may be said to grow by what it feeds upon. In proportion as the workman raises his standard of comfort and welfare, he develops in the very mental conception of and in the desire for that higher standard, an increasing power to attain it; thus his increasing share of an increasing product becomes the base for the attainment of a yet greater increase.

It has been well said that the true measure of civilization consists not so much in the standard of living which is actually attained by common laborers, as in the standard which is intelligently set up by them as the mark of their attainment. The truer the standard aimed at, the greater will be the power developed to secure it. Our mother earth stands ready to yield an unmeasured abundance of the means for material welfare, and will respond to productive labor in exact proportion to the intelligence with which the work is directed; therefore with the development of the mental as well as the manual or mechanical capacity, higher earnings becomes the correlative of a reduced cost of production. For instance: there is almost an exact correspondence between the supply of food and the power of doing the work by which the food is supplied. The Western prairies yield more meat and bread than the people of this country can possibly consume. The power of the railways to distribute this food is in excess of the quantity waiting to be distributed. Let these two forces or instrumentalities of production and distribution be freely developed according to the opportunity, and it will follow of necessity that each person will obtain the largest supply of food at the least cost. But if there should arise a prejudice against the railway managers such as to lead to obstructive interference at the demand of the majority of voters, then it must follow that the cost of distribution will be increased, the stimulus to production will be diminished, and the supply of food will be proportionately cut off until intelligent methods shall take the place of ignorant prejudice.

Again: a large part of the labor of Europe is rightly named "pauper labor." It is under-fed; it is ineffectual and costly because it is under-fed; the one condition is a complement of the other. Why is it under-fed? It is not because there is not land enough in Europe to

sustain every inhabitant with a full supply of food. The reason is quite different. The masses of Europe are too ignorant to throw off the burden of dynasties and standing armies and navies ; they permit the supply of food to be obstructed, and also permit so large a part of that which is produced to be devoted to the destructive purposes either of preparation for war or of active war, that what is left will not suffice for either adequate nutrition or for the comfort or the welfare of the workman ; neither will it suffice to enable him to do the most effective work; therefore he tends to become a pauper. It is not, however, the purpose of the writer to deal with these broader aspects of this question. It is his present purpose to show that if the lives of either rich or poor in this country are still ignoble, it is not for want of the means for a better life. We shall hear less of classes among men, and we shall not be obliged to sort them into classes, when the true purpose of living is better comprehended than it is now by rich and poor alike.

It is necessary to true welfare that the mental capacity and power of direction of the capitalist or his agent shall be recognized as a prime factor in production, especially by those who attribute abundance to the mere application of mechanical or manual labor to the work. There are admitted evils in the present age of machinery which are brought about by the extreme subdivision of labor, even though these processes are absolutely necessary to the production of that abundance without which the present general standard of living could not be set up even as the mark of future attainment. Yet out of this abundance even the dream of the eight-hour agitator may ultimately become a reality, but this attainment will be near at hand only when the workmen themselves comprehend that leisure is secured through liberty and not by way of restriction. This is only the first century of commerce in any true sense, and the bearing of steam and electricity upon civilization is as yet but dimly apparent ; their effect in shortening the necessary hours of work and in alleviating the adverse conditions under which so many common laborers now merely exist, has hardly begun.

It is admitted that, co-incidently with the great progress from poverty which has been brought about by the very rapid application of invention to production and distribution, the conditions under which the work of the country is carried on have been profoundly changed ; there has therefore been at times great difficulty on the part of unskilled laborers in finding steady occupation, while there has also been more or less difficulty in adjusting themselves to new conditions on the part of persons whose occupations, requiring special skill and aptitude, have been done away with wholly or in part by the use of machinery. These difficulties have, however, been exceptional ; the general influence of all the changes referred to has been in the direction of lower prices, small profits proportionately to each transaction, accompanied by

higher wages to those who do the primary work of production and distribution.

As the margin of profit has diminished, a higher order of intelligence, a much closer method of business, and a more strict application of science have been called for in all large undertakings. Therefore, while the earnings of workmen have increased, the earnings of those who have been charged with the direction and application of capital have also increased, possibly even in inverse proportion to the lessening ratio of profit on which the remuneration of capital depends, while mere possession of capital has become less and less remunerative to the owner. Thus the work of the director or administrator of capital, whether its owner or agent, has assumed a position of supreme importance.

It may also be observed, that while great fortunes, even those which have been gained by theft and fraud or by gambling in the stock market with loaded dice and marked cards, have become more conspicuous, they yet bear in the aggregate a lessening proportion to the total savings of the community. It may not be a subject capable of absolute proof, but it may be safely held that the wealth of the country is more widely distributed than ever before. In respect to distribution by fraud and gambling it is also to be remarked, that no one need trust or deal with an outlaw who has corrupted the courts of the country, unless he chooses to do so, and that no lambs will be shorn who do not offer their own fleeces to the wolves.

Again it may be remarked, that as the margin of profit diminishes, the so-called system of co-operation or profit-sharing becomes more impracticable, and also less desirable as a mode of distribution. Co-operative distribution has had some success in Great Britain, where a credit system has long ruled even in the retail traffic of towns and cities, but it has had little success in this country, where the principle of large sales at small profits, for cash or its equivalent, has long been in operation in the great retail shops.

A glance over the figures of production and distribution will perhaps remove doubts as to these propositions, and may help in their comprehension. The great gain and the increase in consumption in recent years have been chiefly in the consumption of articles which are of common use by the great mass of the people, rather than in luxuries or articles of voluntary use. (Here we set aside for separate treatment the consumption of spirits, wines, and fermented liquors.) It is because so large a part of the industry of this country is applied to the production and distribution of the necessities and comforts of life that they become the subjects of paramount importance in the study of questions that are now at issue ; this fact also renders the alleged tendency to luxurious consumption and waste relatively unimportant.

If we take as a starting-point the year 1870, when the armies on both sides of the civil conflict had become finally absorbed in the pursuits of peace, when the difficulties of the reconstruction period were mainly ended, and when the revolution not only of institutions but of ideas in the Southern States was so nearly completed that the whole country, as a unit, had entered upon an era of great material progress, we find that while the population increased from 1870 to 1887 only 55 per cent., the product of hay, which is synonymous with meat and the products of the dairy, increased from 70 to 80 per cent.; the product of grain, 85 per cent.; the product of cotton, 112 per cent.; the consumption of wool, domestic and foreign, nearly 100 per cent.; the product of pig-iron, 285 per cent; the construction of railways, 223 per cent.; and so on in varying proportions, all in excess of population, with regard to all the necessities and comforts of life.

If the consumption of liquors be considered separately, the facts show that the consumption of champagne, expensive wine, brandy, and the like, is very small compared to that of beer and whiskey, or the drink of the every-day working people. The most complete and accurate estimate of the consumption of liquors has been made by Mr. F. N. Barrett, editor of the *American Grocer*, whose conclusion is that on the average, from 1883 to 1887, the consumption of spirits, beer, and wine cost the consumers a little less than $768,000,000 a year. Of this consumption, domestic spirits, domestic beer, and domestic wine amounted to $734,000,000, leaving only the remainder, $34,000,000, to cover foreign wines, spirits, and beer; less than five per cent.

It thus appears that the increasing supply and consumption of commodities of domestic and foreign origin have consisted mainly of those articles which enter into general consumption, and which are either the common necessities or the comforts of life; or, if spirits and beer may be called luxuries, the luxuries of the common people.

It follows of necessity that since there has been no accumulation of stock, and since all that has been produced or imported in exchange for the export of the domestic products has been consumed, the general consumption of the mass of the people must have been greater, more adequate, and more satisfactory than ever before. Yet in this period from 1865 to the present time, we have had several commercial crises, panics, and periods of alleged depression in trade and industry, recurring oftener than in former times, accompanied by want of employment for a considerable number of workmen, especially common laborers, who feel the depression first and who are least capable of waiting for work on the proceeds of which they may subsist.

It may also be observed that while the general tendency of prices throughout this period has been downward, there have been sharp and not infrequent upward fluctuations, or, according to the new

term, there has been a "boom" in trade and commerce. These new and varying conditions lead once more to the study of prices or to the determination of the very obscure question, What makes the price of goods? They also bring up the question, What is the actual connection between price and money, the latter considered quantitatively and qualitatively? Whether or not these problems will ever be determined in such a scientific way as to make the solution a part of the common knowledge or of the common-sense of the community, is a matter that cannot yet be decided. The utmost that can now be done is to treat, perhaps somewhat empirically, some of the forces that affect prices directly or indirectly by their influence upon the exchange of products, on which the salable value depends.

Among the major forces promoting abundance and tending to increase the value of the annual product and thereby of the wage and profit fund, may be named improvements in the methods of banking, the telegraph, the extension of the railway and steamship service, with a reduction in the charge, and the opening of the Suez Canal.

Among the lesser forces which have tended to obstruct the exchange of products and thereby to reduce the general wage and profit fund and to affect prices, the war of tariffs may be named, by which the peaceful benefits of commerce are interrupted. In Europe these barriers of taxation, dividing the several states and nations of the Continent, maintain animosities of race, creed, and nationality. The customs revenue, being an indirect form of taxation, is kept up to the deception of the people who are oppressed by it. It is said to be necessary to the support of the several states by which these duties are imposed; in fact, upon the Continent an analysis of the revenue and expenditure of only a few states proves that a sum exceeding $350,000,000 a year is collected from customs at these barriers, and a sum exceeding $500,000,000 a year is annually wasted in the support of standing armies and navies, which would not be required or tolerated if these barriers were leveled or removed. This evil is very much diminished and is of little effect in this country, except so far as the tariffs of foreign countries obstruct the import of our grain and other articles of food, for the reason that the continental system of absolute free trade throughout our whole country, covering a larger area and benefiting a greater number of people than ever before enjoyed absolute freedom from trade restrictions, has assured our progress in spite of all obstructions to our foreign commerce, which is relatively unimportant.

The main purpose of the present treatise is to consider only one of the forces which have in recent years exerted a great influence upon prices, and through prices upon the rates of wages, to wit, the currency or circulating medium of the country. (I hesitate to use the word "money" in connection with mock or substitute money, *viz.*, the legal-

tender notes of the government, which, under a fiction of law, have become *fiat* money, and have been forced into circulation in place of true money, which carries its own value in its own substance.)

The advocates of fiat money, or unlimited paper money, attribute great importance to the volume or quantity of money or instruments of exchange in circulation. On the other hand, prior to the resumption of specie payment, the advocates of the specie standard, whether the single or so-called double standard, considered the quantity of circulating medium a most important factor; they believed that the contraction of the circulating medium or of legal-tender paper money would be required in much greater measure than actually occurred, as a necessary precedent to the resumption of specie payment.

It must be admitted by every one who gives any weight to facts, that the issue of legal-tender notes during the war was accompanied by great depreciation and by much greater advance in prices than in the rates of wages; consequently the great mass of working people suffered great harm, which was in part compensated to them by the excess of demand for their products and services for war purposes. This was proved in the last article.

But who can measure the relative importance of the quantity or volume of the notes issued, as compared to their discredit or the doubt of their ultimate payment during the dark period of the war; or who can measure the effect on prices of the demand of the war itself upon the labor of the country, either in the military service or in supplying the armies? The actual work of war is and must be done during the war period; payment for such work by way of taxation may be in part deferred until either the bonds due at long date or the demand notes issued under a legal-tender act become payable.

It is somewhat difficult to conceive the measure of the actual work of the war. From April, 1861, to June, 1868, four years of war and a little over three years of reconstruction under military rule, the revenue of the United States was:

From taxation, sales of public lands, and from miscellaneous sources	$2,213,349,486	
From loans which were unpaid June 30, 1868	2,485,000,000	
		$4,698,349,486
The expenditures of seven years of peace at a considerably higher rate than in previous years might have been		$698,349,486
Leaving the money cost of war to the nation		$4.000,000,000
But to this must be added the war expenditure of States, towns, and cities. I am not aware that this has been separately compiled; it must have been at least		$1,000,000,000
Making the cost of war to the nation as a whole (in money or debt)		$5,000,000,000

But again, to this sum must be added the waste of property, of time, and what little capital there was in the Southern States, which cannot be estimated at less than three fifths the expenditure of the North, or $3,000,000,000. The waste in the South has perhaps been more rapidly made up than the cost to the North, by the abolition of slavery and by the emancipation of whites as well as of blacks from its degrading effects ; witness the subsequent enormous growth of all the varied arts and industries in the South, to which liberty has given place and opportunity.

It may be assumed that at a minimum the cost of suppressing the Rebellion, which was promoted by the little oligarchy who made use of the slave power to mislead and deceive the masses of the people of the South, by making them believe that slavery and State rights were consistent with and were bound up in each other, was $8,000,000,000. The cost of establishing and maintaining national liberty and State rights in a true sense throughout the land, was therefore $1,135,000,000 a year for seven years. This price in terms of money represents so much actual work done, mainly by the privates of both armies and by those who supported them.

It has been held that the maximum product of each person occupied for gain in 1880 could not have exceeded $600 worth. Labor and capital were at least one third more effective during and since the year 1880 than during the period of war and of reconstruction. If then we value one man's labor from 1861 to 1868 inclusive at $500 a year, the work of war required the unremitting labor of 2,270,000 men for seven years, either in the two armies or in sustaining them. At $400 each, an estimate probably nearer to the mark at that time, the measure would be the constant work of 2,837,500 men for seven years. The average population of that period was 35,000,000, of whom not over one in five could be considered an able-bodied man of arms-bearing age.

The cost of liberty therefore consisted in actual arduous work at the risk of life for seven years, of one man of arms-bearing age in every three. More than one third of the price of this work of war was deferred by borrowing ; yet such was the enormous increase in production and the facility for distribution brought about by the unification and completion of the railway system of the North, which took place at about the beginning of the war, and such was the effect of the rapid application of inventions and improvements, especially in agriculture, during this period, that not one single Northern crop diminished, and not one single art or important branch of industry, except cotton-spinning, failed to increase. Therefore, as soon as the disbanded armies were absorbed in the pursuits of peace, production went forward with leaps and bounds, while foreign markets took our excess in payment for our foreign loans ; our bonds were rapidly returned to

us by purchase. In 1876 and 1877 the tide of foreign coin set toward this country, and the resumption of specie payment became possible on the 1st of January, 1879.

In the latter part of this same period the wonderful development in Southern industry also occurred, than which there is no more extraordinary chapter in all economic history. That section of our country which had been devastated by the war, its capital destroyed, its former system of labor completely overturned, its people left to recover without inherited aptitude, mechanical appliances, or any other of the conditions which have been assumed to be necessary for success in diversified industry, is now dotted all over with factories of various kinds, and crossed and re-crossed by a rapidly extending railway system, while its mines and iron-works are threatening those of the older States ; yet more important, all the lesser arts of civilized life which go to make towns and cities are springing into existence. All this has been done in spite of the free and urgent competition of the Northern States, with all their capital unimpaired, their inherited aptitude, and their fully-developed mechanical appliances. Thus while the South (which previous to the war had depended mainly upon the North not only for manufactured goods, but for bread and meat, wasting its misdirected slave labor by its application almost wholly to cotton, rice, and sugar) has now become almost self-sustaining, its crop of cotton has become more and more a money crop, representing its surplus of agriculture or the means for a better subsistence than in the bad old times of the past. The North, thus deprived of a part of the great Southern market which it formerly enjoyed, while its own crops were rapidly increasing in ratio to its population, has found it more and more necessary to open a foreign market for the food which could not be consumed at home, and which might have rotted upon the field except it could have been exported.

The reduction in the railway charge, taken by itself, may fully account for the rapid increase in the export of grain, by means of which we more than balanced our import and paid our foreign debt. But there is a yet more subtle element to which attention might well be called. The value of the imports of merchandise over and above our exports, from 1866 to 1875 inclusive, was in round figures $817,000,000. The value of our exports of merchandise above our imports, from 1876 to 1885 inclusive, consisting wholly of the products of agriculture, was $1,574,000,000.

On what elements did this depend? The railway charge upon the twenty-six great systems of railway which diverge from Chicago east and west, from 1866 to 1875, was 2.1837 cents per mile ; from 1876 to 1885 it was 1.1037, making a saving of 1.08 on the traffic of these specific lines, on which 35 to 40 per cent. of the whole railway service

of the country was performed ; yet this difference in the rate of charge on these specific lines only, from 1876 to 1885 inclusive, came to more than $1,700,000,000, as compared to the rate charged in the previous ten years. This saving alone more than accounts for the excess of our exports over our imports, which excess enabled us to redeem our bonds or to import the coin necessary for our use.

But the yet more subtle element is this : The self-binder was first successfully attached to the reaper in 1876. From 1867 to 1876 inclusive our average crop of wheat, varying more with the season than with the planted area, had been 258,000,000 bushels. In 1877, when the self-binder first began to be used, the crop mounted to nearly 364,000,000 bushels. Again in 1878 it mounted up ; and from that date to 1887 inclusive, in which period the use of the self-binder had become general, the average crop, varying more with the season than with the planted area, was 440,000,000 bushels. Could the crops of the last ten years have been saved without the self-binder ?

When we consider the fact that in the United States the adoption of each harvester did away with the work of seven or eight men, who had previously been required to bind the crop by hand during the short harvest season ; when we consider also that the total number of self-binding reapers now made and sold is more than 100,000 a year, requiring over 30,000 tons of twine to bind a single wheat crop, at this date 1889, over 50,000 tons, do we not find in the tying of that knot on the self-binding harvester a main factor in the export of grain with the returning import of gold, on which we resumed specie payment ? By that single improvement the cost of wheat was reduced not less than 6 per cent., and in some places 10 per cent. We may also find in this little knot one of the most potent factors in the displacement of unskilled labor.

There is an intimate connection between these forces and the currency question. The financial danger of this country came immediately after the war ended, when the expenditures were at their maximum and the income had not reached its full measure. The greenback craze pervaded the country, and the welfare of the people was held to depend rather upon the quantity than upon the quality of the circulating medium. At that date there had been no record in history of any country which had paid a great war debt, or of any country which, having issued its own notes and having made use of them under a legal-tender act for the purpose of collecting a forced loan, had afterward redeemed or paid them in coin according to promise. Few there were at that time who had firm faith either in the redemption of the notes or in the speedy payment of the debt.

The great war debt incurred and entered upon the books of the nation on the first of August, 1865, amounted to $2,674,815,856. To

this sum the Secretary of the Treasury, Hon. Hugh McCulloch, in his last report, added for debt due August 1, 1865, but not audited and entered, the sum of $322,574,347. The maximum debt of the United States was therefore $2,997,386,203. It has since been reduced to $1,500,000,000, or from $84 to $18 per capita of the population. Sept. 1, 1889, $1,083,740,625.

The writer was apparently the first to prove, in an address to the Republican Convention of Massachusetts, September 19, 1868, that if the per capita taxation of the United States were maintained at the rate then imposed, $8.60 a year, the whole debt would be paid before January 1, 1885, as it would have been had not the average rate of taxation per capita been somewhat reduced. Its final payment has been deferred a little longer by a reduction of annual taxation to about $6.00 per capita, of which nearly $2.00 is now applied to the payment of the debt. There will probably be no Congress that will dare reduce taxation in sufficient measure to prevent payment of the last dollar of the national debt before the end of the century.

During this period, from 1860 to the present time, the quantity of the circulating medium, consisting of coined money or redeemable bank-notes or other substitutes, or of legal-tender notes which under a fiction of law have taken the place of true money, has varied, as shown in the table on the opposite page.

Through the courtesy of the Secretary of the Treasury I am permitted to give this table showing the total amount of money, or of the instruments of exchange in use as money, consisting of coin, legal-tender notes, convertible bank-notes, or other instruments of exchange in use at the several dates given, computed per capita in ratio to the population each year. Absolute accuracy is not, as I understand, claimed for this table, but the estimate is as close to the mark as it is in the power of the Treasury Department to compute it.

It will be observed that even if the present tendency of the surplus revenue is to cause all the United States notes to fall into the Treasury without re-issue, and even if it should end in the liquidation by way of taxation of all that part of the circulating medium which now consists of United States legal-tender notes which are not already in the Treasury or covered by coin in the Treasury, and the circulation or volume of what passes for money should be contracted to that extent, there would nevertheless remain in circulation in coin, in gold and silver certificates, or in convertible bank-notes, a sum per capita substantially the same as that of the year 1880. It will be remembered that the year 1880 was a year of more than normal prosperity. May it not therefore be inferred that the country is now rich enough and strong enough to pay its demand debt, represented by the legal-tender notes, and to withdraw those notes from circulation without any

appreciable effect either upon prices, wages, or credits? If such be the fact, delay in reducing the so-called surplus revenue by reduction of taxation may, so far as its effect upon the circulating medium is concerned, work no injury but rather a benefit.

The table on page 188, showing the relation of prices, wages, and purchasing power and quantity of the circulating medium, is given in order to sustain this view. It will be interesting to observe, in the con-

TABLE SHOWING, FOR THE UNITED STATES, THE POPULATION, TOTAL AMOUNT OF MONEY, AND THE AVERAGE AMOUNT PER CAPITA YEARLY, FROM 1860 TO 1887 INCLUSIVE.

Year.	Population. (Prof. Elliott's Tables.)	Total amount of money, exclusive of legal tender, gold, and silver certificates.[1] 1860 to 1872 inc. taken from Fin. Rep. of 1886; 1873 to 1887 inc. taken from Fin. Rep. of 1887.	Average Amount of Money per Capita.
1860	31,443,321	$ 442,102,477.00	$14.06030
1861	32,060,000	488,005,767.00	15.22164
1962	32,704,000	532,832,079.00	16.29257
1863	33,365,000	623,100,168.75	18.67526
1864	34,046,000	1,062,840,516.50	31.21778
1865	34,748,000	1,180,197,147.76	33.96446
1866	35,469,000	1,068,065,785.96	30.11266
1867	36,211,000	1,020,927,153.52	28.19384
1868	36,973,000	888,412,602.75	24.02869
1869	37,756,000	873,694,101.61	23.14054
1870	38,558,371	899,875,899.48	23.33802
1871	39,555,000	894,375,751.06	22.61094
1872	40,596,000	900,570,903.52	22.18373
1873	41,677,000	891,211,673.94	21.38378
1874	42,796,000	939,225,887.17	21.94658
1875	46,951,000	914,149,629.69	20.79929
1876	45,137,000	904,849,434.89	20.04673
1877	46,353,000	922,160,168.84	19.89429
1878	47,598,000	989,845,159.27	20.79594
1879	48,886,000	1,056,232,698.11	21.61488
1880	50,155,783	1,207,827,059.70	24.08151
1881	51,495,000	1,371,688,001.65	26.63731
1882	52,802,000	1,431,411,868.18	27.10905
1883	54,165,000	1,494,404,497.14	27.58986
1884	55,556,000	1,503,129,680.64	27.05612
1885	56,975,000	1,553,246,868.21	27.26190
1886	58,420,000	1,577,191,425.52	26.99746
1887	59,893,000	1,649,149,915.37	27.53494

Jos. S. McCoy,
Acting Government Actuary.

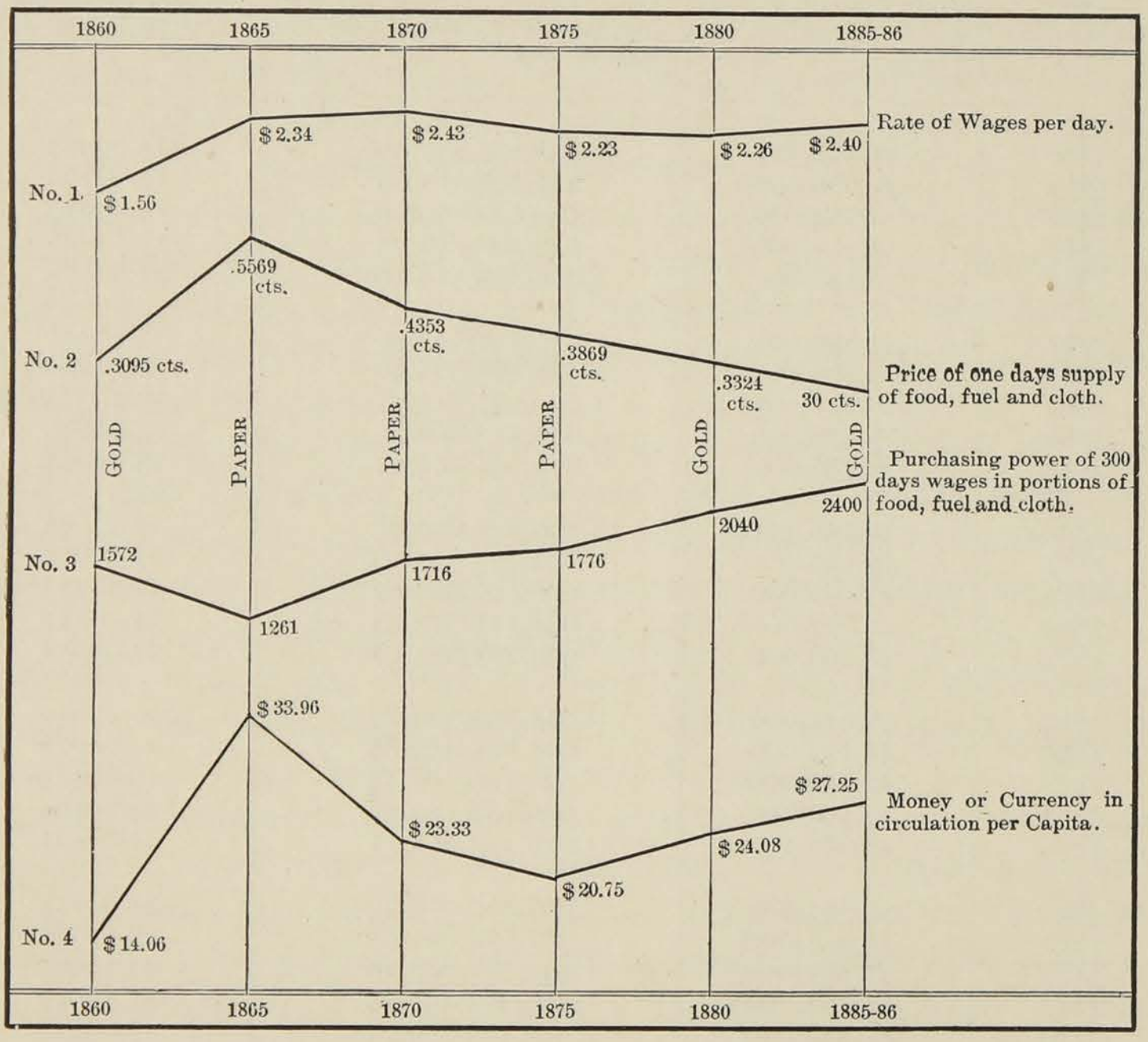
July 17, 1888.

[1] Gold coin, silver coin, and United States notes may be deposited in the Treasury under present laws, and certificates taken out which enter into circulation in place of the coin and notes thus deposited.

sideration of this table, that the welfare of the workman has wholly depended upon the quality of the money in use, and not upon the quantity, again enforcing the principle that if we keep the quality of our money true the quantity will take care of itself.

In respect to the *data* on which this table has been compiled, I beg to say once more, with regard to the rates of wages, that they have been averaged from a compilation of the figures given in the larger number of establishments treated in Volume XX. of the United States Census, those of which I have had some knowledge myself as to their having been in continuous operation throughout the period treated, or else

RELATION OF WAGES, PRICES, PURCHASING POWER OF WAGES, AND VOLUME PER CAPITA OF MONEY OR CURRENCY IN CIRCULATION AT THE RESPECTIVE DATES GIVEN.



No. 1.—Average wages of mechanics, engineers, carpenters, machinists, and painters connected with the mills and works treated in Vol. XX., United States Census ; establishments in Eastern, Middle, and Western States.

No. 2.—Average cost of one day's supply of food, fuel, and material for clothing customarily used by such mechanics, computed at retail prices in 20 shops ; 10 east and 10 west of Buffalo, N. Y.

No. 3.—Purchasing power of 300 days' wages in equal portions of the same kinds of food, fuel, and cloth as above given.

No. 4.—Quantity per capita of coin, convertible bank-notes, and legal-tender notes in circulation or in use as money at the respective dates.

such as from the nature of the work must have been fully employed throughout the whole period, being selected for the purpose. The rates are doubtless somewhat lower than would be shown by a compilation of figures given by mechanics themselves, engaged in analogous trades. This would always be the case if the wages of mechanics who are permanently employed in connection with factories were compared with those whose work is transient and not continuous throughout the year, owing to the nature of the occupations, as in the building trades. The rates of wages have also been compared with those computed on special investigations made on my own behalf, from typical establishments in the State of Massachusetts, which I know to be correct.

With respect to prices, I had myself made averages of prices from *data* obtained by myself before Volume XX. of the Census was issued; and by comparing my own *data* with those of the Census, I was able to verify the prices given in that volume for the Eastern States. The number of portions assigned to 300 days' work of course assumes continuous work, like that of the factory, which runs every working day in the year, omitting Sundays and holidays, customarily computed at three hundred days.

The computation of money or currency per capita is as accurate as the official *data* of the Mint and of the Treasury Department will permit. The only issue which can be raised affecting it, is in regard to the quantity or amount of coin in the hands of the people. This subject has been a matter of considerable discussion; suffice it to say that the absolute knowledge of the subject possessed by the Department of the Mint would substantially verify the proportions of currency per capita given in this table, even if the amounts did not absolutely correspond and were somewhat less.

It may, therefore, I think, be safely assumed that the margins for error in these four computations are very small; and if all errors were eliminated, while the figures might be slightly changed, the ratios or proportions would not be varied sufficiently to affect the general conclusion.

In view of these variations in the quantity of money or currency in use at different dates, which bear no steady or uniform proportion either to the volume of trade or to the population of the country, it is apparent that the quantitative theory of the currency cannot be maintained. May it not be held that confidence and credit have been greater factors in making prices than the quantity of the money or circulating medium of the country, which is made use of directly only in the petty or retail transactions of trade? Is it not the confidence engendered by the way in which we have overcome difficulties and dangers, that keeps our mixed currency at par with gold at the present time and that will enable us to surmount difficulties yet to come? If

we keep the quality of our money good we may be sure that the quantity will take care of itself.

The resumption of specie payment took place January 1, 1879; the fiscal year ends June 30th; it is therefore more easy to make compilations from that date by calendar years. From July 1, 1879, to July 1, 1887, the declared value of our net imports of merchandise was $5,640,261,758. In the same period the declared value of our exports of merchandise was $6,764,311,704. The true value of exports has doubtless been somewhat greater, as those which go by rail to Canada and to Mexico have not been accurately recorded; the official reports of the Dominion of Canada and of Mexico prove them to be in excess of the value declared in this country.

It will be apparent that such an enormous volume of exports could not have been sold for payment in money only, since the standard of international commerce is coin or bullion. The coin which serves the purpose of international commerce is computed at the gold standard, there being no legal tender in international exchange. Such a demand for gold or gold bullion in sole payment for our exports would have drained every bank in Europe, and we should have no domestic use for such an amount of coin; therefore unless an exchange of domestic for foreign products had been possible the export could not have been made. We could not have paid for our imports in coin only, nor could foreign countries have paid us for our exports in coin only. International trade must of necessity mainly consist in an exchange of goods for goods, the balance only being settled in gold. Had it not been possible to make this exchange, or to export the excess of our corn, wheat, dairy products, cotton, and oil, this excess could not have been consumed at home, as the remainder met the demand of the most abundant and increasing consumption; nor could many of our domestic industries have continued without the import of crude or partly manufactured materials from abroad.

This mutual dependence or interdependence of nations is too generally admitted to make it worth while to waste time on the theories of a few incapable persons who advocate national isolation, with whom discussion is useless. The benefit of foreign commerce, under certain conditions, is fully admitted by every one. It may be admitted that the duties upon foreign imports give a different direction to domestic industry, but the effect, whether beneficial or otherwise, of our present system of duties, has been, in the opinion of the writer, very greatly exaggerated by the representations of both sides in the discussion of the system. When this becomes a part of the common conviction, the reform of the tariff, admitted by both parties to be necessary, may be entered upon by reasonable men without bitter contention, and with the simple purpose of adjusting the necessary revenue duties so as to

give the widest scope to the development of domestic industry, and to interpose the least obstruction to the exchange of product for product, in which our foreign commerce must, in the nature of things, consist.

The point to which I desire to give prominence in this treatise is, that in spite of the depreciation and the fluctuations in the currency, and in spite of the ill-adjusted burden of taxation of all kinds which is now admitted by all parties, whether under a tariff, under the internal revenue system, or under State and municipal assessments, the effect of these minor forces has been but to retard in some measure the great progress of this country. Confidence and credit have been based on the progress which is assured by the application of invention and of science to human welfare; these elements of commerce have far more than counterbalanced the blunders and stupidities of financial legislation, and will ultimately force our fiscal system into harmony with the higher laws of material progress.

If some of the computations presented in this treatise are already familiar to my readers, I can only justify their repetition by having brought them down to a later date.

V.

THE STRUGGLE FOR SUBSISTENCE.[1]

ONE of the most noticeable facts of the present day is the great and general interest in statistics. It is now admitted that every economic hopothesis must be tried by the test of figures to see if it coincides with the facts of life. It is also admitted that these figures must be compiled, sorted, and corrected by well-trained men and the work guided by their judgment, so that the figures may not lie. Both parties in the national Congress have united in establishing the national Department of Labor Statistics, and more than half the States have established State bureaus. Not least significant among various incidents is the fact that special labor organizations are making appointments of statisticians by whom the specific figures relating to their separate departments of labor may be compiled. After a few years there will be a basis for a true science of statistics such as has never heretofore existed ; it almost exists to-day, and from it a true science of inductive political economy may soon be evolved.

By drawing from every source as yet available, the writer has recently presented statistics which cannot be gainsaid, proving, so far as figures suffice for proof, that greater progress than ever before has been made during the present generation, dating from 1865, when this nation first truly attained its independence, in providing for the means of subsistence, shelter, and clothing, and in organizing the machinery for distributing the necessaries of life. Computations have also been given which go far to prove not only that since the dangers, difficulties, and destruction of the Civil War were surmounted and since slavery was abolished, there has been a more equal distribution of the necessaries of life among the masses of the people of this country, but also that there has been a more equitable distribution since the standard of value of the country was re-established on a specie basis.

No attempt has yet been made to compile or to compare the statistics of the hours of labor, but figures are not needed to prove to any one who has even a moderate faculty for observation, that the hours of labor as a whole have been diminished, while much of the hard hand work has been displaced by labor-saving mechanism. In the fac-

[1] Reprinted from the *Forum*.

tory, either by way of legislation or in spite of legislation, it matters not which for our present purpose, ten hours have become customary in place of eleven or even twelve ; the usual hours of work in textile factories forty or fifty years ago having been thirteen and even fourteen. In the building trades, either by way of trade unions or in spite of them, nine and ten hours have become customary in place of eleven and twelve, or even more. In all the great retail shops and wholesale warehouses in which goods are distributed, the hour of closing is earlier and the hour of opening is later than it used to be. In the factory the rooms are better lighted, better ventilated, and in winter more uniformly heated than ever before. Attention to sanitary conditions has become necessary even to pecuniary success. In the field the farm laborer rides upon the plow or upon the mowing machine, the hay rake, or the tedder, freed from the hard labor of guiding the plow by hand, mowing the hay with the scythe, or reaping the harvest with the sickle. The steam harvester and thresher have rendered the work of saving the grain crop vastly more effective and much less arduous to each person. In the building trades the small hoisting engine lifts the men and the materials to the tops of the highest buildings, while much of the heavy work of preparing the timber and other materials, which formerly required long and arduous work by hand, is done by steam or water power in the factory. The optimist can thus find on every side facts which sustain his view that the general struggle for life is becoming easier and not harder, while the statistics of the life-insurance companies prove that the duration of life is lengthening.

Even in some cases where the quality of the working people may appear to have deteriorated, and their standard of living to be no longer equal to what it was in the same pursuit twenty or thirty years ago, one may find, on looking a little deeper into the causes of the change, that by way of improvements in machinery either less intelligence or less mechanical aptitude is now required on the part of those who tend the machines than was formerly needed in the same branch of industry. In this way a class of operatives has been brought into the factory and there enabled to do efficient work, for whom a few years since there would have been no place above the plane of unskilled, menial, or common labor ; while the class of operatives formerly required to do this kind of work has been lifted up to better conditions, better work, and better wages by the possession of the same superior qualities which first enabled them to do the work of the factory when the machinery did less and the man or woman did more. Forty or fifty years since, the daughters of the farmers of New England worked thirteen hours a day in the cotton factory in order to earn $175 a year ; to-day French Canadians, working ten hours a day, earn $300 a year ; yet the cost of labor is less now than ever before.

Every point thus far recited can be sustained by such evidence that it cannot be gainsaid by any one. In a broad and general way it might be proved that Uncle Sam and his children have obtained such power over the mechanism of production and distribution during the past twenty-five years, that if the long hours of work required thirty years ago to produce the materials for a narrow and poor subsistence were now applied under the new conditions, the same hours would yield at least one third more of all the necessaries and comforts of life than they did then. This gain in power has been applied in two ways. First, it has led in part to shortening the hours of work. Secondly, it has led in part to the attainment of a more ample subsistence and to a higher standard of common comfort and welfare. A better subsistence, better clothing, and better shelter are now obtained with shorter hours of work and less arduous effort than ever before, by all who have aptitude and industry coupled with the mental capacity which is required to enable them to adopt the new methods. Such must be the necessary conclusion from a comparison of the conditions of the present generation with those of the one next preceding it.

Yet no one can be blind to the fact that in many occupations which are necessary to the present mode of life, great numbers of persons are either worked to the utmost of their strength, or else are of necessity occupied so many hours of each day that what time remains to them is barely sufficient for eating and sleeping, so that healthy recreation is absolutely wanting. Time has not yet been saved to all. The well-trained or skilled workman can get more with less effort, but the common laborers have increased relatively in their number by immigration, and are not yet educated to the level of the present opportunity ; hence arises want in the midst of plenty, and a waste of abundance which with better individual training might be saved and made conducive to comfort and leisure.

Again, many occupations which are necessary to the present methods of life, and without which modern society could not exist in its present form—especially the kind of work which is done in great factories, mines, and furnaces—involve the continuous labor of multitudes of men and even of women under very monotonous and in some few branches even noxious conditions, or else under conditions in which the attainment of even a physically clean and wholesome life for a part of each day or week seems almost hopeless.

What is called division of labor distributes and sorts men and women each to a separate part of the work, which may be in some cases harmful to health, in some cases so extremely monotonous that there is no mental stimulus in it, and in some cases so depressing or even degrading in its necessary conditions as to preclude almost any hope of mental development. It is one kind of work all the time, in

place of many and varying kinds dividing the longer day's labor. In former days there may have been more hard work, more unpleasant work, and even more unwholesome work to be done ; but was it not so divided and distributed that but few persons were limited to work of any one kind, day in and day out, for three hundred days in the year ? Was there not more variety, more versatility, and more opportunity for young men and women to find out for themselves what they could do in the best way, and also a better opportunity to improve their position than there is now in the arts to which this so-called system of division of labor has been applied ? Was there not also a more humane relation between the employer and the employed, more sympathy, and more recognized mutuality in the service of each to the other ? Yet, if the great factory did not exist, and were it not for modern machinery and mechanism and this subdivision of labor which has become necessary to any adequate supply of the means of living, how could the existing population of Massachusetts, for instance, of whom at the present time more than one fourth are foreign-born, and more than one half of foreign parentage, live even as well as they do ? Had it not been possible for these foreigners to come here in order to avail themselves of the opportunity which is offered, how could they have existed at all in the lands which gave them birth, which are even now overcrowded ? If it sometimes seems that progress and poverty march together, one may ask what would have been the poverty without the progress ? If the analysis of our present condition, relatively good as it is compared to former times or to other countries, yet proves that only a narrow, poor, and meagre life has become possible to great masses of people, in what direction shall we look for the progress in which poverty shall cease to be one of the phases or correlatives ? Can we lift great masses of people all together to a higher plane, or must we rest content with such developments as open their own way to those who have the eyes to see and the capacity to attain each for himself or herself ? Can any one be boosted by the state who cannot help himself ?

After all has been proved in respect to greater abundance, lower cost, more equitable distribution, higher wages, and smaller margins of profit ; after all has been recited that can be claimed in the line of progress, what does it come to ? What is the result ? What is the present measure or limit within which each and all must of necessity subsist ? Is it sufficient and ought it to induce content, or is there a sound and reasonable cause for discontent and a craving for something better ?

In order to consider these questions great aggregates in millions must be avoided ; such figures only mislead and delude. The conditions of life must be brought down to the unit of the individual or of

the family. When this has been done, the few who have attained an abundance, and who have reaped the full benefit of all that science and invention have enabled them to accomplish, may for the first time begin to comprehend the aspect of life that is presented to the many who have not yet secured a much better subsistence, or a more suitable dwelling, or greater comfort and better opportunities.

These problems must be studied from below as well as from above, from within as well as from without, if the discontent of the present day is to be removed by gradual, peaceful, and adequate methods ; for the very reason that the better conditions of life which are now so readily attained by those who are capable of grasping the opportunity offered them, bring into more and more conspicuous contrast the adverse conditions of those who have not yet become capable of such attainment.

Probably very few of the persons who will read this article, in fact very few among those who read with interest and intelligence any articles, essays, or books upon what is called the labor question, have themselves had the kind of experience which is necessary to enable them to comprehend the aspect of life to the man who can earn only one or two dollars a day for the support of himself and of his family, if he has one. Perhaps even a less number may have the kind of imagination that will enable them, without having had the experience, to comprehend the struggle for life on these terms, even if they try to put themselves in the place of the common laborer or of the mechanic who can barely do the limited and monotonous work in which he is occupied, without the prospect of ever doing any thing more or different.

If it shall prove that a great number of people at the bottom can barely exist, while a considerable number at the top enjoy much more than is required for a good subsistence, may it not soon become necessary for those who are in possession of wealth to justify their position, by proving that by the use either of their own personal ability or of their capital they add more to the annual product from which all incomes are derived than they take from it for their own consumption? The man of superior ability may add a million dollars' worth a year to the value of the annual product, which addition except for him would not have been made ; from this he may secure a personal income of a hundred thousand dollars a year, yet he costs the community only what he and those who depend upon him consume. Is he not a cheap man for the community to employ in its service, even if he finds his recreation in fine horses and a fast yacht?

If nine tenths of the product which he has brought into use falls into the common stock whether he will or not, cannot the community well afford to him his tithe even if he wastes it? Vanderbilt reduced

the cost of moving a barrel of flour a thousand miles from a dollar and a half to fifty cents; was he not a cheap man for the community to employ even if he did make a hundred million dollars? What he made himself was but a tithe of what he saved to the community.

In other essays I have endeavored to show that not exceeding ten per cent. of the product of a normal or average year can be saved in a concrete form and added to the capital of the nation. Whether this ratio is correct or not, it will be admitted by all that a certain amount of capital must be saved in some way in order that society may continue to exist, even under the present narrow conditions of life. It will be generally admitted that it is more important that capital should be efficiently maintained than it is to determine who saves it or who controls it. A large part of this addition to capital may, and doubtless does, consist of the savings of persons who can never hope to accumulate enough to enable themselves to give up work in their later years, or to live wholly upon the income of what they may save. The most that the great majority can expect to do, is to lay up a moderate sum of which they may expend the principal when they become disqualified for work, unless they are then supported by their children wholly or in part.

There are no *data* by means of which the number of the rich or even of the well-to-do persons can be set off as a separate class from the rest of the community; that is to say, there is no way to find out how many can accumulate a sufficient amount of capital to enable themselves or their children to live upon the income of their property without further work. Suffice it that the proportion is very small indeed in point of number; and as the margin of profit becomes less, or as the amount of capital required in order to yield an income sufficient for a comfortable support without work becomes greater, the proportion of those who can hope to live without work in their later years will probably diminish rather than increase as time goes on.

It is probable, to say the least, that fully ninety per cent. of the whole body of the people spend nearly all that they earn; of this ninety per cent. a portion may, by setting aside a moderate part of their small earnings, become the owners of a house, or become depositors in a savings bank, or insure their lives in a moderate way; of the remaining ten per cent. a part save enough to protect themselves against want in their later years, and a very small part may become rich, and then need not work unless they choose. There are but few in each generation who do not choose to work, whatever their motive may be and however rich they may be; the actual drones are but a small fraction even of the rich, hardly calling for attention. They are, like Mr. Toots, of little consequence to themselves and of no consequence to others.

When it is admitted that the whole capital of the richest State in this Union does not, and probably never can, exceed in value three years' annual product of the same State; and that the people of the richest State are always within one year of starvation, within two years of being naked, and within a very few years of being houseless and homeless, unless they work for a living, what possibility is there that any considerable part of one generation can save their children to any extent from the beneficent necessity of supporting themselves? Our present aggregate product, whatever it may be, being mostly consumed by those who work for a living, what is the limit within which the measure or cost of living must of necessity be confined? When we have settled this question we may ask, What is the aspect of life to the average man or woman who works for a living in order to gain a mere subsistence, and what can we do to better it?

In the next article I will give the reasons for my conclusion that the present limit within which the great mass of the people of this country must find food, fuel, shelter, and clothing ranges between that which forty cents and that which sixty cents a day will buy for each man, woman, and child in the community, the average not exceeding what fifty cents a day will purchase. It requires the work for gain or the earnings in money of more than one in three in the population to sustain the whole community; and the average earnings of the great mass of the people range from $1.00 to $3.00 a day, on which earnings three persons must be sheltered, fed, and clothed.

The picture which is brought before the eye or mind of him who can take in the full significance of these figures is somewhat appalling. It might lead many to ask, If this is the result of the highest civilization yet attained by the most favored nation, is life on the whole worth living? and one must carefully guard himself against the influences of materialistic philosophy in order to keep an even balance in his own life.

It may not be judicious for the mere business observer, who cannot claim to be able to comprehend any thing more than the elements of the philosophy of history, to venture to forecast the future; yet to many prosperous persons who now pay little regard to the blind struggle of vast numbers of working men and women to improve their condition, and who think workmen have no rights to be secured and no wrongs to be redressed, one may rightly put the question, Have not you also something to do in the solution of these problems? Are there not signs of danger? May not the existing unbearable tension among European nations, burdened as they are with monstrous national debts that can never be paid, and with huge and onerous standing armies which it seems to be impossible to disband, end in revolutions in which many feudal privileges and vested wrongs may go down forever, but in

which also many institutions covering not only rights of property in land but in all the products on which existence depends, may for a time be questioned? If such should be the course of events in other countries, are we so strong in our popular government that we ourselves may not share some of these difficulties and dangers? Or even if there be no danger to society in this country, and, as the writer most profoundly believes, nothing but benefit to be ultimately gained from the organization of labor and the study of economic problems by so-called labor associations, clubs, and societies, might not all others also join in attempting to solve these problems, to the end that free institutions may be fully justified, not only by those who possess an abundance, but also by those who can find in such institutions the opportunity for themselves or their children to attain the conditions of life which may indeed make this life worth living to the poor as well as to the prosperous?

VI.

THE PRICE OF LIFE.[1]

IN my last essay I endeavored to present the condition of life as they must of necessity appear to him or her who earns little more than enough, or barely enough, to support material existence. In those which preceded it I endeavored to define the limit within which life must be sustained, if sustained at all, under the present conditions of production and distribution. The series would be incomplete if in this paper the figures which define the limit were not again presented and worked out more fully and conclusively than they have been elsewhere. In the subsequent computations I shall omit small fractions and shall deal with round figures only.

In 1880 the average family group consisted of five persons ; the working group consisted of a fraction under three persons, one of whom sustained two others. The time had not then come, and has not yet come, when the work of women and children for gain or money payment could or can be spared ; it will be many long years before the head of every family of five persons can produce enough, or can procure enough by his own exertions, for the support, in comfort and welfare, of four persons dependent upon him. This would be true if we were to consume for mere subsistence every thing that we produce. If the total product were divided evenly and consumed, there would not be enough to raise the general level much above what it now is, and the next generation would then suffer want because we had eaten up or worn out that part of the product which ought to have been saved in the form of capital.

In all the computations which existing data enable me to make, I have been obliged to stretch a point and to assume a maximum rather than a minimum estimate of the gross value of the product of the nation, in order to find six hundred dollars' worth of food, fuel, shelter, and clothing as the average product of each person occupied for gain, by which product, whatever it may be, three persons must be subsisted, housed, and clothed. This is the gross product. Unless ten per cent. of the six hundred dollars' worth be set aside by some one, whether by rich or by poor matters not, to be added to the capital of the nation,

[1] Reprinted from the *Forum*.

the product of future years will be diminished rather than increased, and want will then ensue rather than welfare.

Again, a part of this product must be diverted by taxation to meet the necessary expenditures of the country and of the several States, cities, and towns. The taxes required for cities and towns are assessed upon property in a great measure, nevertheless they must come out of the gross product of the nation ; they represent work of some sort, and those who do the work, of whatever kind, contribute to these taxes. A tax cannot be made to stay where it is put ; it is distributed no matter where it may be first collected.

All profits, all taxes, all shares of the product represent work of some kind, whether it be mental or mechanical or manual. It may be work in which capital or machinery has saved labor the greater part of the effort, or it may be work in which manual labor does the most and machinery the least. If the capitalist cannot demonstrate his right to the share which falls to him by proving that in the direction, control, and use of the capital which he owns he adds to the gross product more than he takes away for his own consumption and for that of those who depend upon him, then he must hold his capital only by force rather than by recognized service. If taxes cannot be justified in their expenditure, they cannot be justified in their collection.

If the possession of property does not rest upon service rather than upon force, on what pretense can any one set up the right to property ? The word " right " cannot cover wrong. Can he who lives on others' work, or who takes from the product even a small part without adding by his own service or that of his capital more than he takes from it, justify his existence or set up a right to the property that he misuses, no matter how legal may be his title ?

In 1880, State, city, and town taxes came close upon twenty dollars per head of all who were at work—about six dollars per head of the population. Assuming that sixty dollars' worth of the product, on the average, of each person occupied in gainful work must be set aside to be added to capital by some one, and twenty dollars' worth must be set aside to sustain States, cities, and towns, in order that society may continue to exist—eighty dollars' worth in all out of each six hundred dollars' worth,—we then find a net income, on the average, to each working man or woman who is not in the public service or sustained by the taxes, of five hundred and twenty dollars a year ; or rather, what five hundred and twenty dollars a year will buy for their own consumption. Computing three hundred working days in the year, this gross sum of six hundred dollars yields a fraction less than one dollar and three quarters per day—a little less than twelve dollars per week, or fifty dollars per month,—and if out of this sum, or of what this sum will buy, after setting aside ten per cent. for the necessary addition to capital and the

local taxes, three persons must be subsisted, sheltered, and clothed three hundred and sixty-five days in the year, the measure of the average comfort and welfare is only about what forty-five cents a day will buy and no more. But even this narrow measure of subsistence is again subject to the indirect tax of the nation. The national revenues being chiefly collected by taxing articles of common or necessary use, are paid in proportion to consumption rather than in proportion to income or ability. In 1880 and since then, the national revenue has come to six or seven dollars per capita each year, varying somewhat ; or from eighteen to twenty dollars a year upon the earnings of each person occupied for gain ; leaving a net revenue of five hundred dollars a year, or only what less than forty-five cents per day will buy per capita for personal consumption. How much food, fuel, clothing, and shelter can the reader buy for forty-five cents a day ? Would it not be well to answer this question before what may be miscalled "the claims of labor" are wholly ignored ?

There is, of course, room for error in this computation ; but an error of five cents a day per person now comes to more than eleven hundred million dollars a year, and one may fairly claim that such a gross error could hardly be made by a careful observer or compiler of statistics. In any event I think it may be assumed that our annual product at the present standard of production, when sorted and divided under present methods of distribution, and subject to no greater assessment than is necessary to maintain the capital of the nation and to meet taxation even when reduced to the lowest possible limit, cannot yield more than fifty to fifty-five cents' worth of the necessaries of life per day for the personal consumption of each man, woman, and child of the present population, after allowing for any possible error. It follows of necessity that by so much as some enjoy a larger portion than this must some others have less ; yet this is the most productive country in the world in ratio to its population, and great multitudes are flocking to our shores to take part even in this measure of abundance.

Present population, about	61,500,000
Share of total product consumed for personal use, at 50 cents per day each	$11,200,000,000
National and State taxes, about	700,000,000
Addition to capital, computed at ten per cent., about	1,300,000,000
Gross product	$13,200,000,000

This would be about $630 per head to one in three occupied for gain. In order to increase the average consumption by five cents' worth a day to each person, an additional product of the value of $1,122,000,000 a year must be made ; a market must be found in order that this product may be converted by exchange and distributed in

terms of money. Yet we have heard more of over-production in recent years than of any other complaint! Would not under-consumption be a more suitable term?

Now let any reader or observer pass in review or attempt to compute the number of people about whose condition he himself is tolerably well informed in the community in which he lives, and he will unquestionably find a greater number of men and women who are engaged in getting their own living (to say nothing of children) whose earnings are less than one dollar and three-quarters a day, than he will of those whose earnings are more. What is the aspect of life to this vast body, constituting a majority of the people of this country, who earn less than one dollar and three-quarters per day, and who support themselves and two others on such an income? When this question is brought clearly before the mind the true "labor question" begins to declare itself.

What are you going to do about it? Is it not a question which demands the attention of rich and poor alike in a democratic country, where the power of legislation rests upon the votes of the majority? What do those to whom it matters little whether they spend twenty-five or fifty cents, or even a dollar a day, per capita, for the food only of themselves and their families, really know about the problem of life as it is presented to him or her whose food costs one half the entire income or earnings, and who must find not only food but a dwelling-place, clothing, and all the necessaries of life out of what forty or fifty cents a day will buy at retail prices at the present time? What do people know about these conditions who never lacked sufficient clothing, and who possess more than one good room well warmed for each member of their families, or perhaps two or three good houses for one family?

If the limit of all that is produced is what I have given, or whatever it may be, whether more or less, it is the source of all wages, earnings, profits, rents, interest, and taxes. There cannot be more than all there is to be distributed, hence it follows of necessity that by so much as some have more of the comforts and luxuries of life, must others have less. Modern society exists by exchange. Few persons take any part in building their own houses or in furnishing them; few do any thing more than a small part of the work of making their own clothing; and aside from those who dwell upon farms, hardly any persons produce any thing which they consume for food. There are only three methods of distribution yet invented. The first is by exchange; the second is by theft or fraud, sometimes within the forms of law; and the third is by taxation. These three ways take a variety of forms. How can the general welfare be improved except by increasing the product of labor and finding a market for it, or by doing away with every existing method of distribution which is not right or just?

There are certain ethical problems which may come into view to him who seeks to justify his own greater share in the comforts of life. One question which a man may put to himself might be, Does the occupation in which I am engaged add to the mass of products which are needed for general consumption more than is taken away by my own consumption or by those among whom I spend my earnings? Or even a deeper problem may sometimes arise of an ethical nature: Does the work which each man performs come within the line of useful service? Does it add to the stock of useful products, or does it fall within the line of baneful service and add to the stock of harmful products? Is the demand for which this man provides the supply of a kind which adds to the comfort of the community as a whole, or is it one which tends toward want rather than welfare? By the answer to these questions each man may hereafter be judged in the court which supplements the treatment of economic questions by the study of ethics.

Before we can begin to answer these questions in a satisfactory manner, it is almost a matter of necessity to analyze the occupations of the people of this country as they now are. We are enabled to do this with great confidence in the accuracy of our results, because the same census agents who counted the numbers also asked what every one did for a living. Therefore, under the head of occupations, the people of this country who worked for gain were classified by their own statements under separate titles. The compilations of the census are made under four general titles, to wit:

Occupied in agriculture	7,670,493
" " professional and personal service	4,074,238
" " manufactures, mechanic arts, and mining	3,837,112
" " trade and transportation	1,810,256
	17,392,099

Thus the proportion of the whole population occupied for gain was substantially one in three of the whole number. This method of sorting is not wholly satisfactory. The writer has therefore made a different compilation under seven titles, as follows:

How occupied.	No. in each 1000.	Computed total number.	
1. Mental work	40	696,000	Clergymen, 64,968; lawyers, 64,137; physicians and surgeons, 85,671; teachers and literary, 227,710; journalists, 12,308; scientists and engineers, 8,126; musicians, 30,477; officers of corporations, banks, railroads, insurance, etc., 202,423.

How occupied.	No. in each 1000.	Computed total number.	
2. Mental and manual	60	1,044,000	Merchants and traders, 481,-450 ; hotel keepers, 32,543 ; clerks,. salesmen, commercial travelers, brokers, and all others engaged in the purchase and sale of goods, 521,898.
3. Automatic machinery.....	100	1,740,000	Collective factory work : textiles, printing, and bleaching, 500,000 ; metals and machinery, 300,000 ; clothing, 450,000 ; boots, shoes, and hats, 210,000 ; all others 280,000.
4. Mechanical : hand and machine tools.	107	1,861,800	Mechanical not collective : carpenters and other workers in wood, 500,000 ; blacksmiths, 172,726 ; painters, 128,556 ; masons, 102,473 ; all others, 958,045.
5. Manual.....	131	2,279,400	Service : express, railroad, telegraph employés (not laborers), 300,000 ; domestic servants, 1,075,655 ; laundry, 122,000 ; waiters, 200,-000 ; draymen, hackmen, etc., 180,000 ; all others, 391,345.
6. Horse and hand tools.....	250	4,350,000	Farmers, herdsmen, stock-breeders, and the like,
7. Chiefly manual.....	312	5,420,899	Laborers on farms, 3,323,876 ; laborers not specified, probably in part on farms, 1,857,-023 ; miners, 240,000.
	1,000	17,392,099	

It requires but little experience or knowledge of the general conditions of men to determine that only a very small part of those listed under each of these titles are or can be men of wealth, or even in possession of such a considerable amount of property as to make their income derived from property the larger part of their annual resources. Moreover, if it be considered that there is a certain general average of income with respect to each class of occupations, one may reach a reasonably close estimate of the relative conditions or proportions of income of those who are listed under each title. For instance, under Title 2 it will be observed that more than half are in the position of the employed rather than of the employer—clerks, salesmen, etc.—who seldom make large earnings. Under Title 3, those who work upon metals and machinery earn the highest wages. Those occupied in making boots, shoes, and hats probably come next. Skilled labor in the clothing trade is better paid or earns more than skilled labor in the textile factory, while common labor in the clothing trade, even when paid all that it is worth, secures very small earnings. Under Title 4,

mechanics—all are substantially well-paid workmen, earning more than the average of those who work in the factories. As we come down in the list, the numbers relatively increase of those who spend nearly all that they earn in getting a living, of whom very few possess more property than a deposit in a savings bank. The farmers to a very large extent work harder than their hired men, and few become rich. Lastly, nearly one third of the whole number listed could reply to the census taker only that they were laborers. Is this wholly creditable to our system ?

If, then, very few come into the possession of any considerable property, while a larger number, but yet a small proportion of the whole, attain an average income of one thousand dollars a year, by far the greater proportion living of necessity on less than $600 a year to each three persons, what can be done about it ?

If from the earnings of every man gaining by his work more than $1,000 a year, the excess were taken and divided equally among those who earn less, the game would not be worth the candle, because the gain to those who received the difference would be but a trifle. The addition to the income of each person occupied for gain would probably not be equal to the price of a daily glass of beer. On the other hand, if this excess of income above $1,000 a year were taken from those who now enjoy it, to be distributed unequally among the working people, then the same disparity of condition would exist as now, or even a greater. What are you going to do about it ? may well be the question put to the reformer who in his own judgment can remove all the inequalities and do away with all the hardships of life by acts of either the national or State legislature. The way to meet each and all of the theories of the professional agitators or sentimentalists who propose to change all the conditions of society by statute, is to bring the consideration of the subject within a limit easily comprehended, say fifty to sixty cents a day, and then to call upon each class of reformers to meet the conditions as they now are, and to prepare an act of legislation by which better general conditions may be assured. This they may find a somewhat difficult matter. In subsequent articles their theories will be subjected to this test.

The days of dynasties and of privileged classes are numbered ; emperors and kings, dukes and lords, have become superfluous ; feudal rights, which could perhaps have been justified in the past, have become the feudal wrongs of the present time. Democracy cares nothing for inherited rank, and may call upon every man to justify his present condition by his service, under the coming democratic rule, not only in this but in many other countries. The Chinese practice of granting titles of nobility to the ancestors of him who now serves his country well may be approved ; but no title gained in the past, unless

sustained by its representative in the present day by corresponding service, will long be tolerated as one either of privilege, honor, or credit to him who bears it. Gunpowder equalized the force of the seignior and the serf ; Vanderbilt became the great communist of the time when he reduced the cost of moving a year's supply of food a thousand miles to the measure of a day's wages of an ordinary mechanic. Yet more remains to be done before the mass of the people even in the United States can be said to live well. What are you going to do about it ?

In this series of articles, and in articles elsewhere published dealing with the same facts and statistics, the writer has proved, by arguments which no one has yet been able to refute or to gainsay, that in this country, which is no longer subject to the inherited wrong of slavery, in which birth gives no privilege, and in which all have or may have equal opportunity to attain material welfare, the working men and women who perform that part of the work of production which is either manual or mechanical, are steadily securing to their own use and enjoyment an increasing share of an increasing product ; while on the other hand, both the material capital which has been saved in a concrete form, and also the element which is yet more necessary to material abundance, the capital which is immaterial, *i. e.*, the mental factor in all productions, are being placed at the service of those who do the primary work at a lessening rate of compensation or profit. Nevertheless, when all Europe is a prey to fears of anarchy, nihilism, socialism, and communism, and when it seems to be as impossible for the standing armies and national debts of the Continent to be sustained as for the armies to be disbanded or the debts repudiated without violent revolution, may it not be well for us to take an inventory of our resources and to review our present methods of distribution, lest we also should perhaps be called upon, again and again, to apply force in sustaining rights of property both in land and capital, which need no force for their defense when fully comprehended and justified by the service to humanity which their possession makes their owners capable of rendering in ever-increasing measure. May not the harmony of interest between labor and capital be disclosed by the statistics of the nation to every one who can read what underlies the columns and is written between the lines ? May it not therefore be well for all to give their attention to what are indefinitely termed the " claims of labor," lest for want of thought, that which is right should be misconstrued and assumed to be wrong by those whose narrow or monotonous conditions of life limit the scope of their thought and may possibly lead them to misdirect their acts.

The conclusion of the whole matter may perhaps be brought within the mental conception of any one who believes that there is order in

the universe, and that there is an over-ruling power that makes for righteousness. The lesson which we learn is this: not only does enlightened self-interest coincide with or lead toward moral and material welfare, but even unenlightened self-interest, as represented by the mere money-getter, the mere capitalist, or by the man who has himself no knowledge of his own function, yet works of necessity in promoting an increased product and a reduction in the cost of all the necessaries of life, under which conditions the great mass of the community cannot fail to attain better conditions of welfare. Great inventions, which were first applied within a century, tended to the concentration of great masses of people under adverse conditions in the cities, and also to the diffusion of other great masses of people, occupied in farming, over wide areas, under isolated conditions which were not conducive to the best kind of welfare. The application of steam, of water power, and of gas led to concentration of the factory population. The introduction of the railway led to wide diffusion of the farming population and to "extensive" methods of agriculture. These applications of science are now being met by other great inventions, the tendency of which is in the reverse of what has occurred during the present century. The application of electricity to the production of speech and light, to the development of power, and to the operation of elevated or surface railways by which very rapid transit may be secured, and many other modern methods of distribution, are tending to diffuse many arts heretofore confined to the centres and crowded parts of great cities, throughout the suburbs and adjoining towns, where broad, low, well-lighted, and well-ventilated factories may occupy a larger area of ground, and where the factory operatives may live under very much better conditions. On the other hand, the adoption of the silo, and what are called the "intensive" methods of cultivation, are leading to the breaking up of large farms and bringing the people who are engaged in agriculture into closer communication with one enother. All these new forces are now in accord with the gregarious habit of men, and without overcrowding, will bring about more favorable conditions of life, while promoting an increase of product at a much less cost of labor than ever before, with correlative high wages and low prices. Yet the motive which sets all these new forces in action is the self-interest both of the capitalist and of the workman, each striving to attain personal welfare only, but yet promoting the public welfare, whether conscious or unconscious of their true functions in society.

It was said by the prophet of olden time that "The Lord maketh the wrath of man to praise him." It might be said by the prophet of the present, that the Lord maketh the selfishness of man to work for the material welfare of his kind.

VII.

AN EASY LESSON IN STATISTICS.[1]

IN this and in articles which are to follow, I shall endeavor to bring the present condition of the people of the United States into a form of statement which will enable readers to understand the bearing of many questions now pending to whom statistics are apt to be very dry and uninteresting. Persons who are not accustomed to deal with figures in very large sums, and to whom the incomprehensible millions of our national book-keeping carry but a confused impression, may easily comprehend the facts on which all fiscal or financial legislation ought to be based when the large sums of the national accounts are reduced to the quantities and values of a corresponding community of 6,000 persons. In this essay I have assumed the existence of a community of 6,000 souls whose conditions as regards occupations, industries, production, division, and utilization of land, etc., are as nearly as may be identical with those of the people of the United States in 1880, when the population was 50,000,000, or in the present year, when it is more than 60,000,000. I have made use only of such census figures as I believe to be worthy of trust or which I could substantially verify myself. Disregarding fractions, then, the following computations relating to 6,000 people correspond to the figures which would apply to the present population of the country, assuming that no material change has occurred since the census of 1880 in their relative occupations and production. The figures of foreign commerce have not held quite the same proportions, but in other matters of production and distribution there has probably been but little change.

I assume a typical township which covers 300 square miles. It is about 25 miles long east and west, and 12 miles wide north and south. It comprises 192,000 acres of land, of which about one half, or 96,000 acres, is good arable land; the rest is about equally divided between pasture, mountain, and forest. A little over twenty per cent. of the arable land, about 30 square miles, or 20,000 acres is under the plow. Within this area of 300 square miles there are 6,000 people, of whom 2,000 (1,700 males and 300 females, including 35 boys and 14 girls of 15 years or under) are occupied for gain, or are doing something by which they may get a living for themselves, each one on the average

[1] Reprinted from the *Forum*.

supporting two others, either in farming, manufacturing, mining, or trading, or in professional or personal services. The 2,000 who are occupied for gain are occupied substantially as follows: 870 as farmers (490) and farm laborers (380), doing their work in part by machinery, mainly by the use of tools and implements driven by horse or manual power; 226 occupied in personal service—servants, draymen, hackmen, and the like—doing their work mainly by hand; 224 laborers not on farms—hewers of wood and drawers of water, diggers, and delvers; 214 mechanics or artisans, working where the work is to be done individually rather than collectively, and operating tools rather than machinery; 200 occupied in the collective work of the factory, operating machinery rather than using tools; 36 employed upon railways—engineers, firemen, and the like—omitting common laborers; 30 miners; 200 persons engaged in mental rather than in manual or mechanical industry, using their heads rather than their hands—clergymen, lawyers, doctors, literary persons, heads of corporations, merchants, traders, and the like.

The study of the occupations of the people may enable one to make a better estimate of their average income or product than any figures which can be compiled in a census; therefore it may be useful to make even a closer subdivision of these pursuits:

Occupied in agriculture:		
Farmers	500	
Farm laborers	370	
		870
Occupied in personal service:		
Hotel keepers	4	
Domestic servants, waiters, laundresses, coachmen, and the like	158	
Draymen and hackmen	20	
Others, including mariners and police	44	
		226
Common laborers		224
Occupied in the mechanic arts:		
Carpenters, wheelwrights, lumbermen, and other men who work in wood	56	
Blacksmiths	20	
Painters	14	
Masons	12	
All other mechanics	112	
		214
Occupied in the collective or factory system:		
Workers in textile factories	60	
Metal workers in blast furnaces, smelting shops, machine-shops, and the like, worked on the factory principle	36	
Clothiers, tailors, and tailoresses	50	
Boot- and shoe-makers and hatters	24	
All other people who work in the factory rather than out-of-doors	30	
		200

Occupied on railways, omitting common laborers :		
Railway engineers, conductors, firemen, and brakemen.....		36
Miners		30
Occupied in mental work :		
Clergymen	7 to 8	
Lawyers	7 to 8	
Doctors.....	7 to 10	
Professors, teachers, musicians, and literary people.....	30	
Presidents of corporations, banks, railways, insurance companies, and the like.....	24	
Merchants and traders	56	
Clerks, salesmen, saleswomen, and book-keepers	64	
	——	200

This classification by occupations is not an absolutely correct one, but it suffices for the general purpose of indicating the condition of the people. In former times, before the adoption of the factory system, each little community was to a large extent self-sustaining. The material for garments was spun and woven in the household. The farmer was a mechanic and almost of necessity a jack-of-all-trades, while the mechanic was apt to do a little farming. The local tailor and tailoress made the clothes. The work of each given community was much less subdivided individually than it has been since. Later came the substitution of the factory system for making cloth, the farmers' daughters leaving the farm and finding occupation in the factory. Then followed the wholesale clothier, and the local tailor as a maker of garments almost disappeared.

But another phase of the distribution of work results from the reduction in railway charges. The railway system, by reducing the cost of moving goods to a fraction of a cent per ton a mile, practically converts a wide area into a close neighborhood. Hence there has been a considerable measure of household manufacture again introduced among farmers, but under wholly new conditions. The sewing-machine has become a necessary household implement, and the knitting-machine, sometimes owned in the farmers' families, but more often owned by a manufacturer of knit-goods, is widely distributed throughout the farmers' households of the eastern part of the country. The materials for ready-made clothing are cut at the manufacturing centres in the cities by the great clothiers, sorted, and put up in parcels with the thread, linings, and buttons ; or the worsted and woollen yarns are made up in packages with directions for their use. These materials are then distributed throughout the farmers' families in the Eastern States, to be made up into garments or worked into hosiery and knit-goods, sent back to the cities to be pressed and finished, and then distributed for sale. Thus there is a considerable amount of manufacturing carried on, especially by the women of the farmers' families, which does

not appear in the census returns, and the women thus partly occupied do not appear in the list of those who are occupied for gain. The income for such work is small in each individual case, but it adds in the aggregate a large element of comfort and welfare to those whose every-day work is that of doing the household and dairy work among the agricultural population of the country. In the mountain section of the South, again, the old conditions of small self-sustaining communities still survive, but are rapidly disappearing. The people are clad in homespun, while the log-house and most of its contents are the products of the handicrafts of the people.

We will assume that the typical community is situated upon land in the northern rather than in the southern section of the country, and that the people are a little better off in personal wealth than the average of the whole country. It may be assumed that they dwell in some part of Ohio, in which State the occupations of the people correspond very nearly in their proportions to the average of the whole country. The present value of all the land with all the improvements thereon, including railways, factories, machine-shops, dwelling-houses, public buildings, schools or colleges, and goods and wares of every description belonging to this community of 6,000 persons, averages less than $1,000 per head, and amounts in the aggregate to between five and six million dollars. This property is divided very unequally. The exact proportion of those who own some part of the land cannot be given with any positive accuracy. From two fifths up to one half of the total valuation consists of the estimated value of the land ; from three fifths down to one half consists in the value of the improvements upon it. The data of accumulated wealth are somewhat uncertain, and the census estimates have been computed at different periods on such different methods as to be almost worthless for purposes of comparison. The property assigned to this typical community is probably a third above the average of the whole country. The value of all these improvements or capital of the community, consisting of railways, factories, workshops, machinery, tools, dwelling-houses, and public buildings, also goods and wares of every kind, does not exceed $600 worth per head of the population, and is probably somewhat less.

The average value of the annual product is about $200 per head, or $600 to each person occupied for gain. The capital of this community, in ratio to its production, is therefore equal to that of the richest State in the Union. In other words, the whole capital of the community which has been placed upon the land is only equal to three years' product, even in the richest and most prosperous parts of the country. The value of the annual product of this community at $200 worth per head of the population, or computed at $600 worth as the average of each person occupied for gain, comes to $1,200,000 a year,

including what is consumed by farmers and their families upon the farms. In this gross value of all that is produced, salable farm products, rated at the farm before being moved away, come to $435,000. Assuming that each member of the families of the farmers consumes about $33 worth of the product of the farm at home, the value of the domestic consumption of the farmers comes to $87,000. The yield of minerals of all kinds, coal, oil, iron, lead, copper, gold, silver, etc., comes to $50,000. The yield of the forests is $80,000. The value added to the crude products of the farm, the forest, and the mine, by manufacturers, mechanics, and others, together with the charges for exchange and the cost for conversion and re-conversion into a consumable form, together with the product of the fisheries, comes to $548,000.

SUMMARY.

Primary value of the salable products of the farm	$435,000
Farm consumption	87,000
Product of the forest	80,000
Product of the mines	50,000
Added in the process of manufacturing and for the cost of distribution	548,000
Total	$1,200,000

It will be observed that, setting aside the sum assigned to home consumption on farms, the work of the country is about equally divided in value. The crude products of the farm, the forest, and the mine come to $565,000. The volume added in the process of manufacturing or distributing—of conversion and of re-conversion to final use or consumption—comes to $548,000.

It is a curious thought that all this huge value of traffic, production, distribution, and conversion has for its end and objective point the supply of each inhabitant with a few feet of boards over his head, sustained by bricks or timber; about ten pounds of wool and sixteen pounds of cotton converted into clothing, a barrel of flour, and two or three hundred pounds of meat each year, and a little sugar, a glass of beer, and about five pounds of solid or liquid food per day, these constituting the necessaries of life. Some one has said that life would not be worth living except for its luxuries, and that time would not be worth having except for the hours that could be saved for leisure. How much of luxury and how much of leisure can the average man get out of what fifty to fifty-five cents a day will buy for his shelter, food, and clothing?

It will be observed that 870 farmers and farm laborers were occupied in the production of grain, meat, butter, and cheese, vegetables, fibres, and fruit. This group produced more food than the 6,000 people in this community could consume, all having enough and much being wasted. They also produced more cotton than could be spun

or worn, but not enough wool. The miners produced more copper and silver than could be used and more oil than could be burned, but not enough iron. Some of the manufacturers produced more goods than this community required. Hence it followed that, at the ratio of 1880, $100,000 worth of various commodities was sold for export to foreign countries. Of the exports, $84,000 worth consisted of the products of agriculture; $16,000 worth consisted of cotton goods, manufactures of metal, tools, and implements, oil, manufactured tobacco, and the like. These figures are now somewhat changed; the export of farm products is less, of manufactures more. This export corresponded to the work of 150 to 160 farmers and farm laborers, and 30 to 40 manufacturers, mechanics, and miners; 180 to 200 in all. It consisted of a part of the product of a much greater number, but in proportion to the total the exports of the United States represent the work of about ten per cent. of all who are engaged in any industry which is directly productive. In exchange for this $100,000 worth of goods exported, this community imported from other countries at the ratio of 1880, $75,000 worth of goods, and $25,000 worth of gold or government bonds brought home. The imports consisted of the following articles:

Yearly Imports.				Per Capita Each Year.
Sugar and molasses	$9,500			$1.58
Coffee	7,200			1.20
Tea	2,400			.40
Breadstuffs	1,100			.18
Fruits and nuts	1,500			.25
Animals, fish, drugs, dyestuffs, and other necessary articles which are free of duty	15,400	37,100		2.56
Chemicals	1,800			.30
Flax, hemp, jute, and sisal grass	1,100			.18
Iron and steel, and manufactures	5,400			.90
Hides, leather, and goods	1,400			.23
Tin and tin plates	2,000			.33
Raw wool	2,000	13,700	50,800	.33
Manufactures of				
Cotton	3,300			.55
Wool	3,800			.63
Flax	2,800			.47
Silk	3,800			.64
Earthenware	600			.10
Glass	600	14,900		.10
Fancy goods	600			.10
Spirits and wines	900			.15
Tobacco and cigars	800	2,300		.13
Sundries		7,000	24,200	1.19
			$75,000	$12.50

It will be observed that the imports from other countries consist to the extent of one half of articles of food, which are articles either of necessity or of common comfort. Adding to these the crude or partly manufactured articles which are necessary to the conduct of domestic industry, the proportion of this class of imports comes to two thirds of the whole. That part which could be spared, if we could not afford to pay for it with the excess of our grain, cotton, and oil, comes to only one third of the total import; and that part which may be rightly put under the head of luxuries is but a tithe of the whole.

Since 1880 exports have proportionately diminished, but imports have ratably increased about in ratio to population, and the above are about the relative values of goods now imported. The individual consumption of imported goods is now about $12.50 per head, on which the duties come to a little less than $4.00; in round figures, $16.00 per head duty paid. The exports are now about equal in declared value to the imports without the addition of duties. As the sum of imports did not balance the export in 1880, the remainder was paid for in gold or bonds. These imports were taxed at the custom-house $24,000, or $4.00 per head of 6,000 people.

It will thus appear that about 18 per cent. of the people occupied in agriculture in 1880 depended upon a foreign market for the sale of their product, to whom were added a few manufacturers and mechanics whose goods were sold for export. The export of food and fibres represented 18 per cent. of the products of the farm, to which manufactures being added, the whole export stood for 8 to 10 per cent. of the work done by all who were occupied for gain. The import consisted mainly of articles of food or of articles in a crude or partly manufactured condition necessary to the work of the domestic manufacturers; a small part only consisted of articles which could be spared, or which might under other conditions have been made within the limit of the community itself and by its own people.

It is admitted that a part of this product of $1,200,000 worth is distributed in payment for rent of land, to owners in whose possession all the occupied land now is. There is still a large area of unoccupied land, but it is not yet available for use and may not be occupied for a long time to come. It is admitted that another considerable part of this product of $1,200,000 worth a year is distributed in the form of interest on bonds and mortgages, these evidences of indebtedness belonging to the few rather than to the many. Still another part of this product is distributed in the form of profits, and falls to the owners of the railways, factories, and other instruments of production constituting the capital of the country, in greater or less proportion according to the measure of service which they render to the community. Another part is distributed in the form of fees or salaries among professional persons, musicians, literary people, and the like.

Lastly, the greater part of the product is distributed in the form of earnings of wages among those who do the primary or mechanical work of production and distribution. Such being the measure of the whole product, by so much as some have a greater share must others enjoy less. If the whole sum of $1,200,000 worth were equally distributed, it would not even then suffice to meet a very high standard of general comfort and welfare ; it would come only to 55 cents' worth a day to each person. This is a large estimate if all were consumed in even portions. The whole work of production would still be substantially as great as it is now, and would not admit of any considerable amount of leisure on the part of the whole body of persons occupied for gain. There would be little relief in the hard work of getting a living. But, unless some part of this product of $1,200,000 worth of all kinds of goods and wares is saved and added to the capital of the community by some one, it matters not by whom, the next generation will suffer for want of capital. A considerable part of the product is wasted through ignorance or vice, while only a small part is wasted in luxurious living. "Mankind is as lazy as it dares to be," even now.

In fact, that part of the product which may be added to the capital of the community must itself be consumed in the process of reproduction or conversion into capital ; therefore the workmen who construct the railways, mills, works, and the like, in which the savings of the community are invested, get their subsistence, clothing, and shelter from what is paid them in doing this work. The object and end of all production is, therefore, in the first instance, complete consumption, the greater part of the product being consumed without specific reproduction in the form of capital, the smaller part being consumed in the process of conversion into capital. Even that part of the product which is consumed in the more or less luxurious living of the prosperous is not wholly consumed by themselves. They may waste a part of their income or devote it to purposes which are not reproductive and are not necessary to comfort and welfare, such as the construction of palatial dwellings, the making of pianos, the laying out of fine places, the building of yachts, and the like ; yet even in this expenditure the workmen who do the work obtain their subsistence in return. No man lives to himself alone even in a material sense, and each one costs the community only what he and those dependent directly upon him consume on their own persons. What he spends stands for the subsistence of other persons. The rich man or the capitalist merely gives a different direction to the consumption of that part of the annual product which comes under his control from what it might otherwise have taken. It may be neither the most useful direction, the wisest, nor the best ; it may even be wasteful ; but even such methods of expenditure cannot be changed without altering the conditions of

life and taking away the incomes of many of the workingmen, among whom the rich man expends his wealth. Liquor and tobacco are computed to cost consumers $75,000 to $100,000 a year in each average community of 6,000 persons. But if each producer or distributer of these articles averages the same income as in the other occupations—to wit, $600 each—then 125 to 167 men supporting 375 to 500 in each average community of 6,000 people, or 1,250,000 to 1,650,000 men supporting 3,500,000 to 5,000,000 men, women, and children in the whole country, now depend on the production and sale of liquor and tobacco for the means with which to buy their own food, fuel, clothing, and shelter. If the production and sale of liquor should be stopped they must find other work. Under the present distribution of occupations and of products, does any one actually suffer because a sufficient quantity of the necessaries of life is not produced? So long as no one suffers for lack of land or for want of opportunity to work for a living in consequence of the accumulation of wealth, may not the true remedy for want consist in the ignorant rich learning how to spend or direct the material force which comes within their control in a better way; and in the ignorant poor learning either how to spend or to save the force which comes within their control in a way that will give them better results? The waste of the many poor costs the community in the aggregate far more than the waste of the few rich. True progress may consist not in taking away from any, but in adding to the production of all, especially of the means for shelter.

It may well be remembered that the science of distribution is as yet but little comprehended, while production in ample measure is absolutely assured. It is less than a century since even the English-speaking people began to learn the very alphabet of commerce; has that part of the English-speaking people who occupy this country yet learned how to spell words of more than one syllable in putting together the letters of this alphabet? They have learned that trade among themselves has become profitable to all just so far as it is free from obstruction; have they yet to learn that trade with other nations may be as profitable when free from obstruction? Have they not yet to learn that the nation in which the wages or earnings of workmen are the highest, because they make their products under the best conditions and therefore at the lowest cost, can also gain the largest profits and earn the highest wages from the widest international commerce?

We sell to China coarse cotton goods made by weavers who earn a dollar a day; yet four fifths at least of the people of China are clothed in coarse cotton goods woven on hand-looms on which the weavers cannot earn more than ten cents a day. They pay us in tea produced and prepared at wages of ten cents a day, which we could not afford to grow at wages of one dollar a day, even if it would grow in this coun-

try, because we cannot spare the time for that kind of hand-work. We sell flour produced at wages four times as high as they are in Belgium, in competition with the tillers of small fields in that country, to which machinery cannot well be applied. We take our pay in part in high-priced Brussels lace, made by women who work for the lowest wages and under the worst conditions of almost any people in Europe. If we want the lace we could ill afford to make it under such conditions.

In the community of 6,000 people which I have taken as an example there may be a few paupers, mostly foreign-born ; but no one in this community is allowed to suffer for want of the absolute necessaries of life, except through oversight or accident.

I have given the probable average product of each person occupied for gain at $600 worth per year. This yields, disregarding fractions, what fifty-five cents a day will buy in the form of food, fuel, shelter, clothing, and sundries for each man, woman, and child ; so close does want tread upon the heels of plenty. This is in fact a large estimate. There are a great many more people whose product is less than fifty cents' worth a day each for themselves and those dependent upon them, than of those who earn more ; yet this is the richest, most productive, and most prosperous country in the world.

VIII.

REFORMS THAT DO NOT REFORM.[1]

ASSUMING the conditions of an average community of 6,000 people to be substantially as stated in the last number, we find but three ways of improving them, namely : First, by increasing the quantity of the product, and finding a market for the increase, in order that it may be converted into money and distributed. Secondly, by changing the present methods of distribution of that which is now produced, without increasing the quantity ; that is, by finding a way by which those who have not quite enough for comfort and welfare may rightfully secure a share of that which is wastefully consumed by those who have too much or who spend unwisely. Thirdly, by improving the mode of using what is now produced, without increasing the quantity or materially altering the present method of distribution, so that it will yield a better subsistence to all.

What is now somewhat indefinitely called the "labor question" must of necessity consist in solving one or all of these three problems. What other way is there to improve the conditions of the community? If all that is produced by each average community of 6,000 people comes within the limit of what will sell for $1,200,000, or what that sum will buy at present prices, surely that fund constitutes the source of all earnings, wages, rents, profits, and taxes. We can consume no more unless we can re-convert into food, fuel, and clothing a part or all of the capital of the country which has been saved in our two hundred years or more of existence, amounting to less than three years' product, the whole of which, if consumed, would save us only two or three years' work and serve us only until it was exhausted. What should we do then? We cannot have more than all there is ; therefore the limit of all that is produced must be regarded in all plans of social reform by all alike. This fact must be considered by the anarchist, the socialist, the communist, the advocate of the single tax on land, the representative of the Anti-Poverty Society, the wage-earner, the co-operator, the knight of labor, the profit-sharer, the free-trader, the protectionist, the eight-hour advocate, the advocate of fiat money, the

[1] Reprinted from the *Forum*.

mono-metallist, and the bi-metallist. The theories of all these doctors of social philosophy—quacks, or regular practitioners—must deal either with what is now produced or else with plans and methods by which the gross product can be increased and more equitably distributed. The question in plain prose is, How much can you add to fifty cents' worth a day ?

If, then, the average product at retail prices is what I have estimated, to wit, not exceeding fifty cents' worth per day for each person, from which sum all profits, wages, earnings, and taxes must of necessity be derived ; or even if I have made an error of five or ten cents a day, which would come to one thousand million or two thousand million a year in computing the gross value of the product of the United States —not a probable error ; then fifty-five to sixty cents a day is the limit, and even that limit is a very narrow one ; it leaves little margin for saving either time or work.

This special community of 6,000 persons would have furnished itself, according to the average of the whole country, with fifteen miles of railway ; but being a more prosperous community than the average, it has perhaps twenty, thirty, or possibly forty miles. Of the 2,000 persons occupied for gain, 140 may be engaged either in operating or in constructing railways, 36 as engineers and firemen or other employés, the rest as mechanics and laborers. Of the nineteen to twenty million men, women, and children now carrying on the work of this country, probably more than twelve hundred thousand men are occupied either in operating or in constructing railways. This railway force is our standing army ; while other nations prepare for war we prepare for peace and plenty by opening the ways for commerce.

It is curious to observe that the only relics of the great Roman empire which now have any actual utility among men are the Roman road and the Roman law. The one, which was constructed to open the way for conquest, remains an open way for commerce ; the other remains at the foundation of our civil organization ; all else has vanished except Roman literature and art. Of all the forms of capital which at the present day are springing into existence, perhaps less will remain even a century hence than now remains of the capital or products of the Roman empire, if we except the opening of the ways. The term " fixed capital " is sometimes used to distinguish the less perishable forms of capital from those which are useful only for the day ; but there is nothing fixed except the law of change. There are factories in existence which purport to be fifty years old ; but within that time the motive power and all the machinery has been changed once, twice, or thrice. Where land can be had, true economy may now consist in taking down the high building of five or six stories piled one upon another, and in reconstructing the mill only one or two stories above the

ground ; such changes are now being made. Who can tell when the next inventor will appear who will destroy all the rolling-stock of the railways ? Who can tell how long people will be satisfied with the present crude and unscientific methods of constructing dwelling-houses ? What useful factor or form of capital exists in a material form to-day that is more than a few years old ? What permanent improvement have we made on the face of the land even in this country, except in leveling the hills, piercing the mountains, filling up the valleys, and laying down the ways of commerce ? All that we can do is to move something ; we can make nothing. And when we have opened the way, laid the rail, and brought the line to the seaboard, why do we obstruct the distribution of our own products ? Why do we construct legal barriers to commerce with Canada and Mexico, for instance, more difficult and costly to surmount than any of the heavy grades over the mountains.

This community of 6,000 people would have furnished itself, at the average of the whole country, with $150,000 in lawful money, consisting of gold or silver coin, legal-tender notes receivable for taxes, convertible bank-notes, and certificates based on silver or gold. The more dense the population, the greater will be the proportion of checks substituted for actual money ; and the more widely scattered the population, the more actual money must be carried in the pockets of the people. All we have to do is to keep the quality of the money good and the quantity will take care of itself.

It is admitted that there may be a small margin of error in each and all of these computations. The proportion of people engaged in the different arts varies materially in different States, but it is not necessary that the proportions assumed should exactly correspond with those of any particular State. These small figures represent very nearly the proportions of the work and of the product of the whole community. In taking the United States Census returns of the occupations of the people, the margin for error is small, and the errors would alter the proportions assigned to each occupation in this small community only by a fraction.

We have become so accustomed to treat income in terms of money that a person is apt to stop at the figures without giving thought to what the money will buy. Now the money measure of the income is but an evidence that productive work has been done from which the income has been derived. The work itself varies in quantity and quality ; the income of each person depends more upon the quality than upon the quantity of his work. Therefore the apparent paradox comes within easy comprehension, to wit, that in determining the cost of any given service the rate of wages in money is no sure standard, but if the quality of the work from which the wages or earnings are

derived is good, the rate of wages will be highest where the actual cost of production is lowest.

Again, the rate of earnings not commonly called wages but counted under salaries or profits, will be highest in proportion to the quality of the mental factor by which the manual or mechanical work is guided. In this, again, the paradoxical rule will hold good, that the highest earnings or salaries and the largest profits are derived from the largest product made at the lowest cost by the payment of the highest wages which the sale of the product will permit, and by the application of the most effective proportion of mental rather than of manual work. It is in this way that the function of the capitalist is justified. By his mental power in guiding and controlling the application of capital in the most effective way, he adds to the product of the community tenfold or twenty-fold what he takes from it for his own consumption. He thus reduces the cost of all production, and increases the real wages or earnings of all the manual or mechanical workers who join with him in the conduct of all the industries and occupations of the country, because he not only assures the highest wages to those who perform the most skilful and effective work, but he is engaged in a perpetual effort to make his capital more effective, so that the proportion of his capital to the quantity or value of his product steadily diminishes. Under this imperative law the rate of wages of the workman is raised, and at the same time each dollar or unit of the wages will buy more of the product of the establishment in which he works, or more of the materials for shelter, food, and clothing for which the product of that factory may be exchanged. If such are the methods of progress under the competitive system which now prevails, we may well hesitate in attempting to reconstruct society by any of the processes submitted by ardent reformers, whether quacks or regulars.

Now, then, how can we reform, change, alter, or improve the present condition of any 6,000 people consisting of a few rich, a considerable number of well-to-do, a large number of busy, fairly well-housed, and fully nourished working people who are engaged in all the arts of life, and a moderate proportion of poor? There are Protestant and Catholic, temperate and intemperate, well-instructed and ignorant, as there are in each community wherever we take the average. It is possible that many difficulties may arise in the application of special and theoretic methods when the attempt is made to deal in a practical way with this typical community of 6,000 people, which do not appear to the minds of those persons who think they can reform the whole nation by an act of legislation. Many men think themselves fully competent to regulate the operation of 150,000 miles of railway and to bring it all under very simple rules, but I have never found one who

was willing to take the whole regulation, charge, and direction of the bakers' carts, the butchers' and grocers' wagons, or the job teams of a single city, or to attempt to reduce the cost even of distributing bread after it is baked. The distribution of bread after it is baked now costs the average workman in a city as much as it does to grow the wheat, mill it, barrel it, move it 1500 miles, and convert it into bread, all put together. If the theories of obstruction and regulation which have been attempted in the control of the railway system were fully applied to the traffic even of a city of moderate size, it would almost surely happen that some of the inhabitants would starve every week unless put into the almshouse.

It is easy to imagine the conditions of a small community of 6,000 persons, some of them far distant from the rest in the outskirts of the 300 square miles occupied, others living in closer neighborhood, as in villages; while in a district close to the coast-line there may be a town in which people are crowded together as they are in many of our large cities. We can also imagine in each community a certain number of "cranks," a certain number of dishonest people, a certain number of thieves who steal either within or without the forms of law; also a certain number of sentimentalists who, finding things all wrong, are absolutely certain that they can put them all right; and also a certain number who promote pauperism by indiscriminate almsgiving; finally, a good many who think they could build up a community, if they only had their own way, in a much better form than that in which this community finds itself. Would it not be judicious to apply a little common-sense to some of the methods which are indicated by the names or titles already given to the several classes of social reformers and economic theorists?

We may perhaps find in each community of 6,000 people one or two anarchists, who have been bred in a foreign land under a despotism, and who think that because there may be no way out from that despotism except by assassination or by the destruction of all existing forms of society, therefore the same methods should be applied in this community; so they shoot a policeman in place of a military ruler. Is there any better way of dealing with them when they become violent than the Chicago method?

There will be a few socialists, or advocates of what is called the collective method of regulating society under the control of the state, who desire to bring all the property of the community under state control, and to do away with private enterprise and private property both in land and capital. They present a grand scheme under which every one shall have enough and none shall have too much. Suppose this grand scheme limited to the conditions of any 6,000 people, 2,000 of whom—men, women, and children—are occupied for gain, per-

haps one in five of whom may be a voter or a man of arms-bearing age, and of whom 800 may sometimes vote. Now in what community of 6,000 people will any considerable part of the 800 men who vote, or of the 800 women, a part of whom want to vote but who are not permitted, ever agree to put the conduct of all the business and the control of all the capital, all the farms, factories, forest, and mines into the hands of the town officers by a majority vote? Who would be the aldermen, the councillors, or the selectmen chosen to become the managers of all the railways, factories, shops, and warehouses? How would they be selected? What would be the condition of the civil service of that community? Who would be "boss"? Would such a method of controlling the capital of the community increase the product so that there would be more than $200 worth per head each year, or about fifty cents' worth a day per head? Would this plan be apt to improve the methods of distribution? If it did not, who would be any better off? If, on the contrary, it were to diminish the present product and put the distribution under the control of the superintendent, might not a good many people starve who now get some sort of a living? Is not despotism, either of one or more, the necessary complement of socialism? Fully admitting that there are many functions of society which the state or the municipal corporation can perform for the citizen better than they can perform them for themselves, yet if it would be manifestly impossible even for a small town of 6,000 people to charge the officials with all that the advocates of socialism or of the collective system propose, is it not yet more impossible for the Congress of the nation to interfere in the direction of many of the functions now attempted by it?

The communist, of whom a few examples are always to be found in every community, proposes to divide the annual product equally among the members of the community—to have all things in common. There have been some examples of successful communism in a limited way; as, for instance, in the Shaker communities; but the Shakers impose a strict limit upon population, besides requiring an equal distribution of the products of labor. This is logical. The general application of their principle would lead to complete success; that is, there would be enough for all, for the reason that all would soon be none. When we ask a communist whether or not the application of the policy suggested by him would lead to a product exceeding that of the present day, about fifty cents' worth daily per head, he is incapable of giving any affirmative answer; all such undertakings which have assumed any importance, except that of the Shakers, having failed and broken up.

Of late, the renewal of the proposition long since presented by the economists who were known as the physiocrats of France, that all value comes from land, coupled with a plan for collecting the entire revenue

of the country by the imposition of a single tax upon the value of land, has led many hopeful persons to believe that the panacea had been found, and that all that is needed to bring about uniformly better conditions is to adopt the single-tax system and to organize anti-poverty societies. It is held by them that the rent of land would be more than sufficient to meet all the expenditures of city, town, State, and nation combined, and that by so converting what is now paid as rent into taxes, no rent could thereafter accrue to the benefit of private persons. The advocates of the single-tax system admit that the private possession of land is necessary to its productive use ; they only propose to tax land more and other property less, and they object only to the private possession of land under any other conditions than their own. There is no absolute private ownership of land in this country. All land is now held in conditional possession only. It is subject to the right of eminent domain, subject to be taken for public use, and subject to the condition of paying taxes lawfully assessed upon it. It therefore follows that the advocates of the single-tax system propose only to change the conditions under which land shall be held in private possession hereafter, as compared with the conditions under which it has been so held heretofore. Will this change increase the product ? Will it tend to the application of more capital or of less capital to the improvement of land. Raw land has no value. When a high price is paid for a corner lot in a city it is paid for the choice of position, not for any inherent value in the land itself. Until the town house is built upon it the corner lot will yield neither rent nor tax. Where land can be occupied and used the highest price is paid for the selection, in order that the occupant or possessor of the corner lot may distribute the greatest amount of products at the lowest charge for the service. Land attains value only in proportion to the labor and capital which are applied to its use and occupancy. There is more free land waiting to be used at this time in this country than ever before, for the reason that capital applied to the construction of railways has brought the whole country within the reach of settlers at the lowest possible cost. In the older seaboard States land is available for use on better terms than it could have been obtained by the original settlers, who paid nothing for it, and who were not subject to any rent, for the reason that the greater part of the agricultural land of the Eastern States could now be purchased at much less than the cost of clearing and improving it, or at less than the cost of the buildings upon it.

It is also probably an error to suppose that the present rental value of land, taken by itself, including that somewhat indefinite factor, the so-called " unearned increment," even if it could all be converted to public use in payment of taxes, would suffice to meet the necessary expenses of government even for State, city, and town purposes. For several years

the assessors of the city of Boston, where the present valuation of land is very high, have kept the valuation of land for the purpose of taxation separate from that of buildings and personal property. The valuation of the city for the year 1888 was $764,000,000, on which a tax is to be assessed of $10,000,000 for city, county, and State purposes, at the rate of $13.50 on each $1,000 worth of property. Land and buildings are assessed nearly if not quite up to the market value. Personal property is reached by the assessors of the city of Boston in larger measure than in any other city in the country. At the average of recent years, the value of land is $333,000,000 ; of buildings and improvements, $230,000,000 ; of personal property, $201,000,000. In order to raise $10,000,000 revenue the tax upon the whole must be $13.50 on each $1,000. If the assessment were made upon real estate, including land and buildings, the rate would be $17.75 ; or, making allowance for abatements, $18.50. If assessed on land value only, the assessment would be a little over $33, allowing for abatements about $35, on each $1,000. It is doubtful if the rental now obtained by the owners of all the land of Boston would more than meet the $10,000,000 expenses of the State and city, omitting wholly the amount required by the nation. It must be remembered that our national taxes amount to a sum as large, if not larger than all the State, county, city, and town taxes combined.

Let it be assumed that all the taxes are levied upon land at $35 per $1,000 : the first question which arises is, Would not this heavy rate immediately depress the value of land ? It has done so in other cases where even indirect taxes upon land customarily assessed upon occupiers and not upon owners have become excessive. I heard of good land in England last summer on which the rates and tithes were so heavy that its market value was only five shillings an acre. The rates, tithes, and other burdens upon wheat land in Great Britain, where there is almost no direct tax upon land value, come to more than the entire cost of producing wheat in Illinois, Minnesota, or Dakota. If the value of land were thus reduced, the revenues would of necessity be derived in some other way than by an assessment on value. It would then become necessary for the city assessors to determine the relative rental value and not the salable value of each parcel of land ; they must then assess a tax on it in the form of rent without regard to what it would bring in the market. The end of that would be that the city would become the landlord and the assessors would fix the rent. How would they change the rental from time to time, to meet new conditions as the value of each particular site for use or occupation changed, permanent possession of land being admittedly necessary to its productive use and occupancy ? When the rental tax had been fixed for a long term—without which fixity of

tenure no permanent buildings would be constructed,—if the site value increased the tenant would sell his lease for a bonus and thus secure the unearned increment. If the site value decreased, he could no longer pay the tax ; who would compensate him for the unearned decrement ? Witness the failure of the attempt to fix judicial rents in Ireland by the decision of a court. In many cases the tenant has secured a reduction by representing to the satisfaction of the court that he could pay no more. As soon as the rent has been fixed, the tenant has sold his new lease at a large bonus or premium. Who would put a building upon land under such a no-private rent and single-tax tenure, unless he could obtain a permanent lease from the authorities at a fixed rental or an agreement for taxation at a fixed rate ? Who would then put a building upon such land unless he could obtain the average income from his capital, and unless he could recover in addition thereto the rent or taxes due to the city, from those who should occupy or use the buildings upon the premises ? Would land subject to an annual tax of $35 per $1,000 on the present value be more widely distributed than it now is ? This tax must be the first lien upon the land ; could any man except a large capitalist afford to occupy land on such terms ? How would a single tax on land affect farmers, who can now barely earn the tax imposed on their land and who seldom get more than a fair return for their labor out of their land as compared with the returns from other occupations ? Most of the farm land of this country is no-rent land ; it yields no more than a fair return for labor. How would country towns obtain any revenue, where all the land yields but a meagre support to those who either occupy or cultivate it ?

The fallacy of this proposition lies in the fact that land is the only source of primary production, and is not the only source of income. If taxes are to be strictly assessed on land in ratio to its capacity to yield rent or a rental tax, then the possession of land in the hands of those most capable of using it as an instrument of the utmost production must become necessary in order that the tax may be met. Low-taxed land now serves for the support of many who have neither the capital nor the capacity to get the utmost production from it ; but if all taxes are put upon land only and the rate thus becomes very high, it can be used or cultivated only in the most productive way, and this implies large capital and full capacity. Would not this again tend to the concentration of land in fewer hands than now possess it ? Would not the capitalist, or any other person who might possess the land under the new conditions, be enabled to distribute the whole of the single tax among the consumers of all products more surely than he does now ?

Finally, would this change in the system of land-tenure lead to an increase of production ? If the present product is fifty cents' worth

per head of the population, more or less, what would be the effect of the single-tax system in increasing or diminishing this product? When the advocates of this system put their proposed measure into the form of a bill to be submitted to any legislature, their difficulties will begin and the fallacy of their reasoning will at once become plain. I may suggest that it is often a sufficient test of an *a priori* theory to ask the proponent to put his proposed system in the form of a bill to be passed upon by any legislature. This brings the subject to a practical issue, and in nine cases out of ten the theorists are incapable of framing an act that will work, because their propositions are impracticable.

IX.

HOW SOCIETY REFORMS ITSELF.[1]

THE advocate of co-operation holds out the expectation of great benefit to the community by the adoption of that system, especially when applied to distribution. One may ask those who prefer this method, If you desire to co-operate, why do you not co-operate? There is nothing to prevent, except the one fact which is commonly overlooked, namely, that the small margin of profit which now suffices to maintain the great shops of this country, dealing upon the cash system and upon the principle of large sales and small profits, leaves little or no fraction to be saved by those who choose to co-operate in some other way than by buying at such a shop. The highest city rents are paid by the great shopkeepers for warerooms in central locations, in order to be able to distribute goods at the lowest cost, because such places are most convenient for their customers. The customers save more time and labor for themselves by going to these great shops in the trade centres, on which the highest rents are paid, than they can save for themselves by going long distances to small shops widely scattered, or by attempting to share the small margin of profit by going into the business of co-operation. It is also probably an error to suppose that the big shops eat up the little ones. The vast increase in the mass of commodities to be distributed in recent years makes the big shops necessary to do the additional work, while what are now small shops in the smaller cities would have been great shops in the great cities thirty or forty years ago. The largest dealers do their work at the least specific charge or profit on each transaction; it is only in the small shops, especially in those giving credit, that the cost of distribution is high in proportion to the amount of the business done. At a recent convention of the representatives of co-operative distribution in Great Britain, where long credit, even on retail purchases, has engendered high cost in distribution, it appeared that the profit saved and divisible among themselves amounted to more than twelve per cent. on the gross sales. It is well known that the co-operative shops on a cash basis sell at lower prices

[1] Reprinted from the *Forum*.

than the private shops. Where is the great shop in any city in the United States in which the net profit is even half of twelve per cent. on the gross sales? The largest fortunes are made on a much smaller margin of profit. On the other hand, the rents, charges, and expenses of the great shops, large as they are in the aggregate, come to a very small percentage on the gross sales, while in the management of the separate departments of these great establishments, large numbers of men attain success as business men who have failed in their attempts to transact the same business wholly on their own account.

The operations of the great banks are probably conducted at the least margin of profit on each transaction, as compared with all other branches of commerce. It is for this reason that in all times and in all places, since banking became one of the necessary factors of commerce, the highest mental qualities of judgment, prudence, and foresight, as well as the highest moral qualities of honor, probity, and truth have been called for and have been found in those who have conducted the great banking houses of the world. On the other hand, there is no truer standard by which to measure the general intelligence and integrity, or the want of these characteristics, in a given community, than by the support or obstruction which its members may give to the establishment of a well-developed system of banks and banking.

We may therefore ask the advocates of co-operation, Would your method increase the general product or decrease the cost of distribution so that each one might get more for his fifty cents than he gets now? Can you save any thing in the general cost of distribution? If you can, why do you not co-operate? So far as legislation is concerned, the way is open.

Another proposed panacea is that of profit-sharing. In one way this has been an established method ever since the factory system was introduced. Payment by the piece is but a system of profit-sharing without imposing upon the workman any responsibility for losses. It lies at the very foundation of the rule that large earnings are the correlative or complement of a low cost of production; it is also conducive to greater profit in any branch of industry to which it can be applied than employers can secure by any other method. Profit-sharing in this way is, however, very different from the conception of those who advocate it as a more just method of distribution than the present system. It is commonly assumed that the share which now falls to capital under the name of profits is very large, because such profits have been the source of many great individual fortunes. In this again it is not safe to reason except on the basis of facts. In many arts the share, or profit, falling to the capital invested may be equal to the whole sum of wages paid out in the conduct of the work; yet this

profit may be but a very small fraction on each unit of product, and may represent but a very moderate percentage upon the capital used, in proportion to the risk taken. In almost all the primary processes in the production of metals, in many branches of metal-working, and in the textile arts, the capital required in the mills or works comes to a thousand dollars or more for every man or woman employed. Heavy stocks of material must be carried, from one half to three fourths of the value of the finished product may consist of the cost of the materials purchased, and the total annual product may not much exceed the amount of capital invested. In other arts, such as milling grain, packing meats, and the like, the cost of materials may come to even ninety per cent. or more of the value of the completed product; hence even a mere fraction of profit on the outlay for material may amount to a larger sum than all the wages paid in that branch of production. If great fortunes are made on these small margins, it is because those special branches of work are the very ones which require not only the largest proportionate amount of capital but also the very greatest ability in the management.

It follows that the ratio of profits to the work done is only that which will bring into the business the necessary capital and ability combined; therefore any system which should propose to give to the workman any share of this small margin, without his taking a corresponding share in the risk of loss, would of necessity result in restricting the work itself. Only those who are specially protected for a time by patents, by combinations or trusts, or by special legislation, can resist the tendency of profits to a minimum, because the competition of capital with capital works steadily toward the reduction of all profits to the measure of that rate which is necessary to attract capital and ability to the work, without which the work will not be undertaken at all.

Many intelligent attempts have been made on the part of great capitalists or employers of labor to introduce the system of profit-sharing, according to the reformers' conception of that term, for the joint benefit of owner and workman alike. If such joint benefit had been the result, would not the system have become general? Has it been found, as a rule, to promote an increase of product or a diminution of work? Has it added to the sum or mass of the product of the community? Unless this method should either add to the present product of fifty cents' worth per head per day or reduce the cost of making that product, what effect would it have on the general condition of society?

The advocate of protection to domestic industry by means of a tariff, alleges that the taxing of foreign imports will greatly increase the general product, and will in the long run diminish the cost of the protected article. This system may undoubtedly give a different direction to the

work of a particular community, but is it not in the nature of things of very limited application? In a given community of 6,000 people divided substantially like the example already given, 2,000 doing the whole work of the community, can more than from six to ten per cent. be found who now make or can make any thing which could be even in part imported from any foreign country? If more, how many? A glance at the distribution of occupations and a little thought given to the kind of work done by each class, may be all that is necessary to answer this question. Moreover, can the articles which are imported from a foreign country be paid for in any other way than by an exchange for or export of domestic products? Is not all international commerce of necessity a mere exchange of equivalents, unless when a foreign loan is negotiated? In the community taken as an example, the export trade, corresponding to the import from without, appears to give employment to a greater number of persons than are occupied in the arts of which a part of the product can be imported. If this exchange of products is wholly or in part prevented by duties upon imports, will the final effect be to increase the general product of the whole community to a sum or mass more adequate than it is now? If so, how much? And how will the gain be distributed? Will all get a share or only a few? Will many pay the cost in order that some may gain? Is not this system rather one which gives a different direction to industry than one which promotes an increase of the gross product?

On the other hand, the advocate of free trade alleges that if imports were not obstructed by taxation there would be a large addition to the general product of the whole country in consequence of this free exchange, and thereby domestic industry would be most effectually promoted. But to him the question may be put, How large a market can you find for the excess of domestic products which we cannot consume at home? How much would your domestic product be increased if there were no obstruction to the import of the crude or partly manufactured commodities necessary in the processes of domestic industry? If by admitting crude or partly manufactured products you add to the power of domestic manufacturers to supply the home market with finished goods, would you not then diminish the import of finished goods? May you not then only alter the conditions of distribution? How much can you increase the general product of the whole community above fifty cents a head, or whatever it is now, by altering the conditions of foreign trade, in which perhaps less than twenty per cent. of the community can have any direct interest either as exporters or importers? Must not exports and imports substantially correspond with each other in value, unless we become heavy borrowers of capital? Would not foreign exports soon cease if we demanded only coin in exchange? Would not one or two years' trade drain every bank in Europe, and if we secured the coin, should we have any use for so

large a quantity in our domestic traffic? If the whole volume of import and export constitutes but a small part of the total traffic of this country, does not the tariff question become one of the minor forces rather than a prime factor?

Yet although our foreign traffic may not be a prime factor in material welfare, is it not a sort of balance-wheel on which the steady and continuous movement of the exchange of all domestic products among ourselves must mainly depend? It is doubtless true that the home market takes by far the greater part of the products of agriculture, but is not the price established by what even a small excess will bring for export? It is true that while the manufacturing portion of the community are large consumers of foreign products, farmers and farm laborers are the largest consumers of manufactured goods. If domestic manufactures are promoted in any suitable manner, doubtless the demand for farm products may also be increased; but if the method of promoting domestic manufactures is one which stops or diminishes the export of farm products, will not the demand for farm products, of which our exports mainly consist, be correspondingly reduced? Can the farmers be then as good customers for domestic manufactures? Would they gain as much or as rapidly in the home demand as they might lose on the foreign sales?

Now, since the excess of our farm products cannot be sold for coin only, and can be disposed of only in exchange for foreign goods, does it not follow that any obstruction to the import of foreign goods also checks the export of farm products, and diminishes the power of the farmers and farm laborers to buy domestic manufactures? If a method of promoting domestic manufactures is adopted which diminishes the power of the principal consumers of manufactured goods to buy them, may not this system work a grave injury even to those for whose benefit it was instituted? These conditions must be considered in all their bearings before one can determine whether any thing can be added to the fifty cents' worth a day, more or less, of our products, by attempting to give one direction rather than another to the industry of the country my means of tariff legislation.

In the community of 6,000 people which we have taken as an example, of whom 2,000 are occupied for gain, 870 are farmers and farm laborers. If we divide persons by the proportion of the value of the different products of agriculture, it will appear that not exceeding five per cent. of the farmers of the United States, or 44 of the 870 employed in agriculture in our typical example, are occupied in the production of sugar, tobacco, flax, hemp, wool, and a few other articles which could be imported in part from any other foreign country except Canada. We now sell more products of agriculture to Canada than we buy from that country, therefore Canada may be left out of this consideration. On the other hand, from 160 to 180 of each 870

persons occupied in agriculture in 1880, depended wholly upon a foreign market for the sale of their product.

Again, the whole number of persons occupied for gain in work done in factories, mines, and metal works,—that is, those who are commonly called manufacturers,—is 230 in our example ; and the product of 30 or 40 of these is exported. How many of those engaged in the manufacturing arts are employed upon products which could be in part imported ? This question cannot be answered until the crude or partly manufactured materials of foreign origin which enter into the processes of their work are free from taxation ; such as wool, ores, iron, steel, hemp, timber, chemicals, dyestuffs, tin plates, as well as the machinery with which they work.

No one can rightly measure the power of this community, not only to supply itself with manufactures but also to supply foreign nations with manufactured goods, until the disparity in the cost of materials which ensues from the taxation on imports of these materials is removed. All other machine-using nations, with hardly any exception, admit free of duty the crude or partly finished materials which are necessary in the final processes of manufacturing. We do not ; therefore we have as yet had no experience by which we can test our own power either to supply our own markets or to supply foreign countries with finished goods. When this fact is considered, the difficulty of measuring the effect of tariff legislation, either in promoting or in obstructing the work of a part of the people of this country, begins to be apparent.

The tendency of invention and of the application of science to production and distribution, is to reduce all prices, to raise all wages, and to diminish the proportion of the product secured by capital in the form of profits. Does not any disparity or disadvantage in the cost of materials which enter into the processes of domestic industry become greater as the absolute prices of the materials are reduced both in this and in other countries ?

In the community of 6,000 people taken as an example, the proportion of the imports of foreign goods (valued at $75,000) taken in exchange for exports would be about as follows, on the basis of imports for the last decade :

A Articles of food, or live animals.....	32 per cent.	$24,000
B Articles in a crude condition which are necessary in the processes of domestic industry.....	23 " "	17,250
C Articles in a partly manufactured condition which are required for use in domestic manufactures	12 " "	9,000
D Articles fully manufactured ready for consumption	21 " "	15,750
E Articles of luxury or of voluntary use.....	12 " "	9,000
	100	$75,000

It will be observed that the taxes imposed upon Classes A, B, and C, omitting D and E, in the community of 6,000 people, came to $12,-500 out of $24,000, collected in the form of duties upon imports. What would be the power of such a community to sell its finished products outside its own limits if this disparity were removed? The burden of a tax is not in its actual ratio to the value of the taxed product, but in its ratio to the profit which might be made in making use of that taxed product as a component material in other manufactures. Can any one measure the power of this typical community until the disparity in the price of iron, machinery, tools, timber, steel, wool, hemp, flax, and other crude materials shall be removed, by which it is now placed at a disadvantage in competing with other communities?

Again, how can greater mischief be done than by bad methods, even of removing bad taxes, except by the bad system under which they have been imposed? Were this question to arise in a small community of sensible people, it might not be made the dividing line between political parties, but it would be assigned to or taken up by men of common-sense and sagacity, by whom the system of providing revenue by duties would be adjusted from time to time according to the new conditions developed by invention and science, and not according to the prejudices inherited from other times or according to the supposed behest of partisan requirements. It may well be that after a direction has been given to the work of large numbers of people even by a badly adjusted tariff, the utmost care and judgment are called for in changing it, lest the loss of capital caused by the change should come to more than the benefit. It is not true, on the other hand, that as legislation is now conducted the work is mainly done by those who have little knowledge of the facts and no convictions in regard to economic theories based on adequate investigation of any kind? What else, then, can happen but a perversion of public trust to purposes of private gain, even by ways of which the legislators themselves have no conception?

Again, taking no cognizance of the general question of protection and free trade, and limiting our considerations to our relations with the neighboring Dominion of Canada, with which we have lately been in danger of a quarrel, what do we find? It is alleged by those who oppose the free importation of fish, potatoes, and other articles of food, or of timber, ore, and fuel from Canada, that if the exchange of Canadian products for our own is stopped, then the people of the United States will be better off and will have more work to do. It may be admitted that, under these conditions, they will have more work to do. That is not the true question. Would they get more for their work if these articles imported from Canada were not taxed, than they get now that they are taxed? We cannot buy from Canada for money only, any more than Canada can buy from us for money only; there

must be an exchange of products. If we should exchange with Canada the kind of provisions, coal, and goods that we want less, and get from Canada the kind of food, the fuel, the ore, and the timber that we want more, might not the product of each country be increased in the measure of the gain on such exchange? Would not the wage and profit fund thus become greater than it now is? The whole country is disturbed over the fishery question. What is the measure of that question? We now import about $300 worth of salt cod and smoked herring, chiefly from Canada, for each 6,000 people in the United States. The whole contest with Canada over the fisheries grows out of the determination of Congress to tax the consumers of fish $60 a year on each $300 worth of fish imported for the use of each community like that taken for an example. The revenue thus derived is not required; it forms a part of the surplus. The owners of the fishing-smacks of the United States employ two or three Canadians to one Yankee in catching fish, and the consumers of fish are taxed $60 a year on each $300 worth consumed by our people. That tax on fish is the whole cause of the quarrel with Canada on the fishery question. Each reader may compute for himself what would be the harm or what would be the benefit of removing the tax on fish, and also estimate the harm of keeping up a constant cause of irritation with our next neighbor in order to sustain this tax. The average interest of each family of five persons in the United States in salt cod and smoked herring imported from Canada, subject to duty, is twenty cents a year; on which the revenue under the tariff is four cents, and this revenue is not required. When these facts are considered, does not the recent discussion of the fishery question become a subject of national humiliation? Whether the treaty was a good one or not did not become apparent because the opposition to ratification was conducted in such a way as to conceal the facts and to deprive the community of the means of forming a true judgment.

We next come to the nostrum of "fiat" money. The advocate of fiat money, or of the unlimited coinage of low-priced silver, alleges that if we had more money in circulation wages would be higher, and then each man could buy more, because he would have more money to spend. Does not experience prove that all tampering with the standard of value, which in the form of coin is made use of as an instrument of exchange, tends to diminish the production of articles necessary for consumption? Have not all such undertakings ended in restricting credit, and therefore in diminishing the product and in raising prices much higher and much faster than wages have been advanced? Is not credit one of the prime factors in abundant production?

Unless a large supply of so-called cheap money should increase the product above what fifty cents a day will now buy, so that the

greater quantity of money would purchase a still greater quantity of produce, might not the only effect be that the rich would become richer while the poor would become poorer, as has ever been the case when the stability of the standard of value has been tampered with by legislation or when the standard of value has been depreciated ?

Is not the malignant influence of all depreciation in the value of the currency of a country to be found chiefly in its effect on credit ? Is not credit a prime factor in making prices ? If so, does not credit depend upon the quality rather than upon the quantity of the circulating medium ? What constitutes credit ? Does not the farmer who plants a crop, or the manufacturer who buys a stock of crude material, grant a credit to the future when he does so ? Will not all his undertakings be restricted when there is any doubt whether the money received for his product, after all his labor has been expended upon it, will be as good as that which he pays out for his labor at the beginning of the season ? Will not product then be diminished ? During the Civil War, when the greenback was depreciating, did not all private credit granted by one man to another finally cease ? Did not prices rise faster than wages ?

The Prohibitionist says : " Stop drinking and everybody will be better off." This may be true ; it may perhaps be true that dram-drinking can be stopped by legislation ; but as yet the method does not appear to have been very successful. Let it, however, be admitted ; what does it come to ? The expenditure for liquor, in the manufacture of which a certain part of the grain and other products of agriculture and a certain amount of fuel has been consumed, now averages about four cents per day per head of the population, or about $15 a year per capita. In the typical community of 6,000 people this would come to $90,000 a year, or seven and one half per cent. of the total product. To that extent a great benefit might ensue if the larger part of the force now expended or wasted in the production of spirits and beer could be employed in some other way. How can it be done ? It would involve the necessity of finding other occupation for the farmers and growers of grain and hops, and for the distillers and brewers, as well as for the dealers who now get their living by providing liquor. To what extent would this change affect the community as a whole ? It is admitted that a large part of the crime and of the public expenditures for prisons and reformatories is due to intemperance ; but, on the other hand, if the statistics were accurately compiled, not only of those whose productive capacity is impaired by the use of liquor, but also of those whose productive capacity is not impaired by such use, or if the statistics were compiled of those who make a temperate or moderate use of liquor as compared to those who are intemperate, the percentage of intemperate persons and the per-

centage of persons whose ability to work is impaired, would be small. If each reader will consider his own acquaintance, or the members of the community in which he lives, rich and poor, and take note of all who ever drink so much as to impair their productive energy, he will probably be surprised at the very small number and the very small percentage of the whole who will be included in that category. Therefore the question must be asked, To what extent would the disuse of liquor increase the product or improve the distribution of products now measured on the average at fifty cents' worth per head each day, more or less? Is there not a greater waste in the use of food than there is even in the expenditure for drink? Admitting to the fullest extent all that may be presented as to the bad effects of liquor, may it not be held that dyspepsia caused by bad cooking is as bad or even a worse evil, whether considered materially or morally, than the moderate consumption of liquors which constitutes their average use?

It has been my purpose in reciting these various proposed reforms by legislative methods or by special organizations, to present them in a way that will bring each to the test, by applying each one to the conditions of a small community and to the measure of the present average product of this country. It would be useless even to attempt to state the manifold bearings of any one of these so-called reforms in an article of moderate compass. I have therefore tried to present "the other side" in each case cited, and to put questions in such a way as may raise a doubt as to the efficacy of his special process, in the mind even of the most strenuous advocate of each legislative panacea for the admittedly narrow conditions under which we now exist. In the end, the common-sense of the people will seize upon and hold fast every element of truth that is to be found in each and all of these proposed reforms, and will reject all that is shallow, fallacious, or purely selfish. In that way society grows and reforms itself.

X.

REMEDIES FOR SOCIAL ILLS.[1]

IN preceding articles I have endeavored to exhibit the relative conditions of an average community of 6,000 persons, and to apply to such community the various reforms which have been suggested by different parties in order to bring about an improvement in the general social state. I will not myself attempt to present or to invent any specific method by which the whole condition of society in this country may be changed. Each man may perhaps do a little to remedy existing faults, but he who undertakes to solve all these social questions may perhaps find that communities grow and are not made to order.

A rather prosaic suggestion can perhaps properly be submitted. It is a well ascertained fact that, with respect to about ninety per cent. of the community, the price paid for food comes to one half the income or more. After this food is bought, how much of it is wasted in bad cooking? How much human force is wasted in consequence of bad cooking? How much does dyspepsia or indigestion, caused by bad cooking, impair the working capacity of the people of the United States and diminish their product? Perhaps the reader can observe and measure, or at least guess, what is the waste of food and fuel in the 1,200 families of five persons each, more or less, constituting the community of 6,000 persons who live near him. How many cooks are there who know what food to buy and how to cook it? In any 1,200 average families, more than 1,000 spend one half their income or more for food and fuel; the less the income the greater the proportion spent for food.

Next, let the reader think for himself whether five cents a day per head could be saved in his own family, or in his neighbors' families, or on the average whether the waste of the 1,200 families nearest him amounts to five cents a day per capita. If all the women were good cooks and knew what to buy and how to prepare food in a judicious and appetizing way, would the saving be five cents a day per head? If not, how much? One will probably find that the average expenditure for each person, man, woman, and child above ten (two under ten

[1] Reprinted from the *Forum*.

counted as one), for food and fuel, is about 25 cents a day. In recent years it may have been a little less, but prices are now rising; a few years since it was a little more. Can five cents' worth per day be saved? Is not that a very insufficient measure of the difference between a poor, wasteful cook and a good, economical one? If five cents a day can be saved on food and fuel, while at the same time that which is bought and cooked may be converted into more nutritious and appetizing food, the difference in each community of 6,000 people would be $109,500 a year, or about nine per cent. of the total product of the typical community, which we have assumed to be $1,200,000 a year in gross. When viewed in this light, it may happen that reform in the art of domestic cooking ought to have taken the first place in the list of proposed reforms already given. Can the anarchist, the communist, the socialist, the protectionist, the free-trader, the co-operator, the paper-money man, the knight of labor, the eight-hour man, or the sentimentalist invent or suggest any other method of changing the direction of the industry of the whole community which would on the whole be so effective in improving the conditions of all, as one which would save five cents a day on food and fuel, the money saved to be devoted to providing better houses in which people may live? If the waste of food and of liquor could be saved and directed or converted into shelter, by providing better dwelling-places for the community, would not the space or number of rooms now occupied on the average by each family be nearly doubled? Could not the sanitary conditions be made wholesome? Might not the slums of the great cities be cleaned out and the nuisance forever after abated? Can this be done by collective or state process or by individual action? The writer has been held up to much obloquy for an attempt to give this direction to some of the reforms of the present day. Such abuse or objection has usually come from those who get their living by misleading ignorant people as to what their true interest really is; it is therefore of no consequence.

Real life consists in the conversion of force; that is to say, in the work, whether mental, mechanical, or manual, which is exerted in giving a direction to the natural forces by which life is sustained. Whether or not the averages which have been given correspond identically to the average product and consumption or conversion of force of the whole country, is immaterial. The margin for error is in any event very small; in all large communities great numbers may be found whose conditions, reported upon by state bureaus, correspond very closely to the figures which have been submitted in this essay on a unit of one typical community numbering 6,000 people. This ideal community really exists somewhere in fact. If you could only find it, what would you do to improve the conditions?

Perhaps a yet better example, and one more easily comprehended, may be found by considering the condition of an average family of six persons, a man, his wife, and four children ; the man himself and one child doing the work corresponding to one in three of the present population by whose work subsistence, shelter, and clothing are now gained for all. We will assume that this man is a good mechanic, earning the average pay of such men in the Eastern or Middle States ; the son or daughter works in a factory on fancy weaving at the highest price, and earns about $1.20 a day. The income of the two persons on whom the six depend would be as follows :

300 days' work of the man, at $3.00 a day	$900.00
300 " " one child, at about $1.20 a day	350.00
Total income	$1,250.00

Food for six persons, at 25 cts. each per day, $91.25 per year, in round figures	$550.00
Clothing, 7 cts. each per day, $25.55 per year	150.00
Fuel, oil, and household sundries, 3 cts. each person per day, $10.95 per year	65.00
Sundries for personal use, 5 cts. each per day, $18.25 per year,	110.00
Rent, 9 cts. each per day, $33.00 per year	200.00
Deposit in savings-bank, each person or fraction over 2 cts. per day, $7.30 per year, say	50.00
Average proportion of all taxes, a little less than 3 cts. per day for each person, $10.00 per year	60.00
Profit upon their work, or contribution to capital at ratio of ten per cent. on gross value of their product, 5 cts. ; 2 cts. having already been set aside for the profit of the workman, there remains 3 cts. per head per day compensation for the use of capital, $10.95 per year	65.00
Total	$1,250.00

The two persons occupied for gain in this group of six are therefore credited with the average production of $625.00 each per year, or a little over $208.33 per year per capita, which comes to a fraction over 57 cents per day to each person.

In what way can this family improve its condition, or in what way can its condition be improved, either by legislation or in any other manner? The man owns or occupies a house ; the valuation of the land is half that of the house and land ; the rental of the whole is $200 a year. If he owns the house he can put aside what he would otherwise pay for rent, or he can spend it for more comfortable living ; this implies private property or possession of land. If he does not own his house, he must either pay rent for it to a private owner, or, if the single tax on land should be carried out, he must pay proportionately more than the same amount in the form of a tax on the land to the city or

State that he now pays to a private person for rent of land. He is employed by a capitalist ; if he can do better and can earn more by working for himself than for the capitalist, so that he gets no service from the capitalist, he need not pay the profit of $65 assigned as compensation to capital, but he can save it or spend it. If he saves that sum himself it is to his benefit. If by working for the capitalist he makes more for himself than the $65 paid by him for the service of capital comes to, then he may gain the difference by working for a capitalist. Capital has no means of compelling him to work in its service, and he has no way open to him to force capital to work for his benefit without contributing to its profit. He only can save a part of his taxes, however collected, by watching the expenditures and voting only for those who will spend the public revenues, national, State, or city, in a proper way for the common benefit of the whole people.

The quantity of materials for clothing that each person requires for comfort and welfare does not vary greatly whether the man be rich or poor. The rich man may possess more clothes at one time ; but he does not wear them out so fast ; the workman on the whole wears out more clothes than the rich man ; the difference, however, in the necessary supply of clothing is not great, and would not affect the general cost of living to any very great extent. The average expenditure for fuel and oil does not vary in any great measure, and this element of the cost of living is not large ; therefore in this the margin for economy is not great.

With respect to food, each average person, rich or poor, absolutely requires the same proportions of nitrogenized substances, starch, and fat, or of the so-called "nutrients." Each adult person requires substantially the same quantity of food, varying a little with the work done ; the man who is engaged at hard labor requires and can digest a greater quantity than the rich man. In quantity rightly consumed, therefore, little economy or saving may be expected or desired ; the saving is to be made by right selection of the materials, and by avoiding waste in the preparation and in the consumption of food. In this direction there is a very large margin for saving.

The greatest inequalities and the greatest variation in the conditions of men are to be found in their dwelling-places ; it is for this reason that the land question has become so intimately connected with the labor question. But it is evident that whatever theories may be adopted by the state in granting the conditional possession of land to individuals, there must be a certain measure of private occupancy, namely, possession or use of land for a dwelling-place. Compensation must then be made to some authority for the choice or selection of land, either in the form of rent or in the form of taxes upon land values.

The selection or choice and the possession of land having been provided in some way, the occupant must then either be capable of building his own house, or he must pay some one else to build it ; otherwise he must hire a house. He can accomplish neither purpose without cost, and he can accomplish neither without subjecting himself to a charge for the service of capital, unless he accepts charity and is housed in an almshouse.

In what way can this typical family improve the condition of its dwelling-place ? If little can be saved on the proportionate expenditure either for clothing, for fuel, for light, or for sundries, and if something, however small, ought to be set aside against a rainy day, does it not follow that the only method open to this man and his family at the present time for improving their condition, is by economy in the purchase and right use of food and drink ? Is it not true that better results can be obtained—a more appetizing quality imparted to the food, and more adequate nutrition derived—from twenty cents' worth of food well-cooked, than from twenty-five cents' worth of the same food cooked and served as it commonly is ? In this typical family $200 a year has been assigned either to the payment of rent or to the rental value of the land and dwelling occupied. Five cents a day saved on the food of each member would amount to $109.50 a year, which might be converted into rent or rental value. If a part of the members of the family now spend a sum equal to four cents a day for each member for liquor, the average of the whole country for liquor and tobacco being over four cents per capita, then a saving of one half of this sum would come to $43.80, which, added to the saving on food, makes $153.30. By this different direction or expenditure of force, the amount first assigned to providing a dwelling-place could be increased seventy-five per cent. The $200 assigned to providing shelter in some way would be increased to $353.30 per year. Is this a practicable reform ?

When the attention of the labor reformer is brought down from glittering generalities and grand schemes for altering the whole constitution of society by act of Congress or of the State legislature, to the simple question of how each person, each family, or each community may better itself under existing conditions, great progress will have been made in solving all the problems which are now pending. The professional agitator, who gets his living by misleading the uninformed, may scout at personal economy and ridicule the only available methods by which any true progress can be made in leading the great mass of the people to a higher plane of general comfort and welfare. It does not matter. Whatever may be the temporary influence of quacks, sentimentalists, professional agitators, and silly novelists, the solid commonsense of the community ultimately controls events, and in a rather slow and indirect way works out for itself its own methods of reform.

In each presidential election the orators of the two parties have for many years predicted the utter ruin of this country unless their own side should prevail. But the ruin has never come—quite the reverse. Witness the figures given under the head of "Progress from Poverty" in one of the preceding articles. For a time it seemed possible that a few unscrupulous men, whose power and influence rested upon human slavery, might succeed in their nefarious purpose of re-opening the slave-trade and continuing to subject the whole country to their malignant control, but even they utterly failed; the principle of liberty, which was established by the common ancestors of those who dwell in the South as well as in the North, was too strong for them. None are now so ready to admit that the great result of the war by which slavery destroyed itself, has been the emancipation of the white man through liberty given to the black man. Compared to this destructive force of slavery, by which the product of the whole country was limited and the equitable distribution of products impeded, there is no material cause of danger of any great moment now existing. We have already paid two thirds of the national debt, and by the application of science and invention, especially to the railway service, it has been paid without any man being called upon to work harder than he did before the debt existed. The danger point in our system of currency was passed when President Grant vetoed the inflation bill. Whether we will or not, the currency of the United States may soon be sustained by specie, dollar for dollar, through the liquidation of the demand debt, now represented by legal-tender notes, as these notes fall in by way of taxation.

The most important question now pending relates to the right method of raising that part of the national revenue which for a long period must be derived from duties on imports. This is one of the minor questions, very important in its place, but probably not of the grave importance customarily attributed to it. The country will prosper, however the taxes may be collected. What the moral effect of a bad method of raising the national debt may be, it is not the present purpose of the writer to treat. When the most important question in a country is how to reduce its taxes to the level of its expenditures, the country cannot be very hard pressed.

The continental system of absolute free trade, which exists among the States of our Union over a larger area and among a greater number of people than are now enjoying or were ever permitted to enjoy it elsewhere, renders our foreign commerce relatively unimportant. The real force that governs this country is more powerful than any Congress or system of legislation. That force may be obstructed by bad statutes, or may be made to work more rapidly by wise political methods; in the end, however, it holds its sway. That force is the solid common-sense and enlightened self-interest of the whole community.

I have endeavored in various essays to present a true picture of the gain in individual wealth and in the means of common welfare in the few years which have elapsed since the nation proved true to the principle of personal liberty on which it was founded; I have also endeavored to show that material abundance is well assured to all who choose to meet the conditions which will entitle them to share it. There are other dangers which may not be rightly or fully treated in this essay. Having cast out one devil, there may be a danger that we shall admit seven others by whom our personal liberty may be restricted or taken from us. Legislation, whose true purpose should be only to promote justice and to give equal opportunity to every one, may be perverted so as to bring about an unjust distribution of the means of subsistence, and to deprive great bodies of men and women of equal opportunity to attain their common welfare. On the one side the national Congress may continue its attempt to obstruct our foreign commerce by one set of statutes, and may render the domestic traffic over our railways more costly than it need be by other statutes. State legislators may continue to limit the power of adults in the disposal of their own time—the only element in life that all might enjoy in common except for such restrictions.

Yet more subtle restrictions upon individual liberty, affecting all the methods of production and distribution, may continue to be imposed by secret societies. The man who chooses to maintain his own liberty and to make his own contracts in his own way, may for a time be denounced as a "*scab*"; but even as the obnoxious title of Yankee applied by the British troops, has been assumed by the people of New England as one to be proud of, so the workman who maintains his own personal liberty may presently assume the title of scab as a true testimonial to his right position and true evidence of the method by which he has attained the advantage of position without harm, but to the benefit of his fellow-workmen. The effect of these various restrictions upon personal liberty may be to prevent the abundance of the means of subsistence becoming as ample as it might be, and may continue to take from the many a part of the fruits of their labor for the benefit of the few. Yet this country has been endowed with such abundant resources that we shall continue to thrive in spite of the blunders of legislators and the interference of labor associations, whose objects may be as right as their methods of attaining them are wrong.

On the other hand, there has never been a period in the history of any country when so much attention has been given to the study of the forces which make for abundance and welfare. Before many years it may become apparent to all that the only way to raise the general standard of living and to benefit the community as a whole, is to develop the personal character and capacity of each and every member of

it. The primary source of all wealth is in the manual and mechanical work done by the many under the mental direction of the few by whom all are served. The stream cannot rise higher than its source, and if the many remain ignorant and incapable of taking advantage of the opportunities which science and invention have placed at their command for developing the products of our mother-earth in ever-increasing measure, then even a low standard of subsistence may with difficulty be attained, and the hardships to which many may still be subjected will continue to be imposed upon them by their own incapacity. The mind of man is the potent factor in material production; character counts for more than capital in getting a living. He lives best, even in a material sense, and he earns the most leisure for himself, who, by the use either of his brain or his capital, while serving himself at the same time raises the earnings of the workman to the highest point by reducing the cost of production to the lowest. The dollars of the gain which the capitalist earns under these conditions are but a tithe upon the service which he has rendered to all.

The open secret which few yet seem to comprehend, although all act consistently with it unless restricted by statute or by trade by-law, is that not only the individual wealth but the common welfare of men and of nations, are attained in most ample measure through interdependence and not through independence.

THEORY AND PRACTICE.

SUPPLEMENT TO NO. 10 OF THE "FORUM" SERIES.

HAVING been led through devious ways to the conclusion that the greatest gain which can now be secured to society as a whole, is not by legislation, not even by remission of taxes, not even by saving a considerable part of the absurd waste by fire, but by teaching society as a whole how to prepare food in the process of cooking after the food has been provided, it would seem as if this series of articles would be incomplete without a treatise in which the practical application of the theories presented may be made and a remedy suggested.

One of the greatest embarrassments even to one who may have been called in early years to practise close economy in the art of living, but who is no longer under any absolute necessity to do so, is to meet the rejoinders of working men to whom he attempts to give any information, somewhat in the following form :

"*We* cannot look forward to any great change in our condition ; we have been too long devoted to one kind of work in one department to see much chance for progress ; we do not want to be lifted out of our present sphere and separated from our fellow workmen, and we could not be if we would, it is too late ; we must stay where we are ; and we are in some danger even of having our own special work invented out of existence by some new machine or other ; we can barely make both ends meet at the end of the year as things now are ; it is all very well for you to talk about economy, you have two or three big rooms for each member of your family ; we have only one little room for every two or three members of our families, and we are so crowded now that we jostle each other ; yet we must go on in the old way, and we must stand by each other in our own trade and try to get all we can. All you tell us may do very well for one who can wait, and who can choose what his work shall be. We can neither wait nor choose ; here we are, and here we must stay whether we want to or not. If you think any one can live on ten cents' worth of food a day, try it yourself if you want to. We don't want to, we don't mean to, and we can't afford to. We have n't much time, and we must buy food that can be cooked quickly."

Underneath this very honest statement of the difficulties of life there is also often an undercurrent which crops out, somewhat in this form :

"We work for all that you get as well as for what we get ourselves, why should n't we have as good food as you do ?"

If the capitalist did not add more than he takes away from the common stock, there would be more force in these objections; the great difficulty is in bringing about a right understanding among the different classes of society; as I have said in one of the previous essays, the one thing most needful is for the rich man to learn how the poor man lives, and for the poor man to learn how the rich man works.

There is but one reply to this sort of rejoinder of the workmen. All that can be said to them is this:

"If you do not learn how to get the most comfort out of what you now earn, there will certainly be very little chance that you will ever learn how to earn any more. The only way to a condition in life in which you may be able to spend twice as much as is necessary for food for every day, is to learn how to get as much as you can out of the money that you can now afford to spend. If you want to be able to spend fifty cents a day, the way to it is to learn how to live on ten cents' worth of food a day. If you are crowded together because you cannot afford to own or to hire a good house, and yet spend twice as much for food as you need to, would n't it be better to save one half the cost of food if you can, and yet get as much comfort out of what you do spend as you now do, and then spend twice as much for a dwelling-house."

The average rent of the workman is seldom more than one third to one half the cost of the materials for food. If the workman can save one third to one half the cost of the materials for food and yet be better nourished, he can then improve his dwelling-place in just that measure. A man who knows just how to do it, and who chooses to give the time which is necessary to the food question, can without a doubt maintain himself in vigorous health and strength on ten cents' worth of food a day; but there are probably very few persons who can afford to do so; it may cost more in time and trouble to live on ten cents a day than it does to spend twenty cents; most people had rather spend more than ten cents a day if they have it to spend, and get more variety of food for their money; but the great misfortune is that most working people spend twenty or thirty cents a day for their food and do not get over ten cents' worth of satisfaction or nourishment out of it because they put good materials to a very poor use. In order to enable those who choose to save a part of the waste of food, the writer has attempted to put his own theories into practice, and in the following article, which is reprinted from the June number of *Lend a Hand*, he has attempted to tell how to do it.

There is one satisfaction in the invention of the ovens referred to in this article; if their use may not improve the condition of the poor, it may at least greatly ameliorate the condition of the rich. If the ovens which are described are used under the direction of a person of moderate intelligence, it is almost impossible even for a poor cook to spoil good food; again those who do not wish to have a hot kitchen, especially in summer, may cook their own dinners in a cool dining-room without altering the temperature by more than one degree.

The information is offered for whatever it may be worth ; and this chapter forms a fit conclusion to a series of articles in which the ruling idea has been that every man makes his own rate of wages by the amount of intelligence that he puts into the work that he is called upon to do. This rule works both in the earning and in the spending of the

[1]

[1] See page 339, "The Missing Science."

WHAT SHALL BE TAXED? WHAT SHALL BE EXEMPT?

WHAT SHALL BE TAXED? WHAT SHALL BE EXEMPT?

WHILE revising the foregoing series of articles, which were first printed in *The Forum*, for republication in book form, I have been reminded that my treatment of the subject of protection and free trade has been subjected to adverse criticism by the advocates of both lines of policy. That might be held to prove that I had at least succeeded in part in what I had undertaken to do through the medium of the magazines, viz., to incite an intelligent discussion of the tariff and other economic questions, in place of the common vituperative method which is so customary among those who may have no intelligent basis for what they call their opinions, and who are therefore accustomed to cover their real want of any knowledge of the subject by imputing ignorance or bad motives to their opponents on either side of the question.

There is now no difference of opinion among the intelligent advocates of protection and the reasonable advocates of freer trade at present leading up to actual free trade in the future, as to the final purpose to which all legislation ought now to be directed. That objective point is the establishment of a system of commerce with other nations which shall ultimately be as free from taxation under the form of a tariff of duties on imports, as the necessity of the nation for a revenue from such duties will permit; such point to be attained as soon as the conditions precedent can be established which will admit such objective point being reached.

Both sides, therefore, seek the same end, differing only as to time and method, with the exception of a few persons who advocate national isolation by means of "a tariff for protection with incidental revenue." They are, however, so few in number, and of such feeble influence intellectually, that they need not be considered by those who treat the subject seriously and who are free from mere partisan bias.

The main difference between the advocates of protection and free trade at the present date is upon the question of time and method in reducing the present tariff, and in regard to the subjects from which the present excess of taxation shall be *first* removed. The difference

is therefore one of detail, both seeking to promote domestic industry in the most effective manner known to them. Cannot an agreement be reached under such conditions?

The basis of the protective theory among those who intelligently and reasonably sustain it is this:

1st. It has been held by them that a nation should develop within its own limits the power or ability to supply itself with the necessaries of life without recourse to imports from other countries.

This view has been very urgently sustained in respect to articles which are necessary not only in time of peace, but which are even more urgently required in time of war; the absolute requirements of war being food, clothing, and arms, *i. e.*, fabrics made of wool, iron, and steel.

2d. It has been or is held, that even aside from the necessities of war, a nation should render itself independent of all others, and should become capable of supplying itself with all the necessaries of life, if the crude materials for such supply exist within the limits of its territory and can be worked, either in the soil, the mine, or the forest.

3d. It is held that in developing the processes for converting these crude materials into their final forms ready for consumption, a great diversity of occupation may be promoted; and that while free trade may be the true objective point, it cannot be adopted safely until such conditions precedent have been established as may enable the domestic manufacturers or converters of crude materials into finished goods to compete with foreign countries on even terms.

4th. Lastly, it is now held by the advocates of protection, that in consequence of the higher rates of wages which prevail in this country as compared to foreign countries in certain specific arts, we cannot yet compete with foreign countries in these arts, if the free-trade policy should now be adopted. In support of this proposition, it is held that the rates of wages are a true standard by which the cost of goods may be compared.

In addition to these principal reasons for placing duties on foreign imports at higher rates than those which would yield the largest revenue at the lowest rates on selected subjects of taxation which are not of necessary use in domestic industry, it has been held that by means of such duties or under the protective system, so-called, additional work may be provided for the people of a given nation, through the diversity of occupations supposed to be greatly promoted by this system.

In conclusion of the whole matter, it has been and is held, that although the first effect of placing protective duties on foreign imports must be to keep the prices both of the domestic product and of the foreign import of like kind, higher than they would be except for such duties, yet the ultimate effect of the system must be to reduce such prices and to furnish a greater abundance to consumers at less cost.

This is the principal justification of the system in the minds of those who sustain it, to wit, that at the cost of a temporary higher price, lower prices will be finally attained.

Such is, I think, a fair statement of the argument for what is called protection to domestic industry by way of the imposition of taxes on foreign imports, commonly called duties.

It is also held by a few persons, even some holding quite conspicuous positions, that by way of duties on imports foreign nations may be made to pay revenue to this country. Such an argument hardly calls for serious consideration, as it could never be put forward by any one conversant with commerce. It is based on the admitted fact that, if the duties imposed should so obstruct our demand upon a foreign country for a given article, this obstruction, in place of raising the price at home, may depress the price abroad, and this depression of price is said to be the same as putting our tax upon other people! In point of fact this lowering of foreign prices is one of the most injurious effects of a mistaken policy, especially when it affects the crude or partly manufactured articles which are used in the mechanical and manufacturing arts, as it gives the foreign manufacturer an advantage over our own which cannot be overcome. See the subsequent figures on iron and steel.

One may not hastily and dogmatically pronounce all these propositions to be without any foundation; and it is both useless and mischievous to denounce those who present such views as being mere spoliators, or to say that they are striving as a body to support themselves and those whom they employ at the cost of their neighbors, without rendering any true service in return. These views have been, and are now, held in perfect sincerity and integrity by many of the most upright citizens in this country; they are still believed to be sound by a very large number of intelligent men, who sustain them without any other purpose than because they fully believe that the welfare of the nation depends upon their being sustained.

Unquestionably there are among the supporters of protection many persons whose own interests are to themselves so paramount in the matter—or are believed by them to be so paramount in their relation to others,—as to obscure all consideration of the public welfare; as there are also, on the other side, advocates of free trade who would break down all barriers to immediate free exchange without any reference to the long period during which protective duties have been maintained, and without any consideration of the great harm that may arise from bad methods of abating what may even be an existing evil. With such intolerant and illogical persons, who give little or no consideration to existing conditions, no discussion is possible.

The writer was bred in the firm conviction that, for the reasons given, the protective system was founded on principle and on facts,

and that protection was necessary to the welfare of the country. It has only been by close observation of the facts of life that he gradually became convinced that these arguments for the so-called system of protection were not founded on any principle and cannot be justified at the present time even on the ground of expediency. The arguments should be met, however by a fair and full consideration of the facts and the influences which led to the adoption of the policy in the past, and of the conditions as they exist at present, changed as they have been in some measure by past acts.

It may be admitted that by force of the highly protective system as it now exists in this country, and as it has been in force practically since the years 1861 and 1863, certain arts have been more fully developed, certain products have been increased, and certain prices may have been reduced both here and in other countries through the effect and in consequence of this system. It may even be admitted that in respect to certain very important commodities—notably iron and steel,—the actual prices have been reduced both here and in other countries more rapidly, and possibly to a lower point, than they would have been, except the protective system had been in force in this country. It must be admitted that as a consequence of the high duties upon wool, the price of domestic wool has been reduced by force of protection to a lower point than it would have attained except under this system ; and that wool growers have been misled in their expectation even of temporary benefit to themselves. There may be other articles which have been affected in the same way.

All that can be said in rejoinder to this possible admission of the claims made on behalf of protection is, that any reduction of prices which has been, or may be brought about in this way is not worth what it costs ; and that during the longer or shorter period given to the operation of this method of securing a reduction in the actual price of an important material, *such a disparity or difference in price* has been maintained throughout this period of high protection in the cost of the crude materials—such as wool, iron, steel, and chemicals,—which are most necessary in the processes of our domestic industry, as compared to the cost of these same materials to the consumers of other countries, as to have made the cost of the protective system much greater than the benefit, if any benefit there has been to any one.

In other words, whatever may be the advantage or the disadvantage of a reduction in price, if it has been brought about by or through the interference of legislation, the disadvantage of being subjected to higher prices in this country as compared to prices elsewhere through a long period, on the most important crude materials which are absolutely necessary in all branches of domestic industry, has been and is much greater than any possible benefit arising from lower absolute prices of such materials at a later period.

In the competition of nations, it is the relative price that tells and gives supremacy at a given time, whatever the actual price may be.

For instance, iron and steel are the most necessary metals ; they lie at the foundation of all production and distribution ; their consumption is the most adequate standard by which to measure the progress of any nation ; but their production is one of the most undesirable occupations, which fortunately requires but a small fraction of the population to be devoted to it.

In 1880 less than one hundred thousand men and boys produced about four million tons of pig-iron in the United States. At the present time, such have been the improvements in the method and the reduction in the necessary work, that it may be computed that not over one hundred and fifty thousand to one hundred and seventy-five thousand, out of twenty to twenty-one million persons now occupied for gain, are required to serve our present population with over seven million tons of iron.

Reference has already been made in a foot-note to one of the preceding articles, to the fact that while we have consumed during the last ten years very nearly *thirty per cent.* of the entire product of the iron and steel of the world, and during the last two years nearly *forty per cent.*, yet although the actual prices of these metals have during this very period been greatly reduced, our consumers have paid fifty-six million dollars a year on the average more than their competitors, or five hundred and sixty million dollars in all in ten years (1878–1887), for iron and steel, according to compilations which are given by Mr. David A. Wells in his forthcoming work. Such has been the cost of protection. For the last two or three years we have paid more than seventy million dollars a year over and above the price paid for these crude materials by consumers in Great Britain in this single branch of industry. Hence it follows that if it should be claimed and allowed that this is the right way to establish and maintain the production of crude iron and steel in this country, it must also be admitted that it has been accomplished at a cost measured by this disparity in price, of five hundred and sixty million dollars in ten years—which is more than all the capital now invested in all the iron-mines, blast-furnaces, steel-works, and rolling-mills combined which are now in existence in this country. Had it not been for this disparity in price working constantly to the disadvantage of this country, no matter what the actual price of iron and steel may have been in any one year, can it be doubted that our consumption of iron and steel in the manufacture of ships, rails, machinery, locomotives, and tools and wares of every description would have been vastly greater than it has been ? Is it not true that we have failed to retain even the control of our own markets in respect to manufactures and machinery made

of iron and steel, while we have been almost wholly forbidden any share in the supply of other countries? Have we not protected the consumers of iron and steel,—or the manufacturers who use crude iron and steel in other countries,—to the disadvantage of our own, and must not this disparity in price be charged to the cost of developing our domestic iron-mines, works, and rolling-mills by way of special taxes on imports imposed for the purpose of protecting them?

If there has been something added to the occupation of the people underground and in these furnaces and rolling-mills, has there not been even more taken away from the occupations of the people upon the farm, in the factories, the workshops, and the ship-yards of the country, whose products might have been exchanged for these crude materials? Lest these figures should be questioned, I will give the proofs and cite the authority. See special treatment of this subject subsequently given.

Have we not protected the woolen manufacturers of other countries rather than our own, by forcing the huge supply of wools from Australia, from South America, and from other parts of the world upon them in exchange for their fabrics, thus lowering prices to them by withholding our own free competition, while depriving our own consumers of these varieties of wool without which our manufacturers of woolen and worsted fabrics cannot thrive? Have not these duties on crude materials prevented us from holding even the home market in this country for our manufactured goods, although the people consume more fabrics made of iron, wool, and cotton than the people of any other country?

At this very moment (May, 1889) it is alleged that through the consolidation of several steel-works in the West the making of tin plate may be taken up; and a desperate effort has been made to double the tax of about six million dollars that the people of this country now pay on tin plate imported, in order to sustain domestic industry in making these plates. Hardly an article could be named upon which a tax could be placed with more injurious effect than upon tin plates. They are articles of common necessity in the dairy, in the work of canning meats, fish, vegetables, and fruits, and they enter into all the domestic arts of life. To the extent to which they may be taxed the farmers of this country are placed at a disadvantage in saving their crops or products by canning them. In answer to the question, "What are the most notable consequences that would follow the establishment of this industry in America?" the answer has lately been given by the promoters of this enterprise, that if this industry were established here, "we should keep among our own inhabitants from twenty to twenty-five million dollars a year, a constantly increasing amount, which we now send abroad the moment we can supply

our own demand." This statement is one of the glittering generalities which may deceive even the elect ; it is alleged that we should keep among our own inhabitants a certain number of dollars ; but this is not the fact ; we do not buy our tin plates with dollars made of either gold or silver ; and if we did, it would be because we can produce more gold and silver dollars than we need for our exchanges. We buy our tin plates with the pounds sterling which are placed at the credit of the exporters of our corn, wheat, flour, cheese, cotton, oil, and other products which we cannot consume at home and which are exported. We pay for tin plates with the excess of our food, fibres, and oils. These products go to supply the people of other countries with the necessary articles of food and fibres which we produce at high wages and yet at lower cost than any other country. If we cut off the imports of twenty-five million dollars' worth of tin plates we also cut off the export of twenty-five million dollars' worth of wheat, corn, cotton, cheese, and other farm products. If the production of tin plate would give employment to as large a number of consumers within our own limits as now buy this excess of our product which is exported, our farmers might not feel the difference. But would such be the fact ? The production of tin plate is very largely a matter of capital, and in moderate extent and in small numbers a matter of rather low-grade labor, while that labor is of such a kind that there are none capable and few willing to do the kind of work which is necessary to be done in order to produce tin plates here. The production of tin plates *here* would imply the application of a large amount of capital, and the importation of a moderate number of laborers skilled in the art, who must yet be a somewhat low-priced quality of workmen, as no part of the work is a very desirable one to follow. Hence it might follow that the farmers who now supply food and fibres in exchange for foreign tin plates would lose a part of their large market abroad, and would fail to gain in the domestic consumption of their produce in any equal measure. Should we then save twenty to twenty-five million dollars now said to be sent abroad for tin plates, or should we not lose at least one half that sum in our restricted market for our surplus crops while paying additional taxes,—if the present tax on tin plates were doubled in order to promote their production in this country ? Would not our farmers not only lose a great market while gaining a little one, but would they not also be yet more heavily taxed on all that they now produce by the heavier cost of utensils in the household, the dairy, the canning factory, and wherever tin is consumed ?

It was not, however, wholly by considerations of this kind that the writer was led to change his views upon the subject of protection, and to become an advocate of ultimate free trade, *i. e.*, an advocate of the

careful adjustment of duties upon foreign imports, to the end that the largest required revenue should be derived from foreign imports, with the least interference with the freely chosen pursuits of the people. Such a policy is a very different thing from the abolition of the custom-houses, sometimes imputed to the advocates of free trade. Custom-houses are held by them to be necessary instrumentalities for collecting a revenue by revenue duties upon some commodities, and a tariff system must be continued unless recourse is had to a system of absolute direct taxation for the support of the national as well as the State and municipal governments—a proposition which has as yet very little support.

Having begun to doubt the validity of the premises on which the protective system had been established, the writer was induced to study the facts relating to the industrial history and progress of this country. It at once appeared to him that the system of protection had been advocated and sustained almost wholly for the development or support of a very few specific branches of domestic industry ; constituting, even from the beginning, only a small part of the occupations commonly listed and considered under the title of manufactures ; notably, in support of iron-mines, iron-works and steel-works, and in support of textile manufactures,—all other branches of industry in behalf of which the system is sustained being relatively very insignificant, both in the annual value of their products and in the number of persons occupied in them.

By reference to every treatise upon the industrial history of this country, it soon became apparent to him that the original production of iron and steel and their conversion into higher forms owed nothing to the tariff. Iron-mines, iron-works, and even steel-works had been thoroughly established long before the nation itself had any existence, so that one of the very causes of the War of the Revolution had been the effort of Great Britain to prevent the development of these arts in the colonies of North America. (See "The History of Iron and its Manufacture," Census of 1880, Report by James M. Swank.) It also became apparent that the manufacture of woolen fabrics, in a true sense, was as old as the settlement of the country itself, and that this textile art had been fully established and developed before the nation itself existed, our ancestors having been mostly clad in homespun fabrics of domestic manufacture in the strictest sense. Woolen manufactures had been very fully developed, even on the factory method, before the first really protective tariff, that of 1824, had been enacted. The art of spinning cotton had not been developed early in our history, because the cotton-gin itself, on which it depended, was only invented in 1793 ; but the beginning of the profitable manufacture of cotton in this country antedated the first really protective tariff, that of 1824, by

many years. Aside from these considerable branches of industry, no important branch of industry has been introduced into this country since the tariff of 1824, which had not a beginning before any tariff was enacted; such branches as have subsequently originated here have been promoted or rendered possible by subsequent inventions.

The writer therefore became convinced that the protective system since 1824 had tended rather to restrict than to diversify the occupations of the people, and that its only effect, whether beneficial to the especially stimulated industries or otherwise, had only been to divert labor and capital in some measure from those branches of industry to which they would have been applied without a tariff, to those which have been especially stimulated or promoted by means of a tariff. It also became apparent to him, as it was apparent to Daniel Webster before he was forced from the position of a statesman to take up the functions of an advocate, that the specific branches of industry which could be thus stimulated by a tariff were not in themselves very desirable occupations to the people who might engage in them; probably much less conducive to welfare than the arts to which they would have been devoted, except for this artifical method of directing their work.

No wiser words were ever spoken on this subject than those which were uttered by Daniel Webster at a meeting held in Boston in Faneuil Hall on the 17th of August, 1820, to resist the efforts which were then being made, notably by John C. Calhoun and the representatives of the slave States, to establish a system of protection in order to create a greater home market for slave-grown cotton. The officers and promoters of this meeting were all leading merchants of Boston, many of whom were forced by the tariff act subsequently passed, to give up their commercial pursuits and to engage in manufacturing. The following is a report of the proceedings copied from the *Daily Advertiser*, and of the resolutions adopted:

At a meeting of merchants and others interested in the prosperity of commerce and agriculture, at Boston, on the 17th day of August, 1820, to take into consideration a communication from the Chamber of Commerce, at Philadelphia, on the tariff recommended to Congress at the last session, the following persons were chosen a committee to adopt such measures in relation to the subject as they should deem expedient.

Messrs. William Gray, James Perkins, John Dorr, Nathaniel Goddard, Benjamin Rich, Israel Thorndike, Esq., William Shimmin, Thomas W. Ward, William Harris, Daniel Webster, Nathan Appleton, Abbott Lawrence, Joseph Sewall, Jonathan Phillips, Lot Wheelwright, Caleb Loring, Samuel A. Welles, George Bond, George Hallet, Samuel P. Gardiner, Josiah Knapp, Isaac Winslow, Winslow Lewis, Thomas Wigglesworth, John Cotton, John Parker, William Sturgis.

The meeting was then adjourned to the 2d day of October, at which time delegates from the principal seaports of Massachusetts, and farmers, manufacturers, and all others feeling an interest in the subject, were invited to attend.

The committee appointed seven of their number—Messrs. Perkins, Gardiner, Welles, Shimmin, Sturgis, and Dorr—to prepare a report and resolutions, to be submitted at the adjourned meeting.

At the general meeting in Faneuil Hall, on the 2d of October, a report, presented by Mr. Perkins, chairman of the committee last mentioned, was accepted, and the resolutions accompanying it adopted unanimously ; and it was ordered that they be printed, and a copy sent to every member of Congress from the State.

The following were the resolutions thus adopted in a State which afterwards became strongly protectionist, but which is now once more about to take the lead in demanding freedom of trade.

Resolved, That we have regarded with pleasure the establishment and success of manufacturers among us, and consider their growth—when natural and spontaneous, and not the effect of a system of bounties and protection—as an evidence of general wealth and prosperity.

Resolved, That, relying on the ingenuity, enterprise, and skill of our fellow-citizens, we believe that all manufactures adapted to our character and circumstances will be introduced and extended as soon and as far as will promote the public interest, without any further protection than they now receive.

Resolved, That no objection ought ever to be made to any amount of taxes, equally apportioned and imposed, for the purpose of raising revenue necessary for the support of government ; but that taxes imposed on the people for the sole benefit of any one class of men are equally inconsistent with the principles of our Constitution and with sound policy.

Resolved, That the supposition, that until the proposed tariff or some similar measure be adopted, we are and shall be dependent on foreigners for the means of subsistence and defence is, in our opinion, altogether fallacious and fanciful, and derogatory to the character of the nation.

Resolved, That high bounties on such domestic manufactures as are principally benefited by that tariff favor great capitalists rather than personal industry or the owners of small capitals, and, therefore, that we do not perceive its tendency to promote national industry.

Resolved, That we are equally incapable of discovering its beneficial effects on agriculture, since the obvious consequences of its adoption would be, that the farmer must give more than he now does for all he buys, and receive less for all he sells.

Resolved, That the imposition of duties which are enormous, and deemed by a large portion of the people to be unequal and unjust, is dangerous, as it encourages the practice of smuggling.

Resolved, That in our opinion the proposed tariff and the principles on which it is avowedly founded would, if adopted, have a tendency, however different may be the motives of those who recommend them, to diminish the industry, impede the prosperity, and corrupt the morals of the people.

In sustaining these resolutions, Daniel Webster used these words :

> "To individuals this policy is as injurious as it is to government. A system of artificial government protection leads the people to too much reliance on government. If left to their own choice of pursuits they depend on their own skill and their own industry. But if government essentially affects their occupations by its systems of bounties and preferences, it is natural when in distress that they should call on government for relief."

Were not these words prophetic ? Has not the tendency ever since the adoption of the protective tariff of 1824 been for many great bodies of the people to think they could better their condition either by attaining higher wages, by shortening the hours of labor, or by some

other artificial method, through an appeal to the Legislature to pass every kind of act for regulating the direction of the labor, the hours of the work, the rate of interest, and the methods of life at every point? Has not the long-continued existence of this system given a tendency to the hardly disguised socialistic movements of the present day? Daniel Webster continued his speech as follows:

"Hence a perpetual contest carried on between the different interests of society. Agriculture taxed to-day to sustain manufactures—commerce taxed to-morrow to sustain agriculture—and then impositions perhaps, on both manufactures and agriculture to support commerce. And when government has exhausted its invention in these modes of legislation, it finds the result less favorable than the original and natural state and course of things. He could hardly conceive of any thing worse than a policy which should place the great interests of this country in hostility to one another—a policy which should keep them in constant conflict, *and bring them every year to fight their battles in the committee-rooms of the House of Representatives at Washington.*"

What truer picture can be given to-day of what we have seen than this forecast of Daniel Webster's of what we should see?

But it was not even by consideration of these matters that the writer became finally convinced that the true interests of this nation would be attained, the greatest diversity of occupation promoted, and the widest extension of manufactures brought about, by steady and regular legislation in the direction of ultimate free trade; his final conclusions were reached only by attempting to reason upon *What Makes the Rate of Wages?* (see "Distribution of Products," G. P. Putnam's Sons); the result of this investigation being the conclusion that in all arts to which modern labor-saving inventions or mechanism can be applied by an intelligent people, high rates of wages either in money or in what money will buy do not imply a high cost of production, but quite the reverse, the rule being twofold:

1st. That in all such arts, *high rates of wages, either in money or in what money will buy, are the necessary complement, correlative, or consequence of a low cost of production, provided commerce is free from any artificial obstruction.*

2d. A principle developed both by Henry C. Carey, the protectionist, and by Frederic Bastiat, the free-trader, "*that in proportion to the increase of capital the relative share of the annual product secured by capital, while it may increase absolutely is diminished relatively; but, on the other hand, the share falling to labor, i. e., to those who do the actual work, is increased both absolutely and relatively.*"

Since these two principles became apparent to me, I have devoted such time as might be spared from the occupations of a busy life, in attempting to bring them into common notice, believing that in this way even those who had faith in the protective system might be led to see

its error, and might be ready to join with the reasonable but not revolutionary advocates of free trade in such a revision of the system of duties on foreign imports as would promote domestic manufactures to the utmost, while depriving the people in least measure of their freedom in applying either their own labor or their own capital to productive industry.

How this should be done and what period of time should be covered in making the change, are matters of relatively small consequence, provided a definite policy be adopted and that a beginning should be made.

The actual burden of taxation under the present tariff, measured in money, even including any small private gain which at the present time may be secured in consequence of its existence, is a matter of relatively small importance. The writer is of opinion that we can afford to continue even under the present system, if that is the only way by which the national debt can be speedily paid in full. But even that end may be secured, *i. e.*, the speedy payment of the whole debt, and yet great modifications may be made in the existing tariff, and at the same time a true adjustment of its terms may be made to the new conditions of the country which have been developed since the end of the Civil War, if the reasonable men on both sides of this question could but for a time lay aside their mutual jealousy and their suspicion of each other's motives, and by reasonable methods devise a measure which would yield not only the maximum revenue required from customs, but the maximum benefit which may be gained by a reduction of taxation. This can be readily accomplished without exposing any great branch of industry which has been developed or considerably extended under the influence of the existing system, to any disaster.

It is to this end that these studies in the Industrial Progress of the Nation have been prepared, as one of the object-lessons which may be useful to both parties in the controversy in the discussion of the economic questions which are now pressing upon this country for solution.

It would be hardly worth while to devote many years or much labor to these two subjects of production and distribution, if they related wholly to material conditions. If there were not a moral and an ethical side to the studies of the social facts which are commonly included under the somewhat misleading title of Political Economy, these questions might be of little interest, even to a student of affairs. It is the moral and ethical aspect of the study of material things which places social science above the plane of mere materialism, and puts the study of social facts at the head of all inductive sciences.

The first development of manhood, *i. e.*, the elevation of man above the beast, appears to have been brought about through the perception of man that he could accumulate both the concrete results of labor, but

also the conclusions derived from experience, to the end that each generation might give the next a better start in life, and thereby each succeeding generation might be enabled to live a better life than the last, *provided* the general intelligence of the people of each generation should be developed coincidently with the accumulation of material products, so that they might be able to find out the best way of making use of the skill and capital derived from the past.

As one passes in review the events which have occurred in the nineteenth century, affecting the material welfare of men and of nations, and at the same time attempts to forecast the events of the twentieth century, the mind becomes dazed in attempting to comprehend the possibilities of the future. At the beginning of the nineteenth century the previous inventions of Henry Cort in smelting iron with mineral coal; of Watt in the use of steam; of Arkwright and others in the application of iron and steel to the textile arts, together with good highways and other great improvements, introduced between 1750 and 1800, had given to Great Britain a huge advantage over all other nations in the accumulation of wealth; a great part of this gain was even then derived from her foreign commerce, although, even up to a later date her commerce was most injuriously obstructed by protective duties. By this huge increase in her productive power she was enabled to join in the great contest with Napoleon, and to subsidize other states and nations in that undertaking; these efforts, culminating in the battle of Waterloo, put the dynasties of the Bourbons and others again into power and restored the old and bad division of countries, duchies, and petty states, for the far better boundaries which Napoleon had established.

In this struggle was also laid the foundation of the great debts and standing armies which are now eating out the heart of Europe; yet, in spite of these debts and armies, by means of the inventions and applications of science which have come into effect during the century, the people have been sustained, great progress has been made, and the foundation has been laid for the better conditions of life whenever the mass of the people who are now oppressed shall find out the way to abate the privilege of classes, to throw off the burden of debts incurred by dynastic rulers to which they never gave their consent, and to disband the armies by which the prejudices of race, caste, and creed, are maintained at the heaviest possible cost, now evidently becoming insupportable and steadily leading on to nihilism, anarchy, socialism, and other evils by which force is met by force.

Yet perhaps even the later inventions of the present nineteenth century, by which time and distance have been almost eliminated and the cost of distributing the abundance of the earth has been reduced to a mere fraction, may prove to be as inadequate in the service of men

compared to what is yet to be accomplished by science, as the old methods had proved to be ineffectual as compared to those which are now working towards abundance and common welfare.

Already the crack-brained enthusiasts of the present day may prove in the future to have been the true prophets when many new processes are perfected, of which the effect can only be imagined : such as the conversion of heat directly into work ; the development of electricity, whatever the force so named may be ; the purification of the waste of the sewers at little cost with profit to those who do the work and freed from the degrading conditions now connected with such occupation ; the disassociation of the nitrogen from the atmosphere and its conversion into food for plants by less costly and quicker methods than any yet known, thereby removing any possible pessimistic notion of the food supply becoming deficient for the population ; the derivation of heat more directly from water and the conversion of its elements into power without the intervention of such excessive quantities of carbonaceous fuel as are now wasted ; the production of the metal aluminium at low cost, giving us a new substance for the construction of all kinds of machinery from a metal in which lightness and strength are combined and for which the crude material is most abundant.

Or again, to any one who studies the textile arts critically or theoretically, in which the production of coarse cotton cloth has been increased in a single generation from a possible five thousand yards to each operative in the factory in a year, to thirty thousand yards as the result of fewer hours of labor in the same factory at the present time, it is apparent that all existing cotton machinery, perfect as it seems to be, is crude and cumbrous. Seventy-five units out of each hundred of the original strength of the cotton fibre are destroyed in the rough handling which it receives upon the machinery by which it is worked or in the processes by which it is rendered suitable for clothing. The loom is but a development of a prehistoric type, to which ingenious devices have been added, but which is still subject to be invented *out* of existence when some one with the genius of Arkwright applies his inventive capacity to a revolutionary change in the method of weaving, such as Arkwright applied to the extension of the strand of cotton or wool prior to spinning, by means of successive rolls working at different speeds.

To what extent and in what way these changes may work the welfare of mankind, one may not yet imagine ; suffice it that one may now be warranted in laying down a principle the very opposite of that upon which Malthus ventured : to wit, the application of science tends to develop the means of material welfare for the enjoyment of mankind in something like a geometrical progression, while mankind itself tends to increase at a far more moderate rate of progression to which

no fitting mathematical term may yet be applied because the law governing the increase of population is not yet fully comprehended. We may, however, almost if not absolutely determine that the conclusion of the whole matter is, that in respect to material things the consumption of mankind is limited, while the power of production of the means of subsistence is relatively unlimited. Under these conditions peace, order, and industry may be maintained wherever the law of mutual service on which all commerce among men and nations is founded shall become a part of the common knowledge of mankind.

It is not, however, necessary to wait for such knowledge and comprehension of the true function of commerce to become universal. Whenever the English-speaking nations and states shall adopt the principle of free exchange so far as it is consistent with the necessity of each country or state to derive a revenue from duties placed upon a few articles, it may become impossible for any other country which continues to subject itself to heavy duties upon imports, to compete in any large way in the commerce of the world. Such a protected state or nation may be enabled to maintain its isolation more or less effectually ; although according to the experience of nations, especially of this country, the retention of the home market is rendered more and more difficult by the imposition of duties on important materials, unless these duties are put so high as to become prohibitive. Even in that case evasion, false swearing, and smuggling tend to prevent the complete success of such an undertaking. What more beneficent influence could the English-speaking people exert than by their control of commerce, which benefiting themselves and all who deal with them, may also put an end to the contests among nations and to the oppression to which other states and nations are now subjected simply because they cannot compete except by adopting the same methods ?

If, then, the analysis of social facts leads to the conclusion that the greatest gain to all nations is to be reached through interdependence and not by isolation or independence, and that the development of individual character rests upon mutual service and not upon the selfish isolation either of men or nations, it follows that the pursuit of material prosperity at once becomes justified as a means to a higher end, that end being the harmonious relations of mankind and the establishment of conditions of order and industry which are conducive to and are only consistent with the strictest morality and the highest measure of common intelligence or civilization.

May it not therefore be held that so long as man dwells in a material body upon the earth, the satisfaction of the material wants of that body will be secured by mutual service rather than through mutual plunder and strife ?

May it not, then, be held that man could only come to the conception of his higher mental and spiritual faculties through the struggle and strife which have been and are still so arduous in the work which is necessary for the supply of his material wants ? The body, the mind, and the spirit can only be separated by physical death ; in life they must be harmoniously developed in order that either phase of life may attain its highest conditions,—giving consideration to mankind rather than to the individual man in treating the general terms of existence. It may be admitted that high spiritual qualities have been developed when asceticism was thought to be necessary thereto, but such lives were almost wholly wasted, for the reason that the example could not be followed by masses and it would have been impossible for mankind to continue to exist in that way. High mental qualities have also been developed under the great disadvantage of extreme poverty ; in some cases it may even have been that the extreme poverty was necessary to give the necessary stimulus to the mental development of an exceptional man ; but that constitutes no rule for mankind. The highest type of art may have been evolved under the conditions of society in ancient Greece ; but would any intelligent person to-day propose to restore the order of Grecian society for the purpose of attaining a high place in art ? The golden age in English literature may have been in the sixteenth or seventeenth centuries ; but would any reasonable person suggest that the order of society as it existed in England at that period should be restored, even if it were necessary to the attainment of such a high plane of literary activity and development ?

It may be and probably is true that the development of the material resources of this continent have so occupied the minds of men who dwell upon it as to have turned their attention in great measure away from art and literature for a time ; but it by no means follows that art and literature may not ultimately make even greater progress, even by way of this temporary retardation, than they could have attained under other conditions. In what country or in what age has there ever been more readiness to apply wealth, gained by the busy work of a single life and by men who have themselves had little appreciation of art or literature, to literary and artistic purposes. In what period and in what country has there ever before been such a readiness to devote private gains to the purposes of common education of every kind, industrial, technical, scientific, literary, and artistic ?

It may therefore be the result of very shallow observation if the great material progress of this nation is condemned for the reason that it has not yet been accompanied by the highest artistic and literary achievements. It doth not yet appear what we shall be. It is but a hundred years since the United States laid the foundation of a national life by the adoption of the Constitution, and that life had no true ex-

istence until Abraham Lincoln became the chosen instrument to give liberty to the slave.

But, on the other hand, it may be held that our material as well as our mental progress has been retarded, because legislation has been directed to an attempt to help those who could not help themselves, or who believed that they could not help themselves, in making use of the huge natural resources of this country. In this mistaken effort may there not be found one of the causes of the alleged mediocrity of the modern statesmen, or of the politicians who cannot be called statesmen, as well as of the discredit which is to some extent attached to political life, or to what might and should be the highest service of the state.

What else could happen if it is admitted that the public trust reposed in legislators may be diverted to any purpose of private gain, even though the end avowed might be the public good?

It is admitted on every side and by every person whose observations are worthy of any consideration whatever, that in the nature of things every great nation must, of necessity, sustain itself in chief measure by the development of its own resources, *i.e.*, from the product of its own fields, its own forests, and its own mines, if any there are within its limits. It is admitted on every side that the internal traffic or commerce of a great nation—that is to say, the exchange of its own products among its own citizens—must, in the nature of things, constitute the greater part of its traffic. With respect to this country, it must be admitted by every one who examines the question with any earnest purpose of ascertaining what the facts really are, that with respect to the products of agriculture, the power of production at high wages and low cost, as compared to any and all other nations and states, is so great that not less than ninety-five per cent. of all our food and fibres for our own consumption must be raised within the limits of our own country, because no other country can possibly compete with us, and that we could almost feed the world besides. Even though the rates of wages are from fifty to five hundred per cent. higher than those of any other country, the products of agriculture which could be in part imported from any other country—consisting almost wholly of sugar, tobacco, wool, hemp, flax, and a few other articles of possible import, or which could be in part imported, constitute not over five per cent. of the entire product of our farms. With respect to the product of our mines, no other country could supply us with our necessary consumption of coal, although a small part of our fuel might be imported from Canada, if coal were free from taxation. No other country could supply us with any considerable part of our copper in competition with our own mines. No other country could possibly supply us with any considerable part of our necessary consumption of iron and steel, even

if all taxes on imports were removed therefrom, without such a rise in the price in other countries, followed by a rise in the cost of production, as would forever do away with the existing disparity in the price which puts us at so great a disadvantage in the conversion of these metals into their higher forms for use. Had our workshops and factories which are now in existence been constructed on even terms with respect to the cost of materials, as compared to those of other countries—that is to say, free from the disparity or difference which has been caused by the tax upon the import of the materials which are consumed in their construction, no other country could supply us with any large part of the common or necessary forms either of the useful woolen or cotton fabrics which are required for the comfort of the people, however large a part of our supply of the finer fabrics depending mainly upon fashion and fancy might be imported, if there were no duties upon them.

Hence it follows that, with respect to the number of persons on whose occupation a system of duties on foreign imports may for a time exert a favorable or at least a stimulating effect, we must omit all of those who are engaged in professional or personal service ; all who are occupied in trade and transportation ; ninety to ninety-five per cent. of those who are occupied in agricultural pursuits ; and a large proportion, varying from sixty to eighty per cent., according to the judgment of the investigator, of all who are engaged in the arts of the mechanic, in manufacturing, or in mining. Under these conditions it follows, of necessity, that any legislation directed toward the especial establishment or development of particular branches of industry must proceed, in the first instance at least, by way of taxation upon the many for the temporary support of the few in the conduct of work in which they are either incapable, or think they are incapable of proceeding successfully without such support from the government. Hence it follows again that all legislation of this kind is, of necessity, special legislation, to be determined upon grounds of expediency and not upon any fundamental principle of taxation.

What else could be expected from such a system persistently followed since the year 1824, upon the quality of legislation and the character of those by whom the laws are made?

Is it not true that the moment it is admitted that legislation may be rightly adopted for the special development of particular branches of industry, the danger comes in which had not before existed, that the public office of the legislator may be perverted to purposes of private gain, even without the legislator being himself conscious of the influence by which he is governed? May it not also follow that even if the attempt is successful, and if even higher wages or greater profits accrue to the particular branch of industry to which special legislation is

directed, the lesson will be caught up and followed in other lines without discrimination, by unreasoning people who do not perceive that such a system of protection must, in the nature of things, be of very limited application? Has this not been the course of legislation for the last sixty years? What truer picture could have been drawn than that already quoted from Webster: "*Agriculture taxed to-day to sustain manufactures—commerce taxed to-morrow to sustain agriculture—and then impositions, perhaps, on both manufactures and agriculture to support commerce.*"

What would the subsidies now proposed to be given to steamship lines be but "impositions on manufactures and agriculture"?

What need of them when men stand ready to construct the steamships and to establish the commerce without subsidy or bounty, only asking that the obstructive taxes which now forbid shall be removed.

Must it not also ensue, and has it not ensued from the apparent if not real success of this method in developing certain branches of industry, and of regulating indirectly the prices of goods and the wages of labor, that the unintelligent should impute to legislation greater power than it is possible to exert by statutes, and should compel Congress and legislatures alike, by mere force of numbers, to attempt to make the same kind of application of statute legislation to all the functions of life—to wit, to the hours of labor, the methods of work, and even to the direct regulation of prices. May we not attribute much of the socialistic tendency of modern legislation in this country to the subtle germ implanted under the so-called system of protection to domestic industry.

It would not be suitable for the writer to make a personal application of these views to particular States or periods in the history of this country. The great moral upheaval of society brought about by the existence of slavery developed heroic qualities, brought true statesmen to the front, and raised the level of the discussion of principles in the Senate and the House of Representative to the very highest plane, as the discussion of moral and ethical principles always has done and always will do.

But whence came the jurists, the statesmen, the legislators, the executive officers, and the soldiers by whom this work was done? Did they not come from States which either had not been subjected to the idea of special legislation, so as to have become almost incapable of sending men of any greatness or force to Congress, or else from States which possessed sufficient intelligence among the mass of the people to surmount the evil effects of long devotion to legislation for special purposes? But since that contest was ended, has not the corruption of the civil service become the paramount evil? Have not the debates in Congress, with few exceptions, come down to the level of unintelligent

mediocrity? Has not the condition of election to political office become a matter of private bargain rather than of devotion to the public service? Will not the function of the politician be degraded from the high place in which it ought to stand as the title of him who serves his country in the truest sense, by even an honest and sincere but yet injurious perversion of the powers of the legislature to the support of special interests which may be demanded by men who as honestly and sincerely believe they are entitled to such support?

Even if every thing could be attained in the way of material progress and prosperity which is claimed for the protective system, would it be worth gaining at the cost of depriving the nation of its opportunity to develop *all* its forces and *all* its opportunities by its own inherent capacity and ability, without calling upon the legislature to enact special taxes intended to force the direction of industry out of its natural channels?

Even if the writer had not reached the conviction that the protective system had failed in accomplishing its declared purpose,—and even if he had not reached the conviction that it had retarded rather than promoted the development of agriculture and manufactures by obstructing commerce,—he would nevertheless have advocated a return to the policy of free trade, so far as it may be consistent with the necessity of securing a revenue from imports for the support of a national government, on these moral and ethical grounds only. But in this as in all other matters affecting human welfare, there is a true harmony in all the phases of life. That policy which can be defended wholly on moral and ethical grounds is the policy which will economically yield the best results, or, in common speech, *will pay the best in the long run.* Their is neither permanent pay nor permanent profit in any material work which cannot be justified morally and ethically as well as politically and socially.

The special occupation of the writer forbids any active participation in the immediate contest; suffice it that in this attempt to measure the material progress of the nation by facts and figures he may have cleared away some of the misconceptions, especially in regard to *what makes the rate of wages*, so that the virulence of the contest may be lessened, to the end that right conclusions may be reached by a reasonable compromise among intelligent men, who on the protective side may claim and on the free-trade side may admit, that any system of taxation which has been long continued should be carefully and judiciously treated in the process of removing these taxes which even on their own merits could not have been justified when first imposed.

When the tariffs of 1861 and 1863 were first adopted, on the basis of which all subsequent tariffs, including the act now in force, have been modeled, the main purpose was to provide a great revenue for the

conduct of the war and to adjust tariff and internal taxation on the same basis. Under such conditions little attention could be given to the science of taxation. Subsequently both the demand of the war itself and the tariff have greatly altered the relative conditions and the direction of industry from what they would have been had the comparatively low tariff of 1857 remained in force. It may be rightly held that those who are engaged in such branches of work, which have been so changed, should be duly considered and consulted in the progress of amendment; but the chief obstruction to rightful change grows out of mutual distrust and the imputation of purely selfish motives on both sides.

When men who are accustomed to co-operate in all the other work of life apply common-sense to the tariff question, the whole obscurity, difficulty, and complexity may be removed.

Putting entirely aside any ethical or political questions affecting the controversy between the respective advocates of protection and of freer trade, and taking up the subject in a practical way as it now stands, there are probably very few persons competent to pass judgment upon the subject, and who are free from personal or political bias, who having investigated the effect of high duties upon wool would not or have not come to the conclusion that the respective interests both of the wool grower and of the woolen manufacturer would be promoted by putting wool into the free list and adjusting the duties on fabrics on a lower basis than at present so long as duties may be imposed on woolen fabrics.

In respect to iron and steel it might be admitted, as I have previously stated, that the great stimulus given to production in this country by way of the duty on foreign imports, had developed this branch of work more rapidly than would otherwise have happened; and it might even be true that this policy had reduced the price the world over. Yet I think if the sense of antagonism could once be laid aside, and if reasonable men could take up this subject exactly as it now lies, they could not fail to reach the conclusion that it would be for the joint interests of the iron- and coal-miner, the owner of the blast-furnace and of the rolling-mill, as well as of the consumers of iron, to put ores and coal immediately into the free list; and either to take every duty off from pig-iron at once or by successive stages at 20 per cent. per year, reducing the duties on the more finished products so as to meet the new conditions; and to this end I submit the following facts for what they may be worth. In the previous text I have referred to the researches of Mr. David A. Wells and to the figures which he may give in a forthcoming work; he has made use of the actual data given in the yearly Abstract of the Iron and Steel Association, and of other equally authentic figures, without venturing upon any estimates; and

he has covered the period from 1878 to 1887 inclusive. I have omitted 1878 and 1879, and computed 1888 and 1889, venturing upon some estimates for the present year, 1889.

On the basis of these authentic data and estimates, the consumption of iron and steel in the United States, less than a very small export, has been as follows :

NET TONS 2,000 LBS. EACH.

1880	6,408,754
1881	5,964,002
1882	6,513,493
1883	5,924,621
1884	5,322,872
1885	5,177,764
1886	7,595,720
1887	9,184,447
Total	52,091,673
Domestic	41,934,088
Foreign rails, bars, plates, etc	10,157,585
Total	52,091,673

In addition to the above imported metal there has been a very large importation of machinery, hardware, cutlery, firearms, etc., for which there are no data for computing the weight. Adding this element by estimate, and this consumption of iron in the United States has probably been nearly 30 per cent. of the product of the whole period.

In 1888 the domestic production was a little over that of 1887—the import somewhat less. In 1889 our production is increasing, and the import, especially of machinery, is large ; the total consumption of the two years cannot be much less than 18,000,000 tons, or nearly forty per cent. of the total product of the world.

Without adding any thing for imported machinery, hardware, etc., the consumption of the United States in ten years ending December 31, 1889, will have been over 70,000,000 tons of iron : adding by estimate the weight of all the machinery, hardware, etc., the total consumption has been about 72,000,000 tons, about one third to one half in the form of steel.

The present consumption of the United States only, being now, if not quite, yet nearly equal to the world's total product of 1865 and 1866.

The question now arises, How much have the iron and steel consumed in the United States cost our consumers in excess of the cost of the same materials to consumers supplied in and by Great Britain ; it being remembered that our consumption is now in excess of the total product of Great Britain ?

For the purpose of computing this disparity or relative disadvantage, I take the quotations of the *highest* annual prices in Great Britain, Scotch pig-iron, and average prices of anthracite foundry iron in Philadelphia as quoted per gross ton in the Statistical Abstract of the Iron and Steel Association from 1880 to 1887; assuming that the difference in 1888 and 1889 has been the same as the average of these years:

Anthracite foundry averaged	$22 42
Scotch pig at 24 cts. to a shilling	12 54
Difference	$9 88

per gross ton; equal to $8 82 per net ton.

Our comsumption has been 70,000,000 net tons, which at $8 82 per ton gives the total excess of cost of iron in this country as compared to consumers of British iron for ten years, $617,400,000; equal to $61,700,000 per annum. I have tested these averages by computing the actual difference of each year, 1880 to 1887, on the actual consumption of each year, and I find the result comes rateably to more than the above, the greatest difference in price falling on the years of greatest demand and consumption, as one would naturally expect.

On comparing the relative consumption I find that considerably over one third of our iron is converted into steel prior to consumption, and also that the difference in price of the higher grades of iron has been more than that on foundry iron. This disparity in the price of steel, added to that on iron, ranges from $7 to $15 per ton, but calling it only $6, on 25,000,000 tons we get $150,000,000 to be added to the difference on iron.

A truer standard of comparison than Scotch pig would be common English foundry iron, worth about $1 per ton less than Scotch. Adding $1 on the quantity represented by our domestic production of about 58,000,000 tons makes $58,000,000.

SUMMARY.

Disparity on Scotch pig and anthracite foundry, 70,000,000 at $8 82	$617,400,000
Add on steel not less than 25,000,000 at $6	150,000,000
Add on 58,000,000 tons domestic to adjust the standard to English iron	58,000,000
Actual total	$825,400,000
Deduct for contingencies, errors, or variations, say	125,400,000
Computed difference	$700,000,000

These figures prove that the prices of iron and steel, both domestic and foreign, have been maintained above those of other countries in a sum nearly equal to the duties and freight charges, a somewhat rare case. In the matter of wool the price of domestic wool has been diminished, and in respect to the useful grades of textile fabrics, domestic

competition has sufficed to keep the prices much below foreign prices with duties added, on all staple fabrics.

Iron is singular because the demand for consumption is imperative. In spite of our having doubled our domestic production, we have been forced to import over 20 per cent. of our supply for the last ten years, and although cost and price have both been reduced here and elsewhere by the improvements and inventions of recent years, the reduction of price in Great Britain has been greater than in this country We may pass over the period of war and paper money in making this comparison.

The average prices given in the Statistical Abstract of the Iron and Steel Association of the United States are as follows :

Anthracite foundry iron in Philadelphia, *average* of each year combined :

1850 to 1859	gold	$26 47
1878 to 1887	"	21 87
	Reduction 17 and 38-100 per cent	$ 4 60

Scotch pig-iron, *highest* prices of each year combined :

1850 to 1859	gold	$17 05
1878 to 1887	"	12 91
	Reduction 24 and 36-100 per cent	$ 4 14

In proportion to the reduction of price both in this country and elsewhere, the difference in price paid by our consumers becomes a greater and greater disadvantage. The present difference, about equal to the rates of duty and freight, ranges from 75 to 80 per cent. on iron and steel, according to kind and quality, while the duties on machinery are only 45 per cent., which with packing charges added leaves our machinists subject to a differential tax of 20 to 30 per cent., from which their British competitors are free.

The disparity in the present year is somewhat less than the average of the whole period ; but computing the total consumption of 1887, 1888, and 1889 at 28,000,000 net tons, two thirds iron and one third steel, the excess of the cost of iron and steel to the consumers of iron in this country as compared to the cost to consumers supplied by Great Britain, has been $60,000,000 to $70,000,000 each year. The revenue to the United States on iron ores and pig-iron comes to less than $4,000,000 a year. The cost of this revenue to our consumers is over many-fold in respect not to actual cost, but to disparity in price.

Since 1887 it has become apparent that the increasing demand for iron and steel no longer depends upon the activity of railway construction in the United States, as it apparently did up to 1886 or 1887 ; since the latter date it has fallen off two thirds in two years. It is evident that the demand of the world for iron and steel is increasing very rapidly ; also that the low prices that have lately prevailed have

led to a very great increase of demand, especially in the United States for other purposes than railway construction. On the other hand it is evident that these low prices must be very profitable to the producers of domestic iron, since our present product is double that of 1879.

This increase of the world's demand on Great Britain is met by a diminishing supply of fine ores :—twenty per cent. of her supply of ores being imported from Spain, Sweden, and Africa, and by an increasing cost of coke owing to the great depth and heat of the Durham mines and the narrowness of the veins ; hence it is evident that any sudden increase of demand on Great Britain would be followed by a rapid advance both in the price and cost of British iron and steel.

If the price of iron and steel could be equalized in Great Britain and the United States by raising the price of iron there rather than by lowering it here, an enormous advantage would be gained by this country, and it is becoming evident that while this change may not be far off in any event, it might be hastened or brought about at once by immediately removing all duties on ores and coal, and ultimately on crude iron and steel in this country.

It is not easy to forecast the increase of demand on Great Britain from other points than the United States, but it is not difficult to forecast the increase of demand in the United States. Our per capita consumption of iron in 1880 and 1881 was about 270 lbs. In 1888 and 1889 it was about 320 lbs., an increase of 50 lbs. per head. We shall add 20,000,000 to our population in the next ten years. There is every reason to expect a more rapid increase in the use of iron and steel for structural purposes and for machinery, in the future than in the past, while the normal construction of railways for short lines and connections must soon bring about a much greater demand for railway purposes than the present. Again, if the price of iron were equalized on the two sides of the Atlantic, there would be an enormous increase in our use of iron in building ocean steamers and in constructing heavy machinery for export.

If we assume an increase of 50 lbs. per capita in the next ten years, and a population of 85,000,000 in 1890, the consumption of iron in that year will be 15,725,000 net tons, or more than double our present product at 370 lbs. each.

The recent address of the President of the Iron and Steel Institute of Great Britain gives conclusive proof that the only source of supply for the increasing demand of the world for iron must be met on this continent, by the complete development of the deposits of the maritime provinces of Canada, and the yet more adequate supplies of the middle and southern United States ; in Nova Scotia, Virginia, Kentucky, Tennessee, the Carolinas, Georgia, and Alabama, where the deposits of iron and coal are in close proximity and near the surface,

supplemented in their conversion into the higher forms by the natural gas and oil of western Pennsylvania and Ohio.

It would seem as if the general conclusion derived from all the facts now apparent might be, that we have touched the lowest prices of iron for the present, and that since Great Britain and Germany probably could not add even two or three million tons to their present production without such an advance in price and cost as would remove them from any future competition with this continent, we may witness a general advance in price throughout the world erelong. If then we should remove all duties, our present very profitable prices would not be reduced, but our consumers would be secured for all time against competition in ship-building, machinery and hardware for domestic use, and would take a very large share in the supply of the increasing demand of other countries.

When all these facts are made known and their bearing duly weighed it may not be hopeless to expect an increasing number of the members of the Iron and Steel Association to join in asking the immediate or substantial restoration of the revenue system of 1857 to 1861, to wit : ores and coal free of duty ; pig-iron at not over 25 per cent., with further remission at the rate of five to ten per cent. per annum until pig-iron shall also be free.

It is possible that one may find my measure of the difference in price rather too low, but perhaps it has been considered prudent for me to discount about 22 per cent. for contingencies. In this case the final issue would be, as before given :

Apparent disadvantage of the United States in the cost of iron and steel, 1880 to 1889, incl.....	$825,400,000
Discount for contingencies.....	125,400,000
Net disadvantage.....	$700,000,000

Say $65,000,000 to $80,000,000 per year 1880 to 1889, average $70,000,000 for ten years, probably over $80,000,000 in the year 1888.

Mr. Wells has treated the decade 1878 to 1887 in his forthcoming book. His more guarded statements on the decade in which the small consumption of 1878 and 1879 take the place of my large estimates for 1888 and 1889, will, I believe, substantially coincide with my final computation, after my deduction for contingencies from what the actual figures show.

In view of the necessary effect upon the price of iron in Great Britain, which must of necessity have ensued from the obstruction to free imports from there, in a country which consumes over a third of the total product of the world, retarding a rise in price there while such obstruction has existed, it would seem that, with a growing scarcity of fine ores, increasing cost of coke, and an increasing demand

throughout the world, the effect of an immediate abatement of our duties could not fail to cause a great advance in price in Great Britain and later in the cost of all foreign iron. This would serve for all time for the protection of our pig-iron product in the most effectual manner and would probably lead erelong to the export of iron from Alabama to England; in such event repeating history and following the course of trade in iron of the last century, when our charcoal iron was exported from the colonies to Great Britain. Under such conditions our consumers of crude iron and steel would also be protected in the most effectual manner by the removal of the differential tax which now oppresses them, thus giving them a chance to compete on even or better terms with the consumers of iron and steel in Great Britain and Germany.

The final conclusion may be that the most effectual protection of the iron and steel interests of the United States would consist in the immediate removal of all duties on ores and coal and the immediate reduction of duties on crude iron and steel to 20 or 25 per cent. with a view to their entire abatement at an early day; and finally in the reduction of all duties on the finished products of iron and steel so as to adjust them fairly to these new conditions.

These figures may be subject to exception as to the prices taken for comparison—to wit, Scotch pig-iron in Great Britain and anthracite foundry iron in this country.

I have discounted over 15 per cent. for the contingency; if that does not suffice, then the burden of proof must fall on the advocates of the existing system to prove that the computed difference in the cost of iron to American consumers has been less; and also that the advantage of the present system has been greater than the price which we have paid for it.

Until these facts and figures can be determined by agreement the discussion of the revenue system will remain unsatisfactory and can lead to no judicious settlement of a controversy which may soon become very bitter.

More than twenty years ago the writer was invited to become one of a party to make an excursion through Pennsylvania, of which many of the members were persons in high office or of great influence; he had not then become as profoundly convinced as he has since become, that the true policy of this country would be to remove all obstructions to commerce with other nations; he therefore went through Pennsylvania governed by the impression which he had derived from the persistent representation of members of the Congress of the United States from Pennsylvania almost from the beginning of the nation, that unless the coal and iron of the State were worked the people of Pennsylvania would be incapable of self-support; and also under the impres-

sion that they were incapable of working their coal and iron mines without the special support of the national government through taxation on foreign imports ; but, as the party went on, making an occasional stay here and there, through the southern counties of Pennsylvania, in which then and now the greatest value of agricultural products was to be found as compared to any counties in any other part of the country,—to the timber sections, and thence by the coal-mines and iron-works,—he learned that the people of this State had been blinded in regard to their own resources, and had put forward what was in fact a very insignificant branch even of their own industry, as the mainstay of the whole community.

Since then the huge product of petroleum and the development of the gas wells have been added to the natural resources of this great State ; and yet if the representations of its senators and of the majority of its members in the House of Representatives are to be accepted, the State of Pennsylvania is incapable of self-support without special legislation in support of the iron industry on the part of the national Congress. What could be expected under such conditions? The two men of whom Pennsylvania is most proud, but who were not natives of that State, did not hold these views—Benjamin Franklin and Albert Gallatin.

What are the facts? In the year 1880 the State of Pennsylvania had a population of 4,282,891, of whom 1,457,067 were earning a living for themselves and for the rest, being occupied for gain in all the arts of life. If we assign to the blast-furnaces that number of the coal-miners and workers in and about coal-mines, corresponding to the proportion of coal and coke used in blast-furnaces, there were less than 10,000 coal miners and workers who were dependent upon making pig-iron. In the same art there were less than 22,000 men and boys occupied in all the iron-mines and blast-furnaces of the State, all counted ; and there were less than 3,000 in the coke ovens. Thirty-five thousand, or three per cent. of those who were occupied for gain in Pennsylvania were all that depended on pig-ion for getting a living in 1880, out of over 1,450,000 occupied in all arts. These people were not the ones whom the State would put forward as examples of the type of civilization of which Pennsylvania is proud. In one sense they were not exemplars of American labor at all ; they were men of all nationalities, a large part of them specially imported to do the kind of work which native Americans are not willing and are not obliged to do because of the adverse conditions under which it is carried on. The conditions of underground life and in face of the fiery furnace do not conduce to a very high type of manhood, and very few natives of the United States will accept these conditions. They can do better. Now in order to give special support to this little petty force, all the workers

in iron and the converters of iron and steel to their higher forms in the State of Pennsylvania and elsewhere have been subjected to a tax which has caused the price of their iron and steel to be $7 to $14 a ton higher than that paid by their competitors in Great Britain, whatever the actual price may have been on the average throughout this period of ten years from 1879 to 1888 inclusive. Now it may happen that Pennsylvania may soon be deprived of a considerable part of the production of pig-iron by the competition of Alabama and of other parts of the country. Will Pennsylvania then cease to be a great and powerful State because perhaps one half of a little petty force who do not to-day number more than 50,000, if as many, cannot find *this* particular kind of work to do? May it not, perhaps, be a blessing in disguise, even in Pennsylvania, if a system of special legislation which has for so long a period belittled her public men and depraved her politics should be done away with? Will not men then come to the front who are capable of directing the huge resources that lie within her territory, without haunting the lobby of the Committee of Ways and Means and trying to get special assistance in conducting work which is in itself of very slight importance even to the mass of the people of Pennsylvania? May not Pennsylvania then become represented in Congress and elsewhere by men whose political capacity in a higher sense may be equal to her huge opportunity in material production?

The reform of the civil service has become, in the judgment of so many voters, *the* matter of paramount interest in this country as to have compelled the leaders of both political parties to defer to their judgment whether they wish to or not. If attention be given to the reform of the civil service in Great Britain, and to the necessary conditions of complete reform in this country, it may be found that it becomes possible, and has been or will be brought about only in just proportion to the determination of the people that public legislation shall not be diverted to purposes of private gain. It may be held that so long as special privileges can be created by law, corruption in the civil service will continue. It may therefore follow that the reform of the civil service can only proceed in due relation to the reform of the tariff system of the United States.

It might well be remembered, that aside from any question of morals or politics, the system of slavery was a great economic blunder; none are more fully convinced of this at the present time than the very leaders of the Southern States who fought out the war to the bitter end by which slavery destroyed itself. It was assumed by the Southern leaders who were conspicuous at the time when the abolition sentiment at the North began to work upon the community:

1st. That the only possible relation in which the black and white races could dwell together in the same land, was that of master and

slave. But now, as the grandson of one of the foremost of the Southern leaders lately said to me, after having described his success in conducting large plantations with free negroes, in answer to my question "What would your grandfather have said to your statement?"—"*If my grandfather had known as much about the negro as I know there would have been no slavery and no war.*"

2d. Another stupendous mistake, economically speaking, which pervaded both South and North, and which led to the subserviency of the so-called cotton whigs in their dealings with the Southern States; especially when the Fugitive Slave Act was passed and Daniel Webster attempted to surrender the liberty of the people to the intolerant demands of slavery, was that the cultivation of cotton especially, and also rice and sugar, depended absolutely upon slave labor; and that without the production of cotton, rice, and sugar the Southern States would be incapable of gaining their own subsistence. This terrible blunder in regard to cotton misled even the most intelligent Southern men, as the error in regard to iron has misled the people of Pennsylvania. It will not require a civil war to correct the error in regard to iron, as it did to correct the blunders in regard to cotton. A due regard to the reform of the civil service only, and to the removal of the present causes of corruption in the civil service, may suffice to open the way for Pennsylvania to enjoy the fruits of the progress which may be made within her lines, whenever the domination of her iron-masters is overcome. Such progress may perhaps correspond in somewhat similar measure to the progress which is now being made in the New South since the domination of the slave-masters has been removed from that section of our common country.

The question now recurs, "What imports should be taxed and what should be free?" If the points presented in this treatise have been well taken, it is of course impossible to grant just and equal protection to all branches of industry and all occupations by means of any system of duties, in view of the fact that there could be no foreign import which would in any way compete with a product of like kind in this country to any considerable extent, in respect to ninety per cent. of all our domestic products. On the other hand, there are unquestionably more persons engaged or occupied in raising crops, or in the manufacturing and mechanic arts, whose market is wholly foreign and who depend absolutely upon exports, than there are in all the arts in which even a part of the product could be imported.

Again, it is admitted by both parties in this discussion, that suitable discrimination should be used when providing for the taxation of imports, in order to adjust the taxes so as to promote domestic industry to the utmost, so far as domestic industry can be affected one way or the other by taxation.

To that end it may be held that it is distinctly unfit to tax common articles of food which are of necessary use. Sugar may be classed either as an article of necessary use or article of voluntary consumption, therefore it stands apart. Under the pressure of absolute necessity for a large revenue sugar may rightly be taxed, and there are a few articles from which a large revenue can be obtained with less interference with the freely chosen pursuits of the people than by a tax on sugar. If, however, there is no necessity to secure a revenue for sugar, and sugar were made free of duty, while at the same time all the duties were taken off of tin plates, there would doubtless be an enormous growth in domestic industry in the preparation of condensed milk and of canned fruits for export to other countries. Therefore, whenever there is no longer any necessity for a tax on sugar, it should distinctly be put in the free list, both for the relief of the consumer and in order to promote domestic industry.

It may also be admitted that if all other duties were removed from articles in a crude condition which are necessary in the various processes of domestic industry, then domestic industry will be promoted by exempting raw or crude materials from taxation in tenfold the measure that any single branch of industry in the production of crude materials can be promoted by subjecting them to taxation.

Again, there are many classes of articles which are finished products in their way, which are not ready for final consumption, but are absolutely required in the further processes of domestic industry. Taxes imposed under a tariff upon such articles tend to restrict far more than they do to promote the extension of manufactures and the mechanic arts. Reference being made to the careful classification of all imports by the Treasury Department, printed annually by the Bureau of Statistics in the Annual Report on "Imported Merchandise Entering into Consumption," it will appear that the whole revenue derived during the last ten years from Class A, articles of food and live animals, Class B, articles in a crude condition which are necessary in the various processes of domestic industry, and Class C, articles wholly or partly manufactured, which are used as materials in the manufacturing and mechanic arts, has averaged less than the annual excess of revenue which it is now so important to keep out of the treasury rather than to put into the treasury.

The revenue of the government from customs may now be reduced at least one hundred million dollars, without depriving the government of an ample income sufficient to cover all the necessary expenses of government economically administered, including even the heavy expenditure for pensions.

It may therefore be held that with the exception of a few of these articles on which it will be necessary to continue the duties in order

that we may be able to collect the excise taxes on articles of like kind of domestic production, all duties in these three classes now yielding about one hundred million dollars a year may be wholly abated. This answers the question, "What articles should be exempt from taxes?"

In reply to the first part of the question, "What imports should then be taxed," the answer may be that Class D, manufactured articles ready for consumption, and Class E, articles of voluntary use or of luxury, may then be taxed under a new system of duties, adjusted to the new conditions, at lower rates than those which are now imposed, without interfering with any existing branch of manufacturing to its detriment, and yet yielding as large or a larger revenue than the government will continue to require from duties upon imports (see subsequent tables).

If the existing tariff had been carefully framed, so as to be uniform and consistent in its various provisions, a change or reduction could be made by percentage, varying the percentage to be taken off each year, according to the class to which the import might belong. But since the existing tariff is not consistent, but is badly framed and subject to grave objection from every standpoint, whether that of the high protectionist, the absolute free-trader, or the moderate men who stand between these two extremes, the first step in tariff reform ought to be a complete revision and adjustment of the tariff in all its parts, having reference mainly to bringing all its provisions into suitable relations each to the other at present rates, whatever the final policy in regard to the reduction of rates might be. It would then matter little how much time should be given to the final abatement of duties or to their reduction to a revenue basis, provided a definite policy were adopted and a moderate beginning were made.

If the method of common-sense be applied even to the existing tariff bill, due discrimination being used so as to promote domestic industry to the utmost by removing petty obstructions and doing away with taxes on the crudest of crude materials and on the most necessary articles of food, coupled with the abatement of such petty taxes as do not yield revenue enough to pay for the cost of collection, fifty to sixty per cent. of the specific subjects of taxation under the present tariff in point of number could be put into the free list without reducing the revenue now yielded by the existing tariff more than fifteen per cent.

Let it be for once assumed that the method of common-sense *has* been applied in this way by common consent, there would remain a comparatively short list of dutiable articles. We will next assume that the rates of duty on such dutiable articles had been adjusted so that they were consistent each with the other, and so that the average rate on dutiable imports should be the same as it is now.

The matter of importance would then be to decide upon a distinct

line of policy in making a suitable reduction upon these rates, and in this matter due consideration should be given to the present conditions of the arts which would be affected, so that sufficient time should be taken to enable them to adapt themselves to the new conditions without danger of any great disaster or loss.

Assuming that sugar had been treated separately with a view to revenue only, the duties which would then remain in force would consist of those imposed upon a part of the articles in Class C, articles partly manufactured for use in the further processes of domestic industry; upon Class D, manufactured goods ready for consumption, and Class E, articles of voluntary use or luxury.

Now it happens that the life of almost any kind of modern machinery is limited to a short term of years, after which the machine or process must be displaced, either because it is so worn that no further repairs will make it fit to be used any longer, or because some new invention has rendered it out of date. For the sake of the example one may say that the apparatus which is made use of for converting crude materials into partly finished forms, which constitute the materials required in the further processes of industry, may have a life of ten to fifteen years, and that the machinery which is made use of in the conversion of crude or partly manufactured materials into goods and wares ready for consumption may have a life of fifteen to twenty years.

It may then be assumed that it may be necessary or expedient to continue the duties on articles of luxury or voluntary use with reference only to the amount of revenue which can be derived from them.

Next, that it may be expedient to continue moderate duties on finished manufactures for a longer period than even the life of existing machinery; but that it would *not* be expedient to continue any duties or taxes which are not required for revenue on crude or partly manufactured materials which are necessary in our own domestic industry.

If this were the declared and adopted policy, to be adhered to without any departure from this line of policy, and without permitting any alteration to be made in public legislation at the instance of those who sought their private interest in the matter, the simple method of doing away with the surplus revenue, and by the same act promoting domestic manufactures to the utmost, might be after removing all duties except on sugar reserved for special treatment, on classes A and B, to reduce the duties on Class D, that is, upon articles partly manufactured which are required in the further processes of domestic industry, at the rate of ten per cent. per year for ten years; by the same act reducing the duties on Class E, covering manufactured goods ready for consumption, at the rate of five per cent. a year for such term of years as should bring them to the point agreed upon, at which the duties might be retained for the purpose of collecting revenue.

In order that this matter may be more fully comprehended, the classification of imports which has been adopted in the treasury, together with the respective amount of import and the revenue therefrom, is now given :

AVERAGE OF THE IMPORTS AND REVENUES CLASSIFIED (DISREGARDING FRACTIONS). FOR NINE YEARS, 1880 TO 1888, INCLUSIVE.

	Annual Import Value.	Annual Revenue.
Class A. Articles of food and live animals—		
Sugar and molasses	$83,000,000	$50,000,000
All other articles	39,000,000	11,000,000
Class B. Articles in a crude condition which enter into the processes of domestic industry—		
Coal, iron-ore, copper-ore, pig-iron, flax, hemp, jute, wood, wool, etc.	52,000,000	16,000,000
Class C. Articles wholly or partly manufactured needed for use in domestic manufactures and mechanic arts	66,000,000	20,000,000
	$240,000,000	$97,000,000
Classes D and E. Manufactured goods ready for consumption and articles of voluntary use or luxuries	$210,000,000	$101,000,000
	$450,000,000	$198,000,000

Average for nine years.—Present import and revenue six to eight per cent. above this average. Excess of revenue at the present date, May, 1889, about $100,000,000 per year ; increasing.

PROJECT FOR TARIFF REFORM.

	Average Revenue about as below for 9 Years.
A. Sugar duties, wholly retained, reduced, or wholly abated, according to the assumed need of revenue	$50,000,000
Duties on live animals and on all other articles of food wholly removed	11,000,000
B. Crude or raw materials, wholly removed at once, or on some articles, at the rate of 20 per cent. a year for five years	16,000,000
C. Partly manufactured materials, removed at the rate of 10 per cent. a year for ten years	20,000,000
D. Manufactured goods reduced at the rate of 5 per cent. a year to a revenue basis. E. Articles of voluntary use or luxuries, retained at present rates	101,000,000
	$198,000,000

The fault of this measure would probably be that the prosperity of the country and the wide extension of its commerce would tend to such an increase of consumption as to bring in a larger revenue with each reduction in the rates of duty. In such event such revenue duties on sugar as had been retained might be wholly removed.

In view of the admitted fact that the existing tariff act, which is mainly the work of the so-called Tariff Commission appointed to revise the forms as well as the substance of the law, is perhaps the most inconsistent and ill-adjusted measure ever passed, leading to confusion, litigation, evasion, and inconsistent interpretations at different ports,—the first measure of reform already suggested might well be adopted by common consent, to wit: the preparation of an act, consistent in all its parts, for the assessment of duties at the rates and in the manner intended by the framers of the existing law without reduction in such preliminary act : the choice might then be presented either for radical changes and the enactment of a wholly new tariff, or for a gradual change based on the newly adjusted tariff by additions to the free list, and by reductions by percentage covering a suitable term of years.

NOTE.

OCTOBER 20, 1889.

The computations on iron and steel in this article were made early in the year 1889. On reviewing them I submitted them to Mr. James M. Swank, whose integrity as a statistician is so well established, in order that there might be no error in the figures on which the analysis is made. This has led me to reduce some of the original figures which were higher. On some points our figures still vary. In the per capita consumption of iron I have included by estimate the weight of machinery, hardware, etc., of which the value of the import only is officially given. My estimate is a little higher than Mr. Swank's.

Exception may be taken to the selection of Scotch pig-iron in Great Britain, and anthracite foundry-iron in Philadelphia as a standard. I am aware of the great variations in the quality of iron on both sides of the water, and also in prices according to locality as well as quality ; but I have averaged Scotch pig-iron on the *highest* price in each year as compared to the *average* price of anthracite foundry-iron in Philadelphia.

Moreover, I have estimated only one third of the iron, or a trifle more, as being converted into steel ; Mr. Swank shows that one half the iron is converted into steel. The disparity in the price of steel has been greater than that of iron. Had I made a full estimate for this item it would have added $66,000,000 to my figures for ten years.

Again, the best refined roll bar-iron in Philadelphia may be taken as the equivalent of the best Staffordshire bar-iron in Great Britain.

The average price in Philadelphia in 1878 to 1887 inclusive, of the best bar-iron, has been	$50 31
The average of the highest price each year of Staffordshire bars in England has been	36 48
Disparity	$13 83

In attempting to measure the disparity in price to which the consumers of this country have been subjected as compared to those supplied from British works, I have therefore attempted to keep so far within the facts that no one may gainsay the conclusion. On these facts our relative disadvantage from 1880 to 1889 inclusive would seem to have been over $800,000,000 ; but in 1889 the disparity is diminishing. Lest this result should be questioned, I have therefore deducted for contingencies due to what some one has called the "total depravity of figures," fifteen per cent. But now again, lest this final result should be questioned, we may take off twenty-five per cent. more, or $200,000,000, thus reducing the disparity for ten years to an average of $50,000,000 a year, or $500,000,000 in all. At this measure the disparity in ten years amounts to a sum exceeding the probable value of all the iron mines, blast-

furnaces, bloomeries, rolling-mills, and steel works of this country which are now in working condition; while the annual disparity in price has been more than the annual sum paid directly to workmen in all the iron mines and blast-furnaces in the production of pig-iron. In my own analysis of the direct or absolute labor-cost of iron at the mine and at the furnace in 1880, I made it at the official figures ($8) eight dollars per ton, including the cost of administration, but not including cost of transportation of material. It has doubtless been reduced since that date.

In a memorandum dated May 7, 1888, Mr. Swank gives the items of direct labor-cost in a ton of Bessemer pig-iron as follows:

Ore:	Labor in mining and connected therewith, per ton	$3 24
Coke:	" in mining coal and coking	1 35
Limestone:	" in quarrying	27
	" at blast-furnaces	1 46
	" in maintenance of furnaces	50
	Total	$6 82

Mr. Swank charges iron with the labor of transporting the materials. I do not. In the Southern mines and works it would be very small, and the same labor would be expended in moving finished iron when imported or the products of such iron; it therefore does not form a necessary part of the direct or labor-cost which is requisite to securing our supplies of the machinery, etc., in which iron is consumed.

The average of Mr. Swank's estimate of the absolute labor-cost and my own would be $7 50 per ton. At this rate the actual labor-cost of our product of 58,000,000 tons in ten years has been $43,500,000 a year, against a disparity at the reduced estimate of $50,000,000 in the price of our iron to consumers. In 1880 the sum of wages paid directly at mines and works on a little less than 4,000,000 tons was $32,000,000, including the charge for administration. The number of persons employed was a little under 100,000, but the work done corresponded to only about nine months' full time. The workmen are about one third skilled or two thirds common laborers; they doubtless average $400 each per year at the present time. This would give 110,000 men and boys occupied in this art for the last ten years. The amount of labor in the Southern mills is less and recent improvements have doubtless reduced the number of workmen elsewhere.

The object of this treatise is to give the basis of fact which is necessary to an intelligent discussion of what should be taxed and what should be exempt. We may reach equality in price with Great Britain, which is rapidly approaching, either under the present system or by abating the taxation on the import of iron and steel; that subject is not a part of the present discussion.

From 1870 to 1879 our consumption of iron was almost exactly 150 lbs. per head. At the present low price it has reached 300 lbs., and the uses to which iron and steel are being applied are rapidly increasing. If the per capita consumption should go up to 400 lbs., than which nothing is more likely during the next ten years, our population which will reach 85,000,000 in 1890, if not sooner, will require 17,000,000 tons, our present consumption averaging 9,000,000 tons. Cuba may be added to our sources of supply of fine Bessemer ore whenever the duty on iron ore is removed; the island contains enormous deposits easily worked. We are much nearer Cuba than Great Britain.

It may be held that it is for lack of attention to these bottom facts in the choice of subjects of taxation we are now oppressed by a system of taxation upon imports at much higher rates on the materials which enter into the processes of domestic industry than are imposed upon the finished products. Such a policy can only result in helping foreign manufacturers to beat our own. It is consistent neither with free trade nor protection.

PRODUCTION, DISTRIBUTION, CONSUMPTION

PRODUCTION, DISTRIBUTION, CONSUMPTION.

THE object and end of all productive labor or effort—mental, mechanical, and manual—is consumption; that is to say, all efforts are directed to the conversion of the primary products of the soil, the forest, the mine, and the sea into forms for consumption, of which the sole purpose is to sustain, clothe, and shelter the human body for the time being. A part of such consumption is so directed that while it furnishes the means of living to those who do the work, it at the same time converts a part of the annual product into a permanent or durable form constituting wealth or capital.

Practically nothing is or can be saved or added to the stock of wealth in its primary or crude form.

The inequalities among men consist—

1st. In the inequality of consumption.

2d. In the inequality of possession.

The prime object of the possession of land or of other property is to give positive assurance of the means of abundant consumption to him who controls either land or capital.

The struggle of those who are not endowed with property or in the possession of wealth in any considerable measure, is to secure an abundant supply of the means of consumption from each year's product.

There is much greater equality in consumption than there is in possession.

In respect to food, substantial equality of consumption as to quantity must be attained in order that the man may live and not die. A certain definite supply of the so-called "nutrients," protein or nitrogenous material, starch and fat, is necessary to the maintenance of health and strength, and if there is any difference in the quantity of food consumed, the working classes, using that term in the narrow sense in which working people apply it to themselves (which is the meaning subsequently given to the term throughout this essay), consume more food by weight than the richer classes, because the kind of work which they do enables them to and also requires them to digest more.

The consumption of clothing is more nearly equal than the provision for housing or dwelling. The greatest inequalities are to be found in the provision for shelter or the dwelling-place of the family. The

necessity for a certain measure of subsistence and suitable provision for clothing and shelter is distinctly admitted by the establishment of the alms-house or the poor-house, where those who are incapable of providing for themselves are provided for at the cost of society.

It was a matter of very great difficulty to the writer to justify the great inequality which exists in the distribution of products and in the control over the means of subsistence, until the subject was taken up on what may be called its metaphysical side ; or, in other words, until an approximate estimate had been made by himself as to the relative value of muscle and mind, or of labor and capital, in the work of production and distribution. The importance of the mental factor in the conduct of the work of life, in which it is the prime motive power, has been treated in other essays. The object of the present essay is to try to make it plain that there are only three methods of bringing about greater equality in the conditions of men or in their control over the necessities and comforts of life.

1st. By increasing the quantity of things produced.

2d. By devising a method by which those who now control a larger share of the annual product, whatever that product may be, than they can possibly require for their own use and consumption, may part with it in such a way as not to pauperize any one in the process of converting it to the general welfare.

3d. By helping those who do not get enough to enable them to live in comfort and welfare, to get more, without being subjected to the indignity of having it given to them either directly or taken from others for their use, by any process of law which shall interfere with personal rights, with the free conduct of society, or with free contracts among all classes of people.

As society is now organized, the distribution of products is and can be worked only by one of four methods :

1st. By barter or exchange in kind.

2d. By purchase and sale.

3d. By taxation.

4th. By theft, either within or without the forms of law.

There are three subjects of distribution by purchase and sale, two of which differ but little from each other, the third differing fundamentally.

1st. That part of the product of previous years which, under the name of "property," has been converted into more or less durable forms, known as capital, tools, machinery, railways, factories, warehouses, and the like.

2d. That form of property which is commonly called "quick capital," being the food, fuel, clothing, and other goods and wares which are on the way from the producer to the consumer.

The third kind of property which passes by title, and which differs fundamentally from either of the other two, is *land.*

It is held by many that land should not be made a subject of distribution by purchase and sale, but should be held as the common property of the state, subject to personal possession for use only on the payment of a single tax upon its rental value. That branch of the subject has been treated by the writer in another essay, under the title of "The Single Tax System." The purpose of the present treatise is to consider the distribution of the present annual product under existing methods and customs, which have been evolved and established consistently with the present order of society and present laws.

In the present order of society relatively few come into the possession of so much land or capital as to be classed among the rich. Very many possess small parcels of land and small amounts of capital which entitles them to be considered "well-off." Aside from these two relatively less numerous classes, the great mass of the people of necessity spend nearly the whole share of the annual product which falls to them, in providing themselves and their families with shelter, food, and clothing, saving but little and therefore adding but little to the capital of the country.

In other treatises the writer has attempted to prove that in any given year of average production not less than ninety per cent. of the entire product of any average series of four seasons is and must be consumed in a corresponding period of twelve months; that measure of consumption, estimated by me at ninety per cent., or whatever it may be, is the cost of subsisting the whole mass of the people, rich and poor alike, in that specific year.

If it can be proved that ninety per cent. is the cost of living, it follows that not over ten per cent. of the average product of an average year is or can be consumed in such a way as to be added to the capital of the country by either rich or poor or both combined, so that it shall form a part of the permanent investment to be used for reproductive purposes. Of course a small part of the product of one year must be carried over to the next, to start the work of that year upon, and the corresponding part of the product of that year is carried foward to the next.

It is plain that in this country, at least, an abundant *production* of all the articles which are necessary for subsistence, for comfort, and even for a large measure for luxury, is now assured. The only question requiring a better solution is the distribution of this abundant product.

According to my estimate, although not exceeding ten per cent. of the average product of this country is or can be added to its capital, it does not follow that not exceeding ten per cent. falls in the first instance

under the control of those who may be called the "richer classes" under the name of income. The income of those who own invested property, either in capital or in land,—which income falls to them under the title of rent, interest, profit, or by way of large salaries for what are assumed to be great services,—is doubtless much more than ten per cent. of the total annual product. But the specific class of persons, the rich and the well-off,—to whom this income falls under the name of rent, interest, profit, or salary, do not consume it all themselves. Their consumption of food is not and cannot be greater in quantity, however it differs in quality, from that of any other given number of persons,—they have more clothing at one time, but they do not wear out more clothing than the working people,—they are much better sheltered, and in that matter is to be found the greatest inequality ; but when they have consumed all that they care to consume, either for necessary or for luxurious or wasteful purposes,—still the greater part of their incomes is again distributed by them among those who work for wages or for small compensation, and it is by way of compensation received for the service rendered to what may be called the "richer classes," which service or work is not in itself productive of the necessaries of life, that a large number of those who are included under the title of "working classes" get their own living.

Existing modes of distribution may be good or bad, equitable or otherwise ; there may be room for many reforms now known to be necessary ; but yet there can be no great and revolutionary change in the present methods of distribution by taking from the richer classes a large share of the income which they now derive from rent, interest, or profit, and converting it over to the control and use of those who do the actual work of production, without, for the time being, at least, depriving another large number of working people of their present mode of gaining their living.

If those who now expend their rents, interest, or profit in building the better class of houses, in the purchase of musical instruments, in silverware, in the purchase of the more expensive kinds of furniture, in cultivating gardens, in buying and using carriages, and in many other ways which constitute either the comforts or the luxuries of those who are well off, were deprived of a large part of their income, then all who now supply these comforts or luxuries would be without work until a new demand had been created for similar services among the working classes engaged in the actual work of producing the necessaries of life ; but the mere privation of the rich would not endow the workman with the means of payment for such services.

It is very important to keep the fact clearly in mind that the absolute necessaries of life now require but a moderate portion of the work of society to be applied to them,—such has been the gain from labor-

saving inventions ; if increasing wants were not developed with the increasing means of enjoyment, work would be wanting for those who now provide for such increasing wants.

In order to make this plainer, I have endeavored to put these facts into a graphical form, only making use of figures or estimates in money *pro forma*. On the diagram herewith will be found a series of oblong squares, designated respectively: First, Second, Third, Fourth, and Final Stage. These are divided into sections representing the conversion or distribution of products. For the purpose of this essay it may be assumed that my computation of the gross value of the annual product of 1880, which I estimated at two hundred dollars per capita, or ten thousand million for the year 1880, is correct. Let it then be assumed that square No. 1 headed first stage is typical of this amount. This gross product is to be put on the way to consumption. It is to be distributed under existing methods in the form—

1st. Of consumption *without* purchase or sale, as on farms.

2d. Consumption by way of taxation, national, State, and municipal.

3d. Consumption by way of wages, small salaries, or the work of small farmers who gain little beyond a necessary subsistence.

4th. Consumption by way of rent, profit, interest, or large salaries.

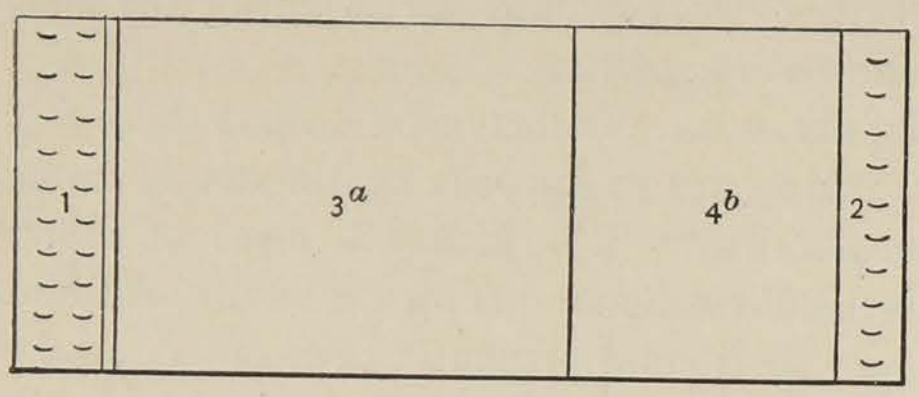
5th. Consumption by way of conversion into new capital.

How is this distribution now made ?

According to my computation, a proportion equal to ten per cent., designated Section No. 1., is consumed on farms or elsewhere without passing into the commercial product. The taxes of 1880 came to about seven hundred million dollars, or seven per cent. of the computed annual product designated Section No. 2. Taxes are all substantially applied to the purchase of the necessaries of life for immediate consumption, by government officers, from the higher officers of the national government to the workmen upon the town highways or the scavengers who sweep the streets. A certain proportion, computed by myself as being by far the larger proportion of the remainder, is carried forward one stage in the form of wages, small salaries, or small farmers' earnings designated Section No. 3*a*, to be consumed. The lesser portion of the remainder is carried forward under the name of " rent, profit, interest, and large salaries," Section No. 4*b*.

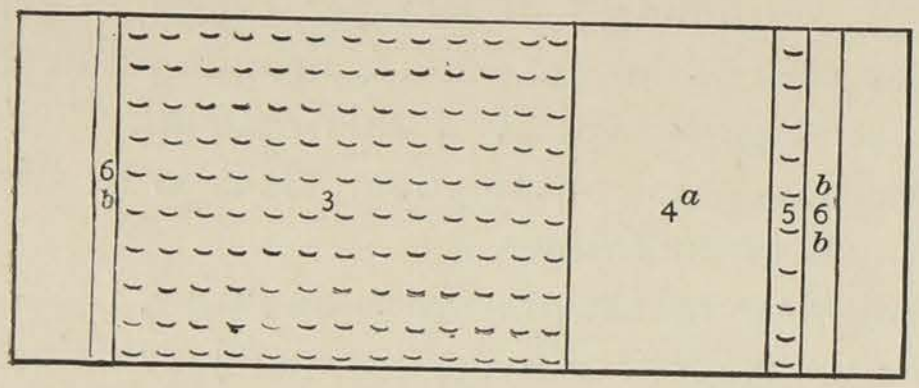
In the Second Stage, Sections 1 and 2 of the previous diagram are left blank, so much of the product having been exhausted by consumption. The greater part of that brought forward, designated Section No. 3, is spent for immediate consumption by the wage-earners and small farmers. A very small part, represented by Section No. 6*b*, is saved by working people, and is carried forward to be consumed in its conversion into capital. The smaller part of Section No. 4*a*, previously assigned to rent, interest, profit, and large salary, designated

FIRST STAGE.



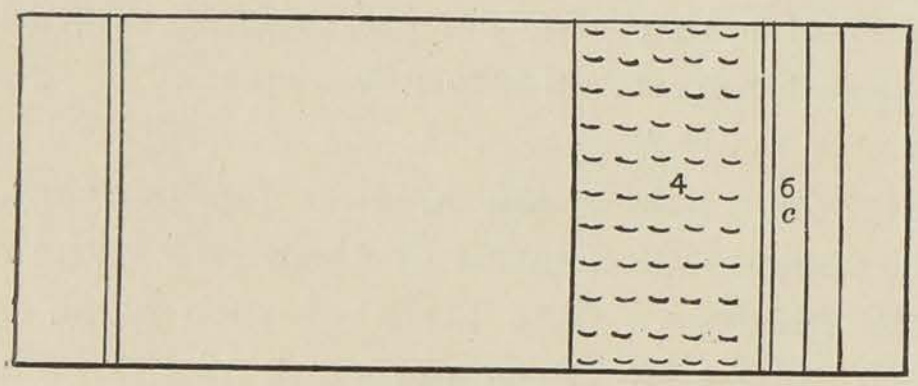
1. Consumption on **Farms.**
2. Consumption by **Taxation.**
3*a*. Carried forward as **Wages or** Earnings.
4*b*. Carried forward as **Rent, Interest, and Profit.**

SECOND STAGE.



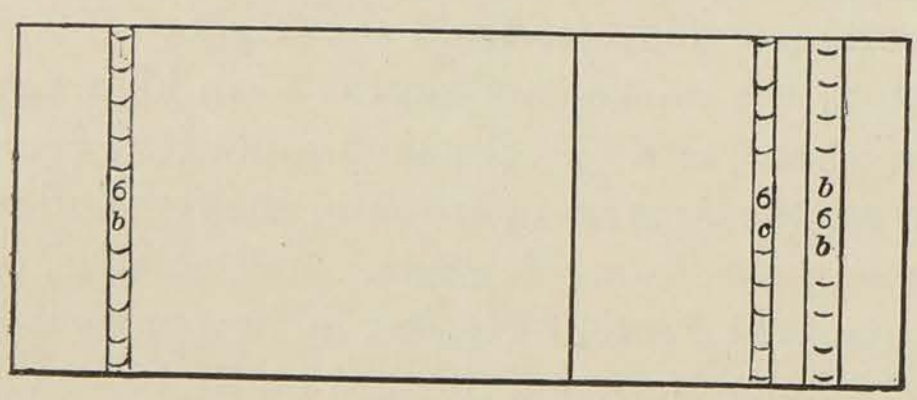
3. Consumed by Wage-earners.
4*a*. Carried forward as **Wages or** Earnings.
5. Consumed by the Capitalists.
6*b* and 6*bb*. Carried forward for conversion into capital.

THIRD STAGE.



4. Consumed by Wage-earners.
6*c*. Carried forward for conversion into capital.

FOURTH STAGE.



6*b* 6*bb* 6*c*. Consumed by Wage-earners in the Process of Conversion into Capital.

FINAL STAGE.



6. Proportion of all products converted into capital as measured in the preceding sections.

Section No. 5, is consumed by the richer classes who receive it : they are relatively few in number, and if they consume or waste according to their own pleasure, as much as five hundred million dollars a year, or five per cent. of the total computed product, yet their absolute consumption is represented by the small section numbered 5. Another part of what the richer classes receive is carried forward for consumption by conversion into capital, Section No. 6*bb ;* but the greater part of their incomes, designated Section 4*a*, is spent on what might be considered a reasonable standard of living :—in the construction of good houses, for the higher education of their children, in provision for music and art, in country-places and the like ; a class of expenditures to which no exception can be taken, unless it could be proved that this specific class did *not add to the aggregate product of the whole people, far more than they receive in the form of income or spend upon the luxuries or upon the comforts of life.*

In the Third Stage, Section No. 4, that part of the income of the richer classes, spent by them on houses, gardens, musical instruments, carriages, etc., is designated ; it is consumed by the working classes, to whom it is paid out, and it provides them with the means of living.

In the Fourth Stage, that part of the annual product which had been previously brought forward under Section No. 6*b*, as the savings of the working classes engaged in direct production, Section 6*bb* that part added to capital by the richer classes and Section 6*c*, that part saved by those who work in the service of the richer classes, is represented in the process of consumption by the working people who construct the railroads, build the mills, or in other ways convert that part of the annual product which can be added to the capital of the country into its durable form.

In the Final Stage, Section 6, the portion designated separately in preceding sections computed at ten per cent. is pictured as being consumed by conversion into capital of a more or less permanent kind, and in the process of conversion is spent among working people.

Now any one who can make a closer estimate of the value of the annual product itself may do so ; or any one who can make a closer but different estimate of the way in which the product is divided, may alter the size or the proportion of the several sections of these diagrams ; but in so doing they may only alter the actual division of a certain annual product without altering the rule under which it is now divided, whatever that product may amount to.

The working people who do the actual primary work of producing the necessaries, comforts, and luxuries of life designated in Sections 3*a* and 3, whatever proportion of the product they control or consume, and whatever section of the square they occupy, either in appearance or in fact, now produce more than food enough,—more than fuel

enough,—more than fibre enough,—more than clothing enough,—and more than timber and metal enough,—to feed, clothe, and house the whole existing population in greater comfort than the whole population now enjoys on the average. This section of the population, whatever its relative number or proportion may be, produces even such an excess of *the necessaries of life*, that with the excess we buy the comforts of life from other nations ; such as tea, coffee, sugar, and spice, more than enough for abundant consumption by the whole population. Yet want exists in the midst of abundance. A few obtain control of more than enough and waste a part ; a greater number secure a competence ; but the many secure less than enough to enable them to enjoy much leisure ; while a few again actually suffer from want or are upon the edge of want all the time.

The problem of society is to change these conditions by evolution rather than by revolution ; since even the waste of the few or of the many cannot be saved or spent in a different direction without bringing about temporary want in the process. For instance, there is scarcely a doubt that the small aggregate expenditure of the rich for fine wines and fine tobacco, which constitutes but a small part of the aggregate expenditure upon this class of luxuries, coupled with the very great aggregate expenditure of those who constitute the working classes, for beer, whiskey, and tobacco, amounts to about one thousand million dollars a year in all ; that is to say, in the aggregate, beer, whiskey, wine, and tobacco come to ten per cent. of the entire production and of the consumption of the people of the United States ; possibly a little less, but according to some estimates even more.

Let it be supposed or admitted that the world would be better off if everybody would give up the use of liquor and tobacco, and did so. It would of necessity follow that about ten per cent. of the people of the United States would be deprived of their present mode of getting a living, and that number would be more than six million, of whom two million are at work. This but indicates the stupendous difficulty of changing the present methods of society and the yet greater difficulty in altering them by legislation.

After all that may be said and done, there may, however, be those who will question the right of persons who fall within the category of the richer classes to their present share of the annual product, whatever it may be, and who may claim that this share would fall, under a more just method of distribution, in a great measure to those who sort themselves as the " working classes."

In answer to this claim, while admitting that there is room for many reforms,—admitting also that there are many defects in existing laws affecting distribution which should be amended,—yet the capitalist class can be fully justified in attaining and controlling the expenditure

of its share of the annual product, whatever it may be, because *they add much more than their own incomes to the total product.*

The mind of man is the prime factor in all material production,—without it the mere labor of the hand would be incapable of providing for an increasing population. Setting aside all distinction of classes and reasoning only on the qualities of mind which are necessary to the accumulation of capital, it becomes apparent

1st. That the saving of capital at the beginning, however little it may be, is due to prudence, self-denial, economy, and sagacity.

2d. The productive use of capital, after it has been saved, calls for intelligence, skill, and mental capacity.

3d. The larger the capital the greater the mental capacity required for its application to productive purposes.

4th. Unless capital is directed to productive purposes, whether invested in land, mills, railroads, or works of any kind, it yields neither rent, interest, profit, or earnings. When productive it increases production more than it secures as income.

5th. Unless labor did in fact secure a better subsistence in the service of capital, the workmen would refuse to work for the capitalists.

It follows of necessity that whatever share of the annual product may be secured by the capitalist class under just laws which create neither privilege nor preference, the annual product itself in which all share, both laborers and capitalists, is increased in vastly greater measure by them than that part of the product or share which falls to capital comes to.

A rule has been propounded on this matter by Henry C. Carey, the advocate of the highest protection, and also by Frederic Bastiat, the most radical advocate of free trade, which is sustained by many other writers, and which is also fully proved by the observation of the facts of life, to wit : "*in proportion to the increase of capital, the absolute share falling to the capitalist is augmented while the relative share is diminished.*" On the other hand, *the share falling to labor is increased both absolutely and relatively.*

There is one method of analysis which may perhaps be accepted as conclusive, upon the question of the proportion or percentage of the annual product which may be saved and added to the capital of the country.

The population of the United States in 1780 was not far from four million ; in 1880 it was substantially fifty million ; the average for the century was therefore twenty-six million. Now twenty-six million people inhabiting a country for one hundred years is equivalent to twenty-six hundred million inhabiting a country for one year. If we then assume that twenty-six hundred million people had lived and

worked one year under the same average conditions as the twenty-six hundred million had lived and worked during the century, and that in the one year the average saving or addition to the capital of the country had been ten dollars' worth each, then the sum of the capital thus saved would come to twenty-six thousand million dollars.

While it may be true that not much dependence can be placed upon the valuation of the capital of the country as given in the Census of 1880, yet this much is known to those who, like the writer, took part in the compilation of the Census of 1880, that the capital is overestimated rather than underestimated in its valuation.

Now deducting the valuation of land and of public buildings from the computation made by the Census Department on the basis of all the returns, and that part of the property of the people of the United States which, in 1880, could in any sense have been called private capital, did not exceed this sum of twenty-six hundred million dollars. Now then, ten dollars a year is ten per cent. of one hundred dollars, and if ten dollars' worth of product saved had been added to capital, the remainder must have been ninety dollars' worth consumed each year per capita. Ninety dollars' worth divided by three hundred and sixty-five days in a year gives a little less than twenty-five cents' worth a day of products, as the average consumption of each person, man, woman, or child, who had inhabited the United States during the century. Could the population of the century have subsisted on less?

If however the average product for the whole period has been worth *more* than one hundred dollars per capita, then all the capital we have now to show for our savings of a century comes to *less* than ten per cent. of the total product of the century.

Each one must judge for himself how near that sum, twenty-five cents, is to what must have been the measure of daily consumption. If the consumption was greater than this, then the proportion saved and added to capital is so much less. If the people had been supported during the century at less than twenty-five cents' worth, including rent or shelter, food, fuel, clothing, and other supplies, then the proportion saved may have been greater. On the whole, ten per cent. would appear to be as close an estimate as it is in the power of any statistician who is capable of reasoning upon the figures, to set aside as the amount saved in each year.

In 1880 the whole amount of property which was assessed for local taxes in the United States was as follows:

Real Estate	$13,036,766,925
Personal Property	3,866,226,618
Total	$16,902,993,543

It will be observed that the assessors' valuation on real estate includes all buildings and improvements upon land of every name and nature. So far as there is any information to serve as a guide, the assessment may be about evenly divided.

Assessment on land one half	$6,518,383,462
Assessment on buildings or other improvements	6,518,383,463

Suppose it be admitted that the land only was valued at seven thousand million dollars, for the assessment of taxes.

The sum of all taxes in 1880 was over seven hundred million dollars, for national, State, and municipal purposes.

Mr. Henry George and his coadjutors propose to put a single tax upon land in order to meet all these expenses.

In 1880 the rate would have been *ten per cent.* on the assessed value. This subject is only referred to incidentally, it has been treated elsewhere by the writer.

If the "site value," so-called, of all land should be taxed ten per cent., the question may well be asked how any one but a capitalist could afford to build upon or to cultivate it. This assessment, was, however, much below the true value.

An estimate of the true value of the property of the United States was made by Mr. Henry Gannett, one of the most conscientious and capable of the experts, who was employed in compiling the Census of 1880. He gives the following data :

True value of farms	$10,197,000,000
Residence and business real estate, including water power	9,881,000,000
Mines, oil wells, and quarries, including half of the annual product of the same assumed to be in the hands of the producers	781,000,000
Railroads and equipments	5,536,000,000
Telegraphs, shipping, and canals	419,000,000
Household furniture, books, clothing, jewelry, and supplies of food, fuel, etc., in the hands of consumers	5,000,000,000
Live stock on or off farms, farming tools and machinery	2,406,000,000
Three quarters of the annual product of agriculture and of manufactures, including imported goods	6,160,000,000
Miscellaneous, including mechanics' tools	650,000,000
Specie	612,000,000
Churches, schools, asylums, public buildings, and other real estate exempt from taxes	2,000,000,000
Total	$43,642,000,000

When we come to analyze these figures for the purpose of separating the value of land from the buildings or improvements which have been put or made upon the land ; and also for the purpose of separating that part of the wealth of the country which had become common wealth, in order to ascertain what the remainder is,—such remainder being the capital which has been saved throughout the period of our

existence as a nation,—the matter is subject to some uncertainty and we must reason by analogy from known facts.

In the city of Boston, where the valuation for the purpose of assessing taxes is very high, the valuation of land comes to three fifths, and of the improvements of buildings constructed upon the land, to two fifths of the assessment on real estate. In the country districts these proportions are apt to be about reversed.

On this basis from Mr. Gannett's estimates we may set aside one half the valuation of farms, one half the valuation of the residence or business real estate and water power, and two thirds of the value of the mines, oil wells, and quarries, including the product on hand, as being so much capital or wealth saved from previous work,—this leaves the valuation of land taken by itself including mines, oil wells, and quarries, at ten thousand million dollars. We may then readily compute the capital.

Valuation of the capital invested upon the land	$10,869,000,000
Railroads and their equipments	5,536,000,000
Telegraphs, shipping, and canals	419,000,000
Live stock, farm tools, and machinery	2,406,000,000
Three quarters of the annual product of agriculture and manufactures (rather a large estimate in the judgment of the writer)	6,160,000,000
Specie	612,000,000
Miscellaneous, including mechanics' tools	650,000,000
	$26,652,000,000

We then have what may be called the true capital of the country, which is all made use of, with the exception of dwelling-houses, for reproductive or for distributive purposes. The remainder, the estimate of property consists of household furniture, books, clothing, and supplies of food which are in the way of immediate consumption, five thousand million. Even if we add this item to the capital previously set apart, the total comes to only thirty-one thousand six hundred and fifty-two millions,—then deduct the dwelling-houses and household furniture, books and clothing, and the actual productive or reproductive capital of the country in 1880 exceeded but little twenty-six thousand millions ; or substantially the sum of ten per cent. on an annual product of only one hundred dollars' worth per capita for a century.

Of course the product has of late been much greater, and the addition to capital at ten per cent. has of late been very large,—much larger in the aggregate than ever before.

If, then, we put the minimum sum against each person of the population on which the people could by any possibility have been fed, clothed, and sheltered, we reach figures which, by comparison with the largest estimates of the taxable property of the country, exclusive of

land, tend to prove the utter impossibility of any accumulation of capital having been made in excess of two or three years' product.

For instance, at my own estimate of two hundred dollars per capita, which, in my own judgment, is too large rather than too small, the amount available for each man, woman, and child of the population in 1880, a year of more than normal prosperity, did not exceed what fifty-five cents a day would buy at the prices at which goods were then sold to consumers ; therefore this sum per capita must have covered the consumption of the farm, taxation and the compensation for all services of all kinds, whether rendered under the title of rent, interest, profits, earnings, salaries, or wages.

Now it is very plain that the mass of commodities of necessary use which have been produced has been greater for the last twenty-five years than at any previous period. The figures indicate double the quantity as compared to the first half of the century under consideration. The prices for the last five or six years of the necessaries of life have been substantially what they were in 1850, before the effect of the gold discoveries in California had begun. Ten per cent. of this increased product makes a very great and rapid addition to capital.

If the whole production of the population which has dwelt in the United States from 1780 to 1880 has been only one hundred dollars' worth per capita in all, as estimated in the previous computation, then the amount of product available to each person during that whole period must have been less than what twenty-seven cents a day would buy. If the product has been one hundred and fifty dollars' worth per capita each year, consumption has been what forty-one cents a day would buy.

According to my computation for 1880 the total product was what fifty-five cents a day would buy, and in view of the continued increase of product since 1880 and the lessening cost of distribution, it may to-day be about what sixty cents a day would buy.

Since 1880 the taxes have probably diminished in ratio to product from seven per cent. to six per cent. Interest, rents, and profits have also steadily diminished in ratio to products until capital can secure for its services, when lent for industrial purposes, less even than in Great Britain ; although the current rates for call money in London,—the banking centre of the world,—may be a little less than in New York.

Again, any one who is at all conversant with the conduct of business may readily bear testimony to the fact, as soon as his attention is called to it, that there is probably seldom or never one year's stock of food held in advance of consumption, even in this country. There is never one year's stock of materials for clothing on hand, seldom a stock more than enough for the ensuing season, held in advance of consump-

tion. The amount of capital, great as it must be, which can be applied to housing the increase of population, barely suffices to keep them under cover. Even houses wear out about as fast as they are built. The warehouse, the machine shop, and the factory are a little more durable, but the life of the best machinery is very short ; it is used up or displaced by new inventions in from ten to twenty years. If a railroad were neglected for a single year there would be little left but the road-bed ; and that would be gullied in the course of every stream. There is therefore nothing useful that is very old. "Want treads on the heels of plenty," with only one, two, or three years to spare in the work of converting the forces of nature to the subsistence of man.

With respect to land, which is said to be limited and which differs in some respects from capital in that whatever the quantity may be it cannot be increased in area ; it may be admitted that the area cannot be increased but the product of land can be increased almost indefinitely when the mental factor, which is the prime factor in production, is applied to its use. No one yet knows or can measure the productive capacity of a single acre of land anywhere.

The possession of land under existing laws by individuals is more free to-day from restriction, and it is more easy for any man who desires land to possess it than it was when the pilgrims landed on Plymouth Rock, or when the first settlers in Florida occupied the country, before a single private title had been obtained from the aborigines either by conveyance or by conquest.

The same amount and quality of work which was then required to reach, open, clear, and put land under cultivation, such land being free from any private title and open to settlement without money charge, if now directed to earning wages in any art which develops the intelligence and capacity of the man who does the work, will enable him to save enough for the purchase of land at present prices, outside a few central and thickly inhabited points, in greater quantity and under better conditions for use, than the entire work of the man for a lifetime would have sufficed to give him without regard to his subsistence fifty years since, or than he could have gained from the virgin forest at any time during the past century.

In fact, good land under good cultivation, with good improvements upon it, capable of such use that it has sufficed for the subsistence of the best and most competent part of the population during the past century, may now be purchased for a sum of money representing far less than the money value which has been expended in clearing it and in building fences and walls.

In 1880, all the crops of the country which required cultivation were made on less than three hundred thousand square miles out of three million square miles constituting the territory of the United States, and

that part under cultivation did not produce on the average more than half a fair crop, owing to the negligent and wasteful methods of cultivation due to want of intelligence in the cultivator, or want of sufficient labor in the process.

Since 1865 more than one hundred thousand miles of new railway have been furnished by capital, by means of which each acre of one million square miles of territory has been brought within five miles or less of a railway, and thereby brought within the reach of him who desires to occupy it at the cost of a few days spent on the way, as compared to months under previous conditions ; and when he reaches the land which he has selected, the price at which he can purchase it is the measure of less labor than has ever before been required to secure such possession. Under these conditions, are not the propositions which have been submitted in other essays fully proved ?

1st. To wit, that under existing institutions and existing laws the working classes, in the sense in which they use that word, have been securing to their own use and enjoyment an increasing share of an increasing product.

2d. The richer classes controlling and using capital are securing to their use, control, and enjoyment a diminishing share of the same increasing product.

3d. The share which each person may secure to his own use and enjoyment of this increasing product, depends upon the development of his individual character and capacity.

4th. All laws restricting the free use of time and opportunity, and all by-laws limiting the use of time and talent or skill, are inconsistent with the progress of society and with the progress of the individual as well.

5th. Liberty sustained under just laws, is the condition under which the greatest welfare can be attained by him who possesses the capacity to grasp the opportunity now offered him.

SLOW-BURNING CONSTRUCTION

SLOW-BURNING CONSTRUCTION.[1]

THE fearful losses of life and property by fire in the United States have lately attracted the attention which is due to the causes of such loss and to the means for preventing them. Coincident with these investigations a very profound change in the conduct of the business of fire insurance companies is in progress. Until within a very recent period the management of an insurance company issuing policies of indemnity against loss by fire has consisted in taking risks as they might happen to be, a more or less careful inspection having been made into the condition of the property before issuing a policy, for the purpose of estimating the rate of premium to be charged rather than with a view to improving such conditions.

The notice of the owners or occupants has sometimes been called to glaring defects, and a somewhat desultory inspection has been maintained; not so much with the intention of informing the owner or occupant how to protect the property against fire, so as to reduce the loss to the lowest terms, as for the purpose of informing the underwriters, so that they may not take or maintain too low a rate of premium. In fact, there has been until recently a passive indifference and sometimes a frankly acknowledged objection on the part of prominent underwriters to the introduction of the most effective safeguards, lest the reduction of premiums that might be demanded should diminish the profits of the insurance companies.

It may be admitted that under this system many fire insurance companies have been established and conducted by men of conspicuous ability, with great profit to the stockholders and indirectly with great benefit to the assured. These companies have done a world-wide business, scattering their risks, and by the very breadth of their operations and income, they have been enabled to reduce their premiums to the very lowest terms that the system itself would permit, subject as it has been to an excessive expense; but as the amount of property at risk has increased in recent years with very great rapidity, the companies of a safe kind have been unable to carry the full lines required in the concentrated hazards of our great cities. Owners have therefore

[1] Reprinted from *The Century Magazine* for February, 1889.

been obliged to seek insurance wherever they could get it, sometimes exhausting all the fire insurance companies of the world. At the same time an unwholesome competition has grown up among the underwriters themselves by which their previously heavy expenses in the conduct of their business have been increased, while badly managed or small companies have been led to take risks at less than cost,—a method ending inevitably in bankruptcy or in withdrawal from business.

In the opinion of competent experts from eighty to ninety per cent. of all the stock fire insurance companies organized to transact business within the limits of the United States, or empowered thereto, have agencies in the State of New York, which renders it incumbent on them to make returns to the Commissioner of Insurance of that State giving a statement of all their transactions in the United States. There could be no better indication of the rapid growth of wealth in this country during the last twenty-five or thirty years than a comparison of the sum of the insurance written by these companies. In 1859, before the civil war, the sum of the risks taken by companies making these returns was a fraction under $1,500,000,000. In the year 1887 the amount in round numbers was $12,250,000,000.

The proportion of loss to the value of the property insured has slowly diminished: there has been a little improvement in the construction of buildings in some of our great cities, though not much elsewhere, so that the loss by fire now ranges from $100,000,000 to $130,000,000 a year. The cost of sustaining fire insurance companies whose function is simply to distribute this loss over a wider field is about $65,000,000 a year; to this must be added the cost of sustaining expensive fire departments, which may be computed at a minimum at not less than $25,000,000 a year, and it is probably more, to say nothing of the additional cost of water supply for fire purposes. The fire tax of the United States may therefore be estimated at a minimum of $180,000,000, or at a maximum of over $200,000,000, in a normal year in which no great conflagration occurs.

Within the last five years a great change has taken place in the views of the leading men who conduct the business of the fire insurance companies, and a system is rapidly coming into vogue for the frequent inspection of buildings with a view to the prevention of loss by protecting them, so far as their generally bad construction will permit, from the dangers which must occur from fires that are unavoidable, by installing apparatus to check the rapid spread of fires when they do occur. Doubtless a very considerable part of the present losses may be saved in this way, but the relief is only a palliation; the true remedy will come only when the owner of the insured building realizes the simple fact that he himself is chiefly responsible for all the

losses that happen. It must be brought home to him that the true function of an insurance company is to distribute a loss when it occurs. True, it may be a part of the function of the officers of an insurance company to instruct an owner how to build his building and how to guard it after it is built; but the owner himself, by his own control over the construction and the occupation of his building, is the only person who can remove the causes of loss by fire. It must be made apparent to the owner of property that if he pays a high rate of premium for a policy of insurance *it is his own fault;* he makes the rate high by neglecting his own duty, and when he may afterward undertake to procure a contract of indemnity or policy of insurance at less than cost, he is an illustration of the old adage, "A fool and his money are soon parted." A contract made under such conditions is not worth the money paid for it.

The cause of this enormous fire tax may be attributed mainly to the common practice of what has been perhaps well named "the art of combustible architecture."

How can this waste be avoided? It is useless to suggest the construction of buildings modelled on those of Europe, especially of those upon the Continent; we have not a general supply of the soft and easily worked stone of which most of the buildings in Paris and in many other of the foreign cities are constructed—a stone which cuts like cheese and which hardens like iron upon exposure to the weather. In some of the States west of the Alleghanies there are considerable deposits of easily worked stone which hardens on exposure, but in the Eastern and the Middle States no such building-stone is found. Neither have we that abundance of low-priced manual labor which will enable us to construct buildings exclusively of brick and iron, without exceeding in cost the capital which can be applied to buildings required for ordinary purposes. Many labor-saving devices have indeed been adopted in the building trades, but on the whole a building of any kind is to a large extent the product of the hand rather than of the machine; the stone must be cut, the mortar must be prepared, the brick must be laid, the timbers must be adjusted by hand-work, and all the costly finish must be put on by hand. Hence, although it is a rule that in all the arts to which modern machinery can be applied a low cost of production is consistent with or is the correlative of high wages or earnings, yet in arts which remain mainly handicrafts the rate of wages becomes one of the elements of a high cost of production or construction; therefore the higher cost of building in this country as compared with the cost in Europe is in itself a proof of the greater relative prosperity of the members of the building trades, even though it results in higher rents to all others. Moreover, many of the articles which enter into the construction—especially of city warehouses, in

which the greatest losses by fire occur—are heavily increased in their cost by the present system of duties on foreign imports ; for instance, structural iron and steel, window glass of the better quality (especially plate glass), cement, and many building stones, to say nothing of the tax imposed upon Canadian lumber. We have, however, a greater relative abundance of timber than of other suitable building materials, and it follows that wood rightly enters into the construction of our buildings more than it does in most European countries, even in our factories, city warehouses, churches, and the like. Again, in the northern parts of the United States wood, properly cut and disposed in the building in a suitable manner, is almost a necessary part of the construction because of the climatic conditions ; stone and brick, when exposed to the extreme cold of the outer air of winter, draw moisture from within the building, which condenses on the inside of the walls and is apt to make the buildings very damp : especially churches, wherein the furnace may be lighted and the building kept warm for only a part of the week.

The question therefore arises, Can buildings be constructed either wholly of timber, or of brick, stone, or iron for the outer walls, combined with wood for the inside construction, in such a way as to eliminate the greater part of the causes of the fearful fire tax which now constitutes a waste equal to an average of at least fifteen per cent. on the net savings or possible additions to the capital of the country in a fairly prosperous year ?

To this question an affirmative reply may be given. It is based on many years' experience in the construction of textile factories under the supervision and guidance of the mutual underwriters by whom these factories have been insured on an absolutely mutual principle for a period ranging from thirty to fifty years in respect to the principal companies.

Witness the necessity for the solution of this problem. There are even now more cities than one in which a great conflagration exceeding that of either Boston or Chicago awaits but the accident of a spark and a favorable wind. It is therefore to be hoped that the time may not be far off when, by the bankruptcy or the withdrawal of only a moderate number of the existing insurance companies whose losses and expenses now exceed their income, a few great and powerful fire insurance companies may be enabled to impose conditions upon those who apply to them for insurance, under which conditions a remedy may be found for the existing faults, even if that remedy be not found sooner under the system of inspection and prevention now beginning, by which the danger of such a great conflagration may be almost if not wholly removed.

It is not too much to claim that if a sum of money equal to that which is annually paid in premiums for policies of insurance on prop-

erty situated within the so-called "dry-goods district" of New York and its immediate vicinity, covering about one hundred acres, were put at the disposal of the officers, engineers, and architects who are employed by the factory mutual insurance companies of New England, to be by them applied to suitable appliances and safeguards for the protection of that district, the danger of a great conflagration would be wholly removed and the destruction of even a single warehouse and its contents would be of the rarest occurrence.

Strange to say, some of the worst examples of combustible architecture are to be found among our prisons, hospitals, asylums, and alms-houses; next, among college buildings, libraries, and school-houses; to these may be added churches, hotels, and theatres. In the year 1887, according to the tables compiled by the *Chronicle* of New York, there were burned within the limits of the United States:

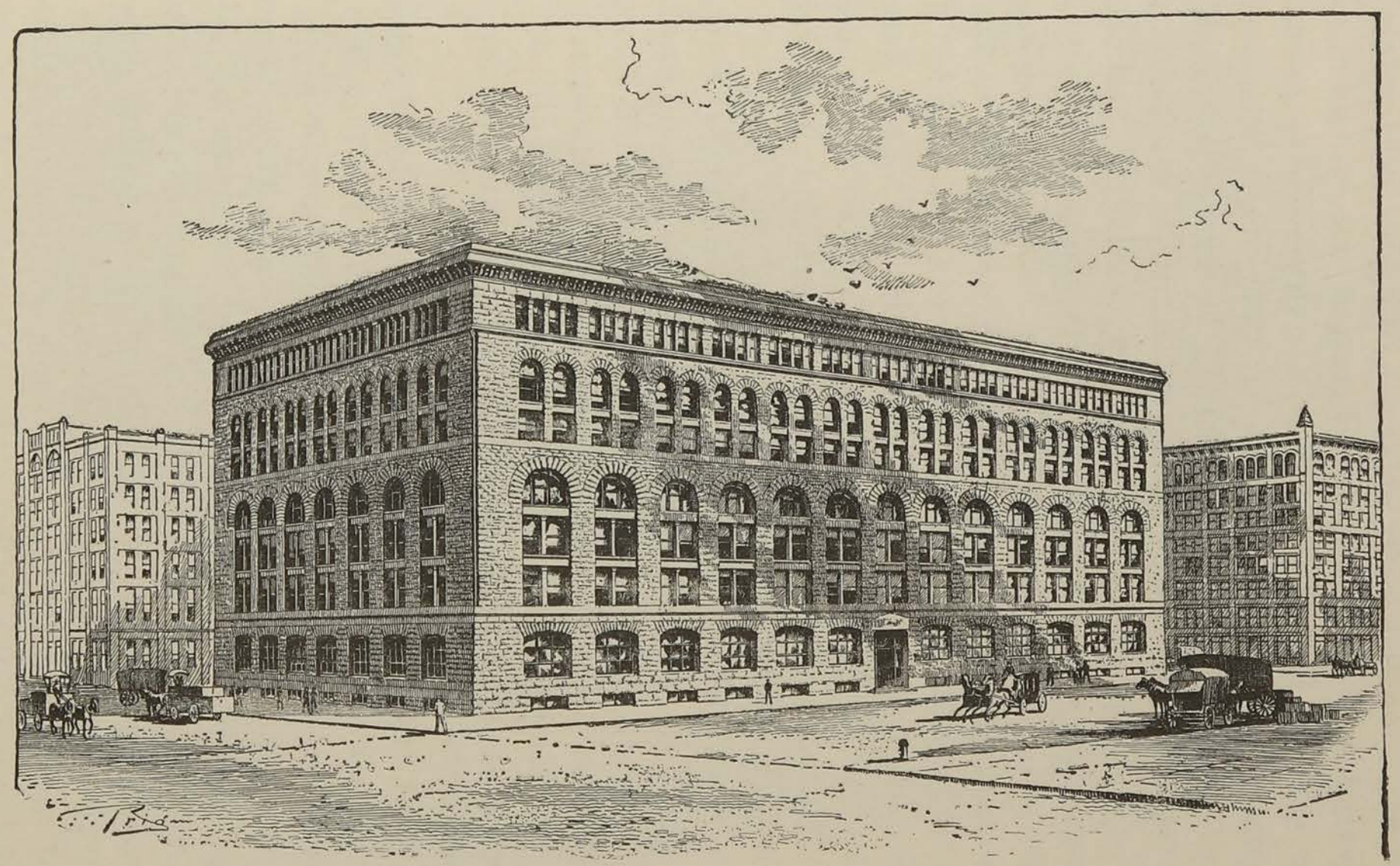
45 hospitals, asylums, almshouses, or jails, being nearly four per month, in many cases accompanied by the loss of a large number of lives.
126 college buildings and libraries, being ten and a half per month.
146 churches, being two and eight-tenths per week.
52 theatres and opera houses, being one per week.
515 hotels, being one and four-tenths per day.

The bad construction of these buildings is due mainly to habit, to fear of innovation, and to distrust of theory. These inherited faults in construction may be readily traced to their origin. In order to make this matter plain, the evolution of the modern factory will be fully described in this article, illustrated by examples of the several types of building which have been from time to time constructed. When the textile factory system was first established, water power only was applied to the movement of machinery. The larger factories were thus customarily placed in narrow valleys or upon very limited areas of land, below the falls of rivers and alongside the streams; it therefore became necessary to economize the area of ground covered by the factories and to build them many stories in height. When other arts began to be conducted upon the factory system, the buildings were apt to be in cities or towns where the price of land forbade large areas being devoted to the purpose, and, again, buildings of many stories in height were constructed. As time went on, however, steam took the place of water power, while cheap railway service or rapid transit made it possible to scatter the factories over a wider area. Factory buildings then began to be constructed in the open country, but apparently it did not occur either to the owner, the managers, the architects, or the builders that the reasons for constructing a building many stories in height did not apply to places where land could be had at a very low price; therefore the customary bad and unsuitable form of construction was

adopted and is still practised where it is not only useless and unsafe but less adapted to the purpose to which the building is to be put than a one-story or a two-story building would be. Moreover, the whole method of cutting timber having been developed with a view to the supply of material required in the ordinary unsafe and unsuitable method of construction, it was for many years difficult to obtain material cut in a proper way for what has been called the slow-burning use of timber. Hence it follows that the art of slow-burning construction is little known outside the limits of New England, and until very lately it was little known even there except to those who had become accustomed to the construction of textile factories, paper-mills, and other works which are customarily insured by the factory mutual insurance companies. It is only within a very short time that the methods which have been practised for many years in the construction of textile factories—which are only the old methods of almost prehistoric time, when timbers were shaped by the axe or by hand, before the modern saw-mill had rendered the construction of a sham building possible—have been taken up by a few architects of capacity and responsibility to be applied to warehouses, churches, college buildings, and occasionally to dwelling-houses.

A most conspicuous example of the right method of dealing with timber and plank in a commercial warehouse may be found in the inside work of the huge building lately furnished and occupied by Mr. Marshall Field of Chicago, on plans made by the late Mr. H. H. Richardson and carried out by his successors, the motive of the plan having been derived from the customary method of constructing a textile factory.

In what does slow-burning construction consist? It may be considered somewhat amazing that so simple an art should not have been common for generations. We will begin at the weakest point in the common art of combustible architecture, to wit, with the roof, and describe its evolution. It may be admitted that the modern factory roof waited for its possibility until right methods of covering a flat roof had been invented; but even with respect to the roofs that are not flat, about ninety-five out of every hundred of those which are now building are models of every thing that is bad. They convert the attic stories into ovens in summer, refrigerators in winter, and fire-traps all the time. It seems as if hardly any one, owner, architect, or builder, had ever put to himself the simple question, "What is the purpose of a roof?" The plain answer obviously is, "To keep out the rain." Many of these "crazy roofs" of irregular form and full of leaky valleys fail even in that essential point. May it not be added to this main object of keeping out the rain that the subsidiary purpose of a roof is also to keep out the heat of the summer sun and to keep in the warmth



WAREHOUSE OF MARSHALL FIELD, CHICAGO, ILL. (H. H. RICHARDSON, ARCHITECT; COMPLETED BY HIS SUCCESSORS SHEPLEY, RUTTAN, & COOLIDGE.)

of the winter fuel? May it not even be added that a roof may furnish a comfortable and convenient place to get a little fresh air by those who dwell in crowded cities; or at least may not a good roof add one floor to a building where work which requires the outer air may be done comfortably and conveniently? Are not the roofs of buildings in nearly all hot countries made great use of by the inhabitants? Are they not invariably of thick, solid construction, flat enough to be occupied in hot summer nights? In what country is there greater need for such a place of comfort and fresh air than in our Northern cities during the extreme heat of our summers? In the country or upon the factory the flat roof might not be treated for use; yet aside from use it is better in every respect, so far as safety, ventilation, and other elements of comfort or utility are considered, than any other form of roof which can be put upon any kind of building. Are our architects capable of making a flat-roofed building artistic, or pleasing to the taste? It has been done in many instances; why not in nearly all?

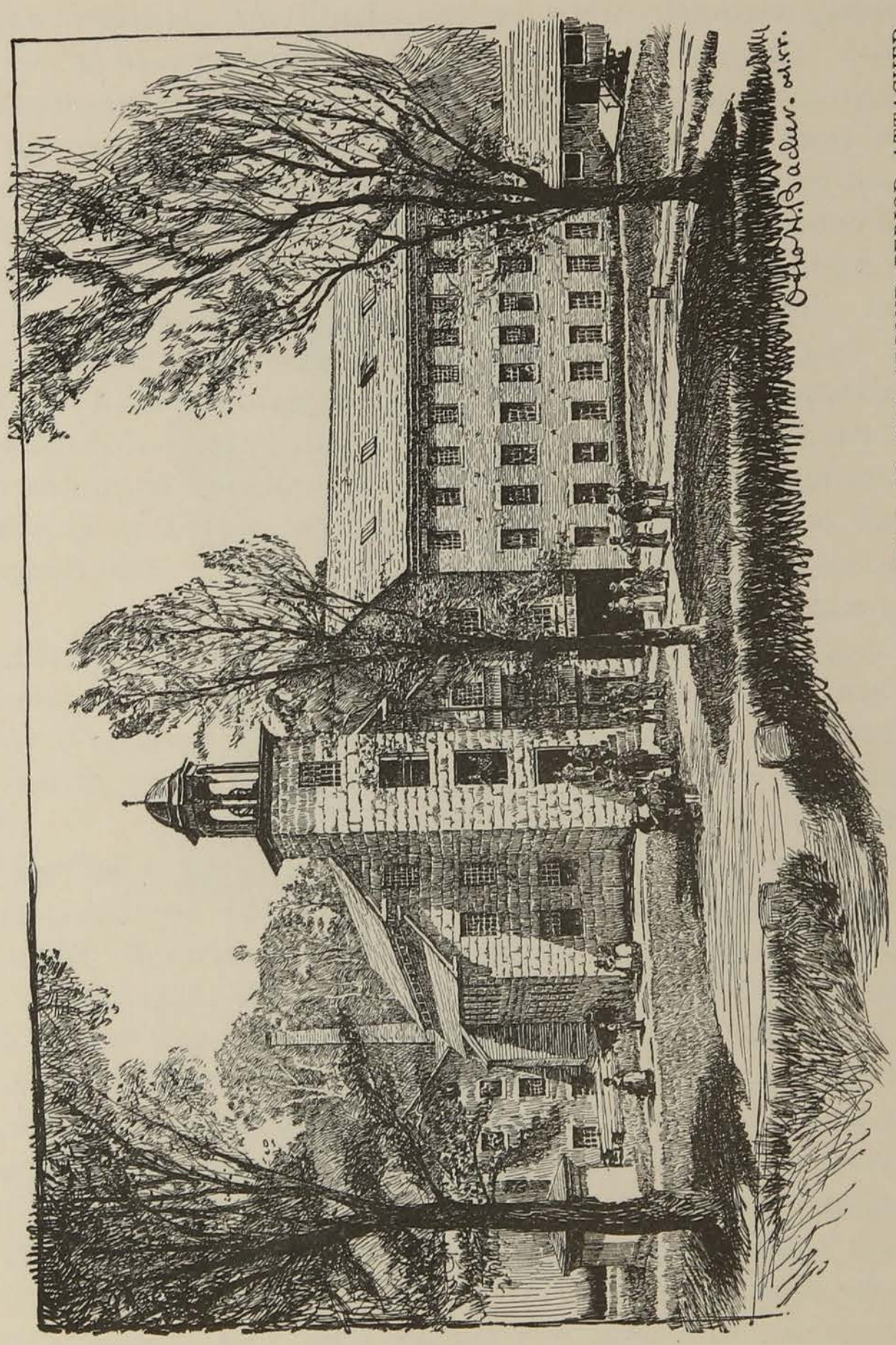
In the evolution of the factory all the faults have been discovered and remedied which now infest nearly all the warehouses, hospitals, dwelling-houses, schoolhouses, college buildings, and other examples of combustible architecture of this country.

The first form of factory roof resembled the gambrel roof of the dwelling-house. In early days it was constructed of solid timbers set wide apart, as they should be, covered with good thick boards and shingled; in some cases the shingles were laid over mortar. I have an example of shingles which are more than fifty years old yet still in good condition, having been preserved by the interposition of the mortar between the shingles and the roof boards.

This method of outside construction might not be objected to in itself; on the inside, however, the owners were apt to put vertical sheathing at a little distance from the eaves and horizontal sheathing across the upper timbers of the roof, making a cockloft. These hollow spaces, in which fire may spread out of the reach of water, are among the most dangerous elements of bad construction, especially when connected with the basement or the cellar by vertical flues in the walls or partitions of the building.

The next form of roof came into vogue when heavy timbers were displaced by joist or plank rafters set closer together. It is commonly known among factory people as a "barn-roof," consisting of an ordinary pitched roof made of rafters set eighteen inches or two feet apart on centres, covered outside with thin boards and slated, sheathed inside vertically at the eaves, and horizontally across the apex.

The older factory roof and the barn-roof are both shown in the accompanying illustration, which delineates an old mill from which a large establishment has been subsequently developed.



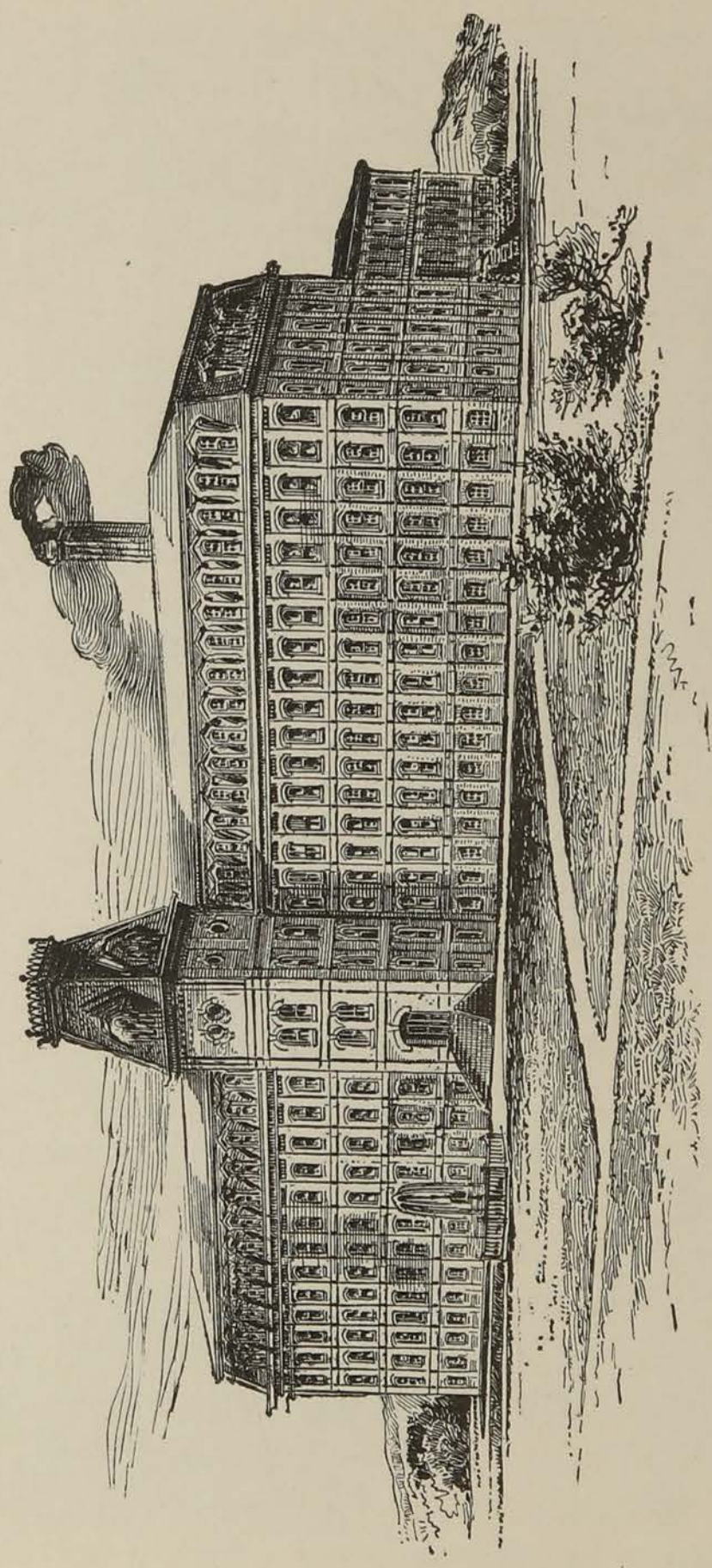
A VERY OLD WOOLEN MILL IN NEW HAMPSHIRE, AND A MILL OF THE SECOND PERIOD ATTACHED THERETO, SHOWING THE BARN-ROOF, SO CALLED—THE GERM OF A LARGE ESTABLISHMENT.

This barn-roof is the most abominable, unsafe, and atrocious roof ever devised for the covering of buildings of any kind. The slates serve to attract the heat of the sun, which beats in through the interstices of the open boards and converts the interspaces of the roof into ovens for the concentration of heat and for its distribution throughout the building, especially when the roof-spaces are connected with hollow walls. The most effectual method of diffusing heat in a factory has proved to be to suspend the steam-heating pipes overhead, at some distance from the walls—the warm air following the cold air as it passes out by bottom ventilation. By analogy it may be assumed that the heat concentrated by the slates in the interspaces of a hollow roof diffuses itself through the hollow walls of a building of ordinary construction. Thus the thin-slated roof fails in summer as well as in winter. In this kind of roof a fire is completely protected from water; the slates when exposed to outside heat are readily cracked; they then fall and cut open the firemen's heads; the interspaces at the eaves also make excellent nesting-places for the rats, which carry into them oily waste and other combustible substances to be ignited by spontaneous combustion in the heat of summer, to the partial or total destruction of many a mill.

The next abomination came with what is called the French roof. This, when put upon the top of a factory, is nearly as bad as the barn-roof: it restricts the space in the attic within, adds greatly to the cost of the building, while in it are commonly repeated nearly all the faults of construction of the barn-roof.

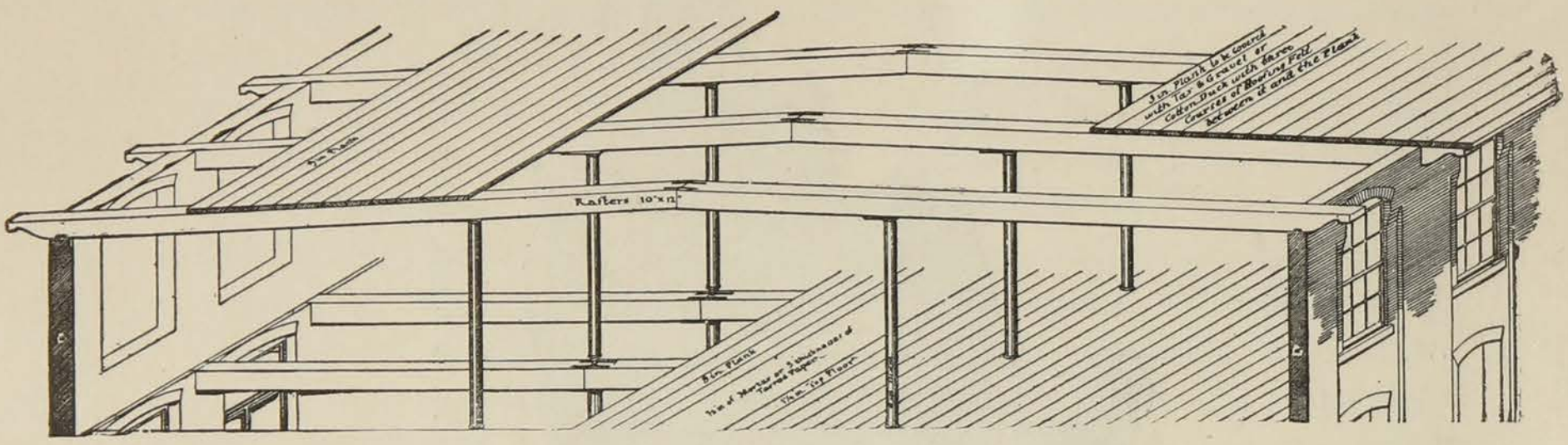
The next roof was a little better. It consisted of a flat roof made of ordinary plank rafters set eighteen inches or two feet apart on centres, covered on the outside with boards and then with composition or metal, and sheathed within upon the under side of the rafters. The humidity generated in any room warmer than the external air and in the processes of many of the manufacturing arts passes into the interstices of this roof, where the moisture is condensed on the under side of the thin boards of the outer covering, from which it drops upon the sheathing and rots it, while the interspaces add not only to the danger of fire, but work the speedy destruction of the whole roof by the rotting of the rafters, especially near or upon the walls. This roof was usually furnished with a hollow wooden cornice, also bad and dangerous.

It remained for the officers of the Factory Mutual Insurance Company to suggest that the same solid floor which is required in the construction of the mill might well be adopted in the construction of the roof, only changed so as to give a pitch of half an inch to the foot. It was also suggested by the underwriters that the wooden covings and gutters and the sham hollow cornices, by means of which fire was conveyed from building to building in the great Boston conflagra-



A COTTON FACTORY IN MAINE, WELL CONSTRUCTED EXCEPT THE ROOF.

tion, were a dangerous and superfluous element in the construction of the roof of the factory. In pursuance of these suggestions all the former bad forms described gave way to a simple deck constructed of three-inch-plank grooved and splined, placed on timbers set from eight to eleven feet apart on centres, sheathed underneath between the timbers if the owner desires a fine finish, and covered on the outside with any of the customary materials; the ends of the timbers



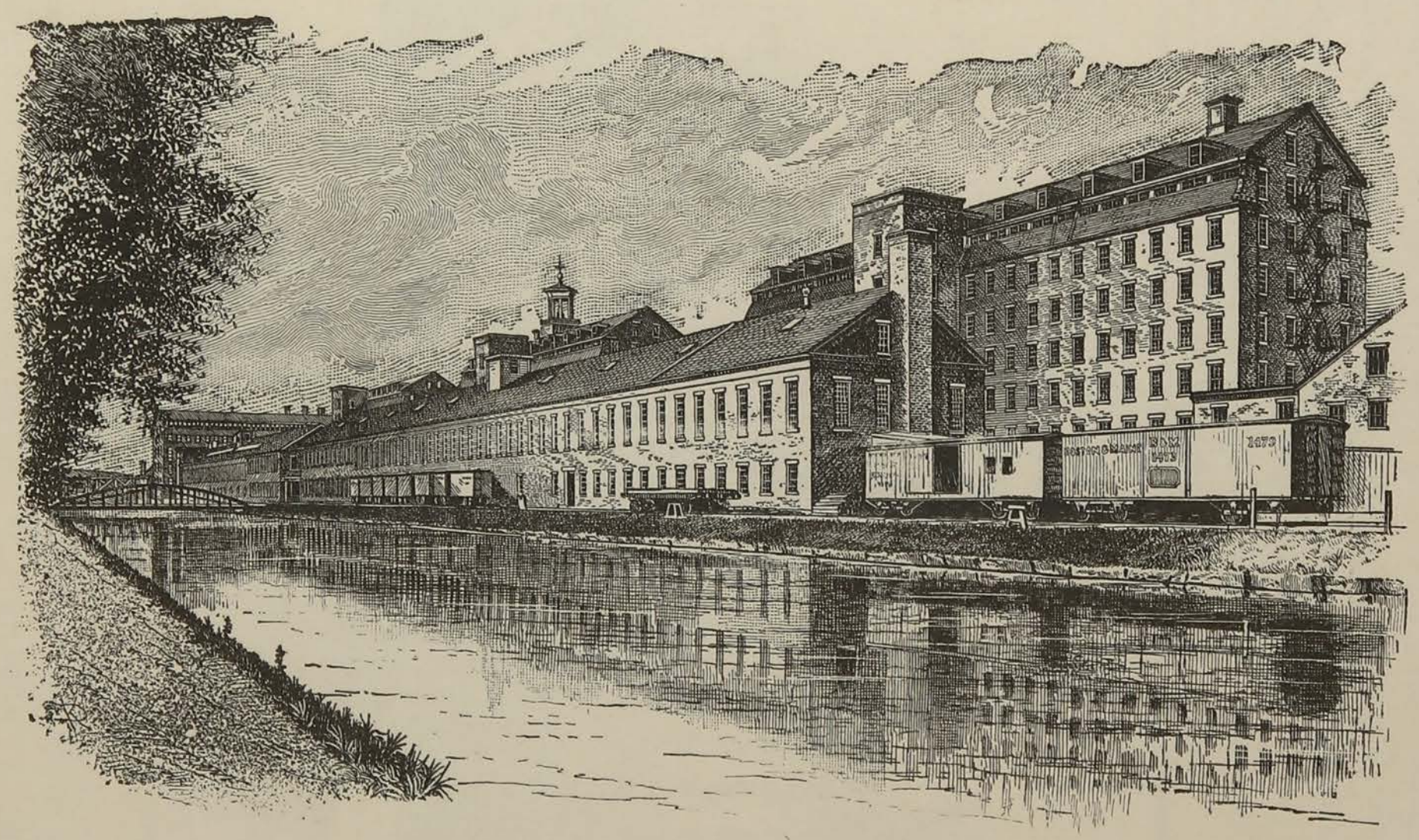
THE FACTORY ROOF, FIRST DEVISED BY W. B. WHITING.

sometimes projecting outside the wall and the deck carried far enough over to form a suitable coving, according to the height and character of the building; or else the finish may consist of a brick cornice, without gutters, the drainage being below.

Again: the old type of textile factory, from which the plans of a great many other factories have been derived, was very narrow and very high. It had not entered the minds of the constructors of the earlier factories that the spaces of wall between the windows might be very narrow and that the windows might be very wide; nor had it apparently occurred to any one that the tops of the windows had better be carried up flush or even with the ceiling of each room in order that the light might be better diffused within. Consequently the wall of the factory consisted mainly of a great blank of brickwork with small holes in it for windows, the mill being seldom more than fifty-two feet wide, often less, and many stories in height. The illustration on page 321 shows mills of this type, nine stories high, including attics.

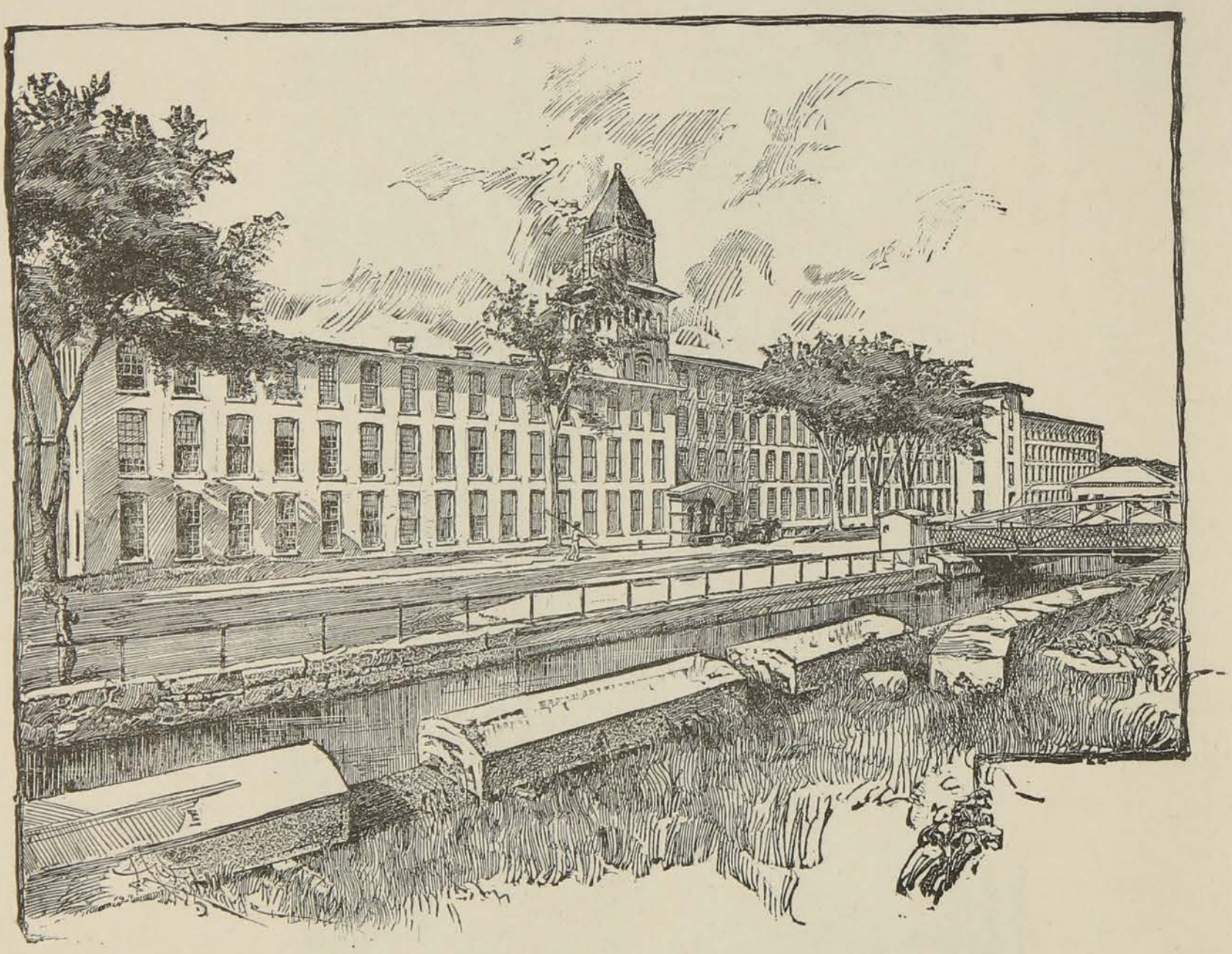
The width of the mill was gradually extended and the size of the windows enlarged by degrees; for many years about sixty-two feet was considered the proper width and the windows began to occupy a larger part of the wall space, while the wall itself was increased in thickness.

At last it was discovered that if the tops of the windows were carried up flush with the ceiling and as much space, or a little more, was devoted to windows as to wall, the width of the mill might be carried to ninety feet; then to a little over one hundred feet.



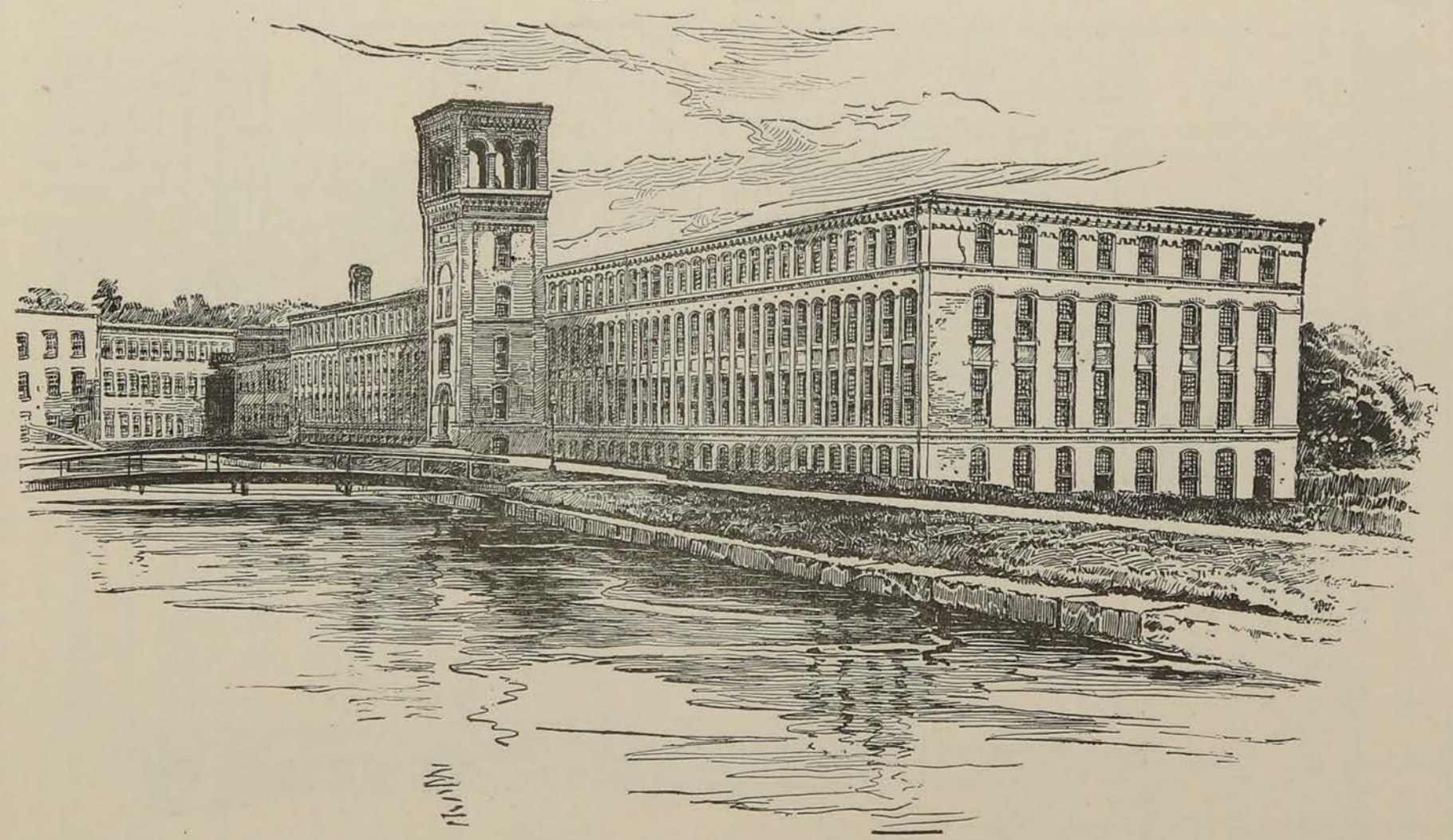
BAY STATE MILLS, LAWRENCE, MASS. TWO OF THE THREE MILLS TAKEN DOWN TO GIVE PLACE TO MODERN TYPES ; ONE MILL DESTROYED BY FIRE.

Until now in England, where the light is less intense than in this country, cotton-mills have been built five or six stories in height and one hundred and twenty-eight feet wide,—that being the width in which certain kinds of machinery can be most economically placed and operated,—with six feet of window space to four feet of wall, the tops of the window panes being absolutely flush with the ceiling between the beams, and the window caps placed opposite the floors. Of late, however, the mutual underwriters, having discovered the great danger of high buildings as compared with those of wide, low construction, began to ask their members who were about to build mills to be operated by



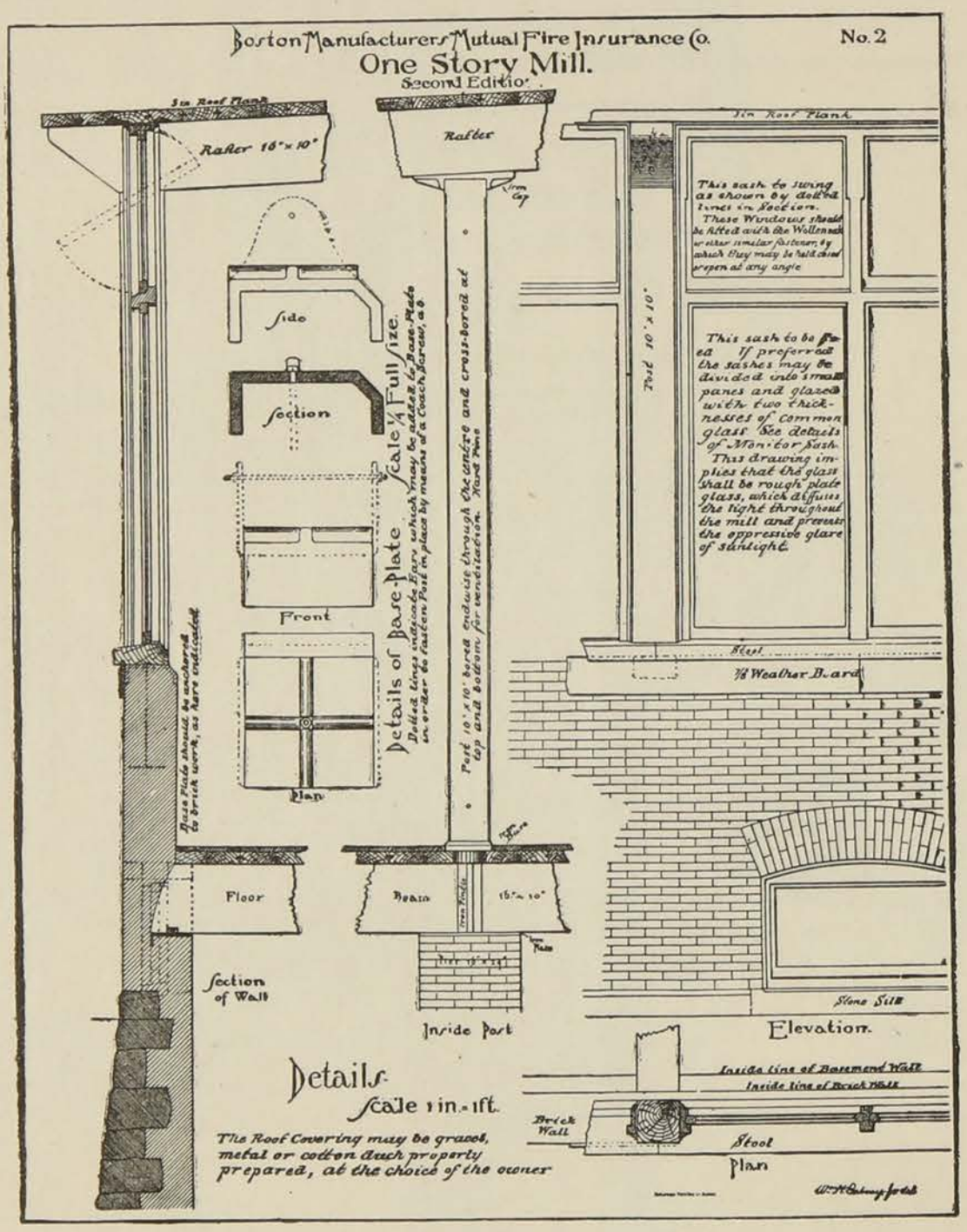
AMOSKEAG MANUFACTURING CO., MANCHESTER, N. H. (CONSTRUCTED BY H. F. STRAW.)

steam power in the open country : " Why do you follow this inherited and bad type of building? A mill of two or three stories in height can be constructed at less cost per square foot of floor than a mill of any greater number of stories ; if you have room enough, even a one-story mill properly constructed may be built at as low a cost per square foot of floor as the mill of four or five stories, while it will be as warm in winter, cooler in summer, and lighter and better ventilated all the year round than any other type of mill can possibly be." Since that suggestion was made a large number of factories of only one story in



MILL NO. I, CHICOPEE MANUFACTURING CO., CHICOPEE FALLS, MASS. (EDWARD SAWYER, ARCHITECT, BOSTON.)

height, covered in with three-inch pine roofs, protected outside with gravel roofing, tin, or with cotton duck properly prepared, and lighted with what are known as monitors, have been constructed in many parts of New England, ranging from half an acre to three and a half acres in size; a very common type being a mill of sixty thousand feet on the main floor, constructed on a moderate slope so as to give a basement under one third of the mill for wet work or for other subsidiary purposes. Such one-story buildings are best adapted to weaving, and are often built in connection with spinning-mills of two or three stories in height.



DETAIL OF ONE-STORY MILL.—NO. 2.

In one instance, in a case where the machinery is very heavy and is subject to great vibration, a one-story mill of this sort was substituted for one of two four-story factories which had been burned; the owners were advised to reconstruct a one-story mill in place of the burned mill, but to make it large enough to accommodate all the machinery then in the other four-story mill which had not been destroyed. They were warned that the new mill would bankrupt the old one on account of the greater economy of the work and the better conditions for its

This Kind of Mill may be constructed of any length; also of any width which the slight pitch of the roof will permit without making the central yard too high in the judgment of the owner. The span of the main timbers may be increased to 25 ft; if the timbers used be 18 in. deep. The parts may be set so as to make the width of bays 10'-6" provided 4 in. plank be substituted for 3 in.

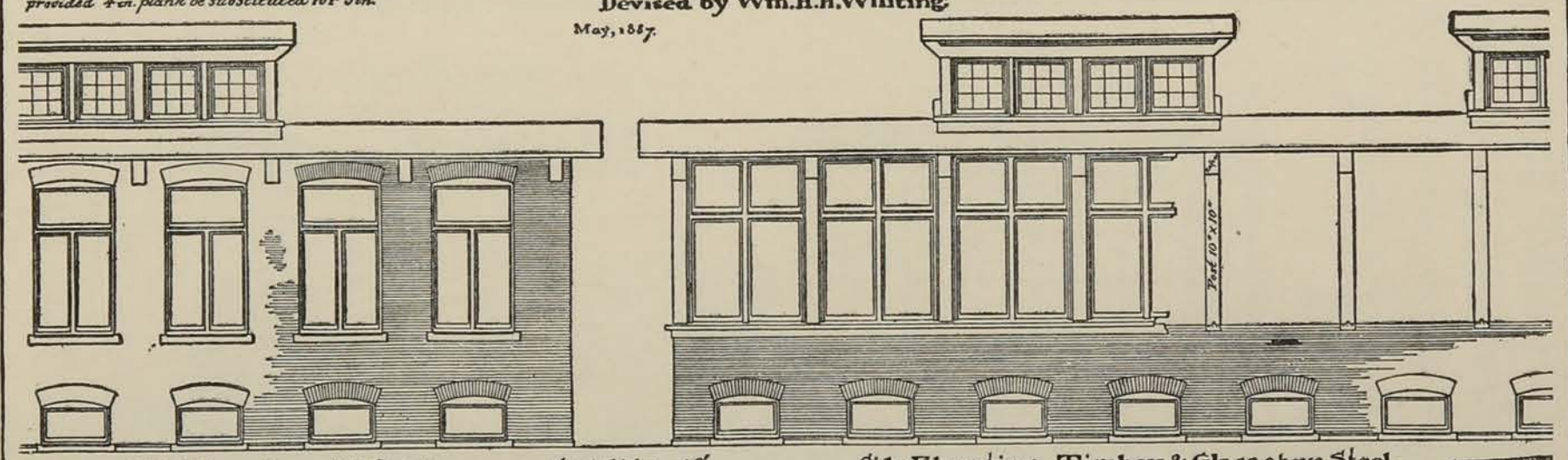
Boston Manufacturers' Mutual Fire Ins. Co.

No. 1.

One Story Mill.

Devised by Wm. H. H. Whiting.

May, 1887.

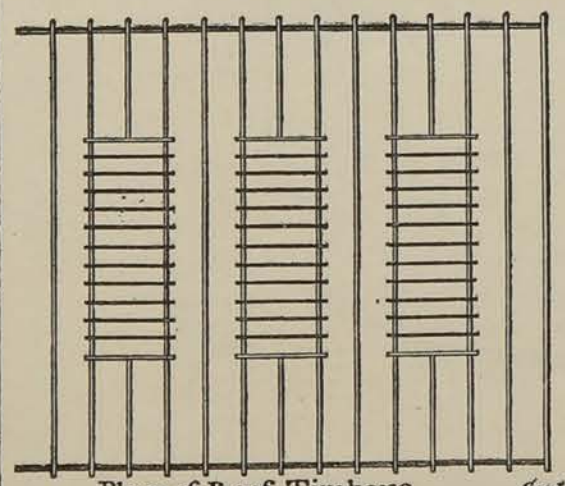


Side Elevation, All Brick. Scale 1/4 in. = 1 ft.

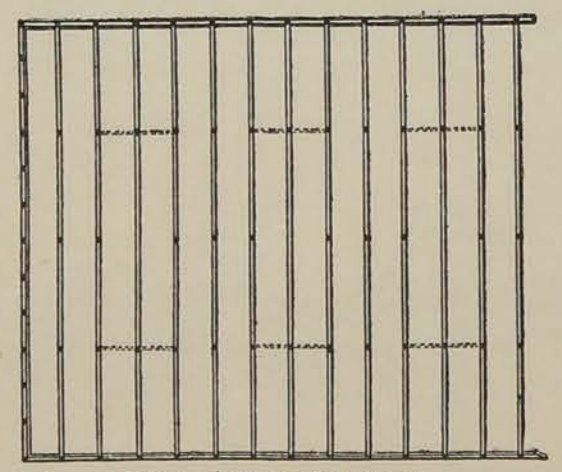
The Mill should be heated with overhead pipes.

Side Elevation, Timber & Glass above Stool.

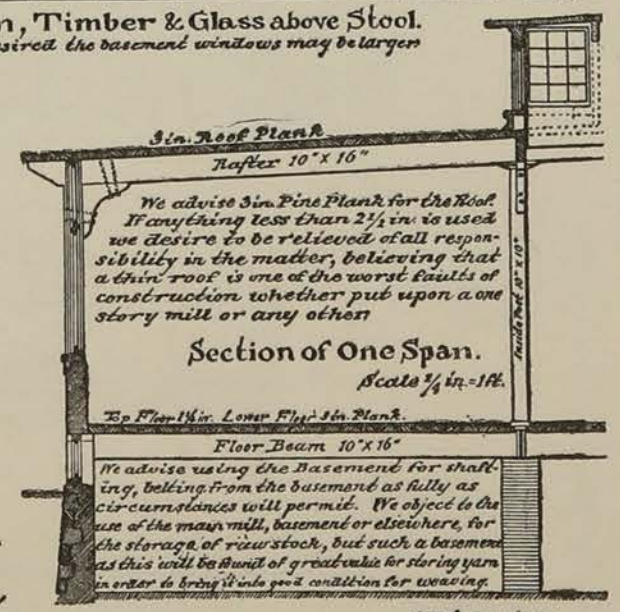
If more light is desired the basement windows may be larger



Plan of Roof Timbers. Scale 1/16 in. = 1 ft.



Plan of Floor Timbers.



We advise 3 in. Pine Plank for the Roof. If anything less than 2 1/2 in. is used we desire to be relieved of all responsibility in the matter, believing that a thin roof is one of the worst faults of construction whether put upon a one story mill or any other.

Section of One Span.

Scale 3/4 in. = 1 ft.

We advise using the Basement for shafting, belting from the basement as fully as circumstances will permit. We object to the use of the main mill, basement or elsewhere, for the storage of raw stock, but such a basement as this will be a unit of great value for storing yarn in order to bring it into good condition for weaving.

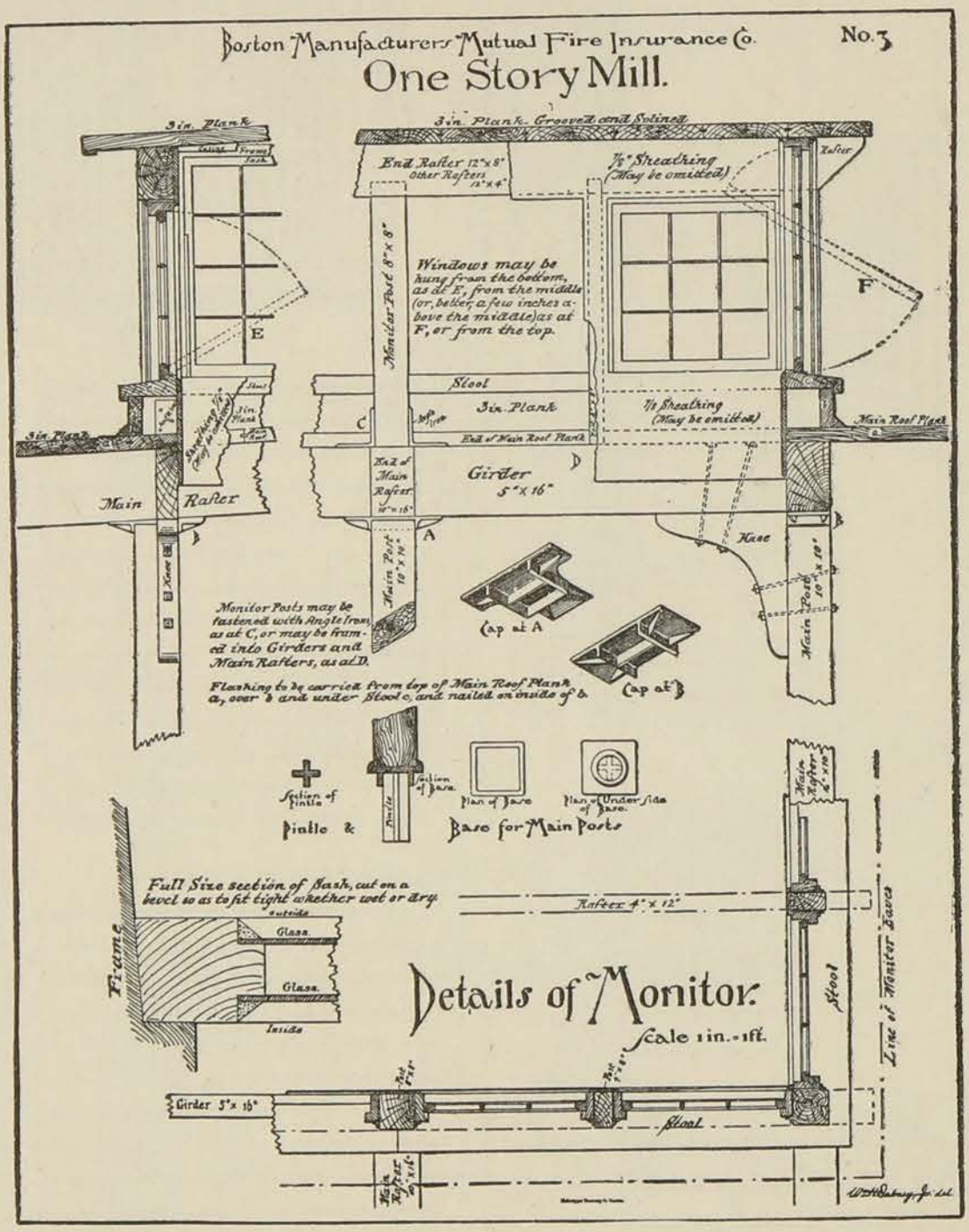
W. H. Whiting for Ed.

Sidewalk glass may be put in the Floor to light the Basement at such points as the placing of Machinery will allow: in this way so much light may be transmitted from above as to warrant the conversion of this plan to the purpose of a very wide two story mill with full sized windows 6 ft. x 4 ft. 6 in. in each bay in the lower story.

ONE-STORY MILL DEVISED BY W. H. H. WHITING, C. E.—NO. I.

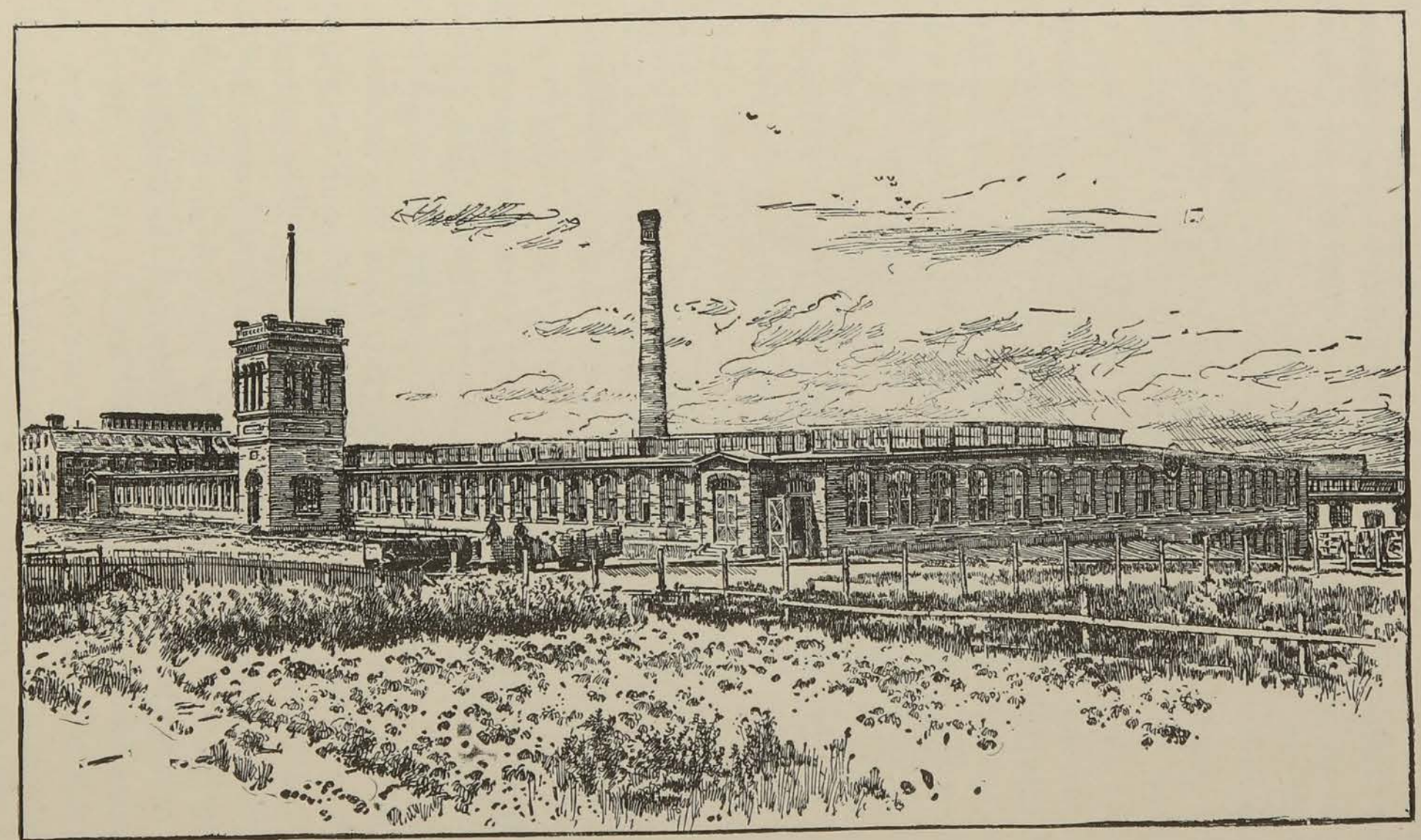
operation. The prophecy has proved true : sixty-seven men accomplished the work in the new one-story mill on the same machinery which required one hundred men in the old four-story mill ; therefore that old mill has been taken down in order to make way for the extension of the one-story factory, and the old material has been put together in a better form.

What, then, is the slow-burning construction ? It consists simply in consolidating the wooden material in frame, floor, and roof in such a way that a fire can be held long enough in any room in which it



DETAIL OF ONE-STORY MILL.—NO. 3.

may originate for a fairly competent fire department, public or private, to get it under control, or where it may be extinguished or held in check by sprinklers. The timbers used may be solid or may be cut in two parts to be bolted together. The latter is perhaps the better way, in order that the air may reach the centre of the timber and season it, great care also being taken in mill practice not to paint, oil, or varnish the outside of any heavy timber for at least three years after it has been placed in the building, lest what is called dry rot should occur from the fermentation of the sap in the green timber. Where an outside finish



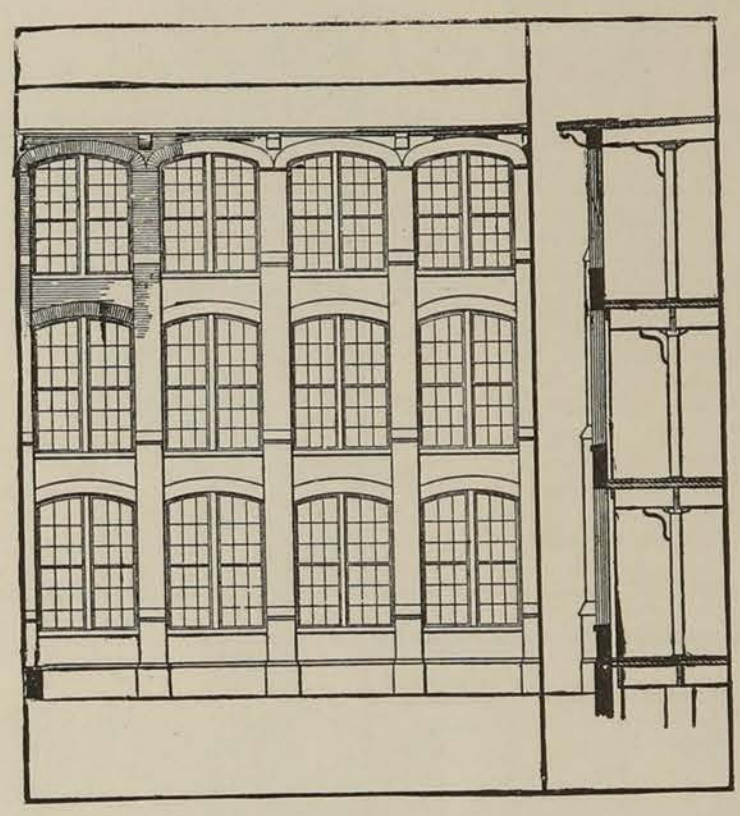
ONE-STORY MILL OF THE PLYMOUTH CORDAGE CO. CONSTRUCTED IN ACCORDANCE WITH TYPICAL PLANS AND SPECIFICATIONS MADE BY THE BOSTON MANUFACTURERS' MUTUAL FIRE INSURANCE CO.
LOCKWOOD & GREENE, ARCHITECTS AND ENGINEERS.

is required some architects use the timbers in two parts bolted together with an air space between, each timber being also bored through the centre lengthwise for ventilation. This latter plan is the customary method with posts when wood is used for supports, a crossway hole being also bored near the top and bottom, connecting with the centre. Upon these heavy timbers—which are commonly placed eight or ten feet on centres resting directly on properly adjusted posts without the interposition of any girders lengthwise of the building, in lengths or spans from eighteen to twenty-two feet—the floors are laid of plank not less than three inches thick when the beams are eight feet on the centres. If the beams are ten feet or even twelve feet apart on centres, ordinary weights will be carried by floors consisting of four-inch or five-inch plank ; the timbers themselves may be from fifteen to not exceeding twenty-two feet in length from wall to post and from post to post, for ordinary factory loads. If provision is required for extraordinary loads, a special computation should be made to meet the case. If a fine finish is desired, sheathing may be placed underneath between the timbers, nailed close to the under side of the plank ; if the most absolute security against fire is called for, the finishing may consist of plastering laid on wire lathing close against the plank. This plastering may be carried around the outside of the timber on the line of the timbers, provided no skim coat of lime putty is put upon the plastering, thereby cutting off the air from the timber. The top floor may be laid directly upon the plank, or a layer of mortar may be laid between the plank and the top floor ; in some cases asbestos paper has been interposed. The layer of mortar offers great security in preventing the passage of fire downward. The roof which has been described corresponds substantially to the floor, to wit : three-inch plank laid upon the timbers, one-inch sheathing on the under side if desired, and sometimes one-inch boarding on the plank ; then the ordinary outer covering of whatever kind may be adopted. If the roof is exposed to great humidity within, as in the machine-room of a paper-mill, one inch of mortar may be interposed between the roof boards and the plank. This latter roof proves to be impervious to cold or heat, and with proper means of ventilation gives security against any possible condensation of moisture from the atmosphere within.

An alternative plan consists in setting the first line of posts at the right distance from the wall to make a passage-way, the floor of the alley being laid of two thicknesses of plank crossed—the posts being fitted with hackmatack knees. This form of horizontal truss braced to wall and post gives great stability to the building.

If the building is over one story in height the stairways ought to be placed either in separate towers outside the building proper, or else in the corners of the building surrounded by brick walls, the doorways

being protected by adequate fire-doors consisting of wood encased in tin, iron being one of the most treacherous materials customarily made use of for the protection of doorways in party walls. In such a factory no cornice is required or permitted, and no sheathing within, set off by furrings from the wall can be tolerated. No concealed space is allowed anywhere in which a fire can pass from room to room or from cellar to attic. Every part of the building must be open, so that water from bucket or hose can be thrown anywhere.



CONSTRUCTION OF FACTORY DEVISED BY EDWARD ATKINSON, THE PURPOSE BEING TO CONSTRUCT THE ALLEYWAYS SO THAT THEY SHALL BECOME HORIZONTAL TRUSSES, TO PREVENT THE VIBRATION OF THE STRUCTURE.

If these plans and specifications are compared with the ordinary method of combustible architecture, the reason will be apparent why textile factories, paper-mills, and other works are better fire risks and are insured at less cost than the average so-called stone church, brick hospital or asylum, or iron warehouse, although the nature of the work done carries with it almost every cause of fire hazard from ignition, friction, or spontaneous combustion, while in many cases the material used is almost explosive.

The method of Sartor Resartus may well be applied to the average hospital or asylum. What is it but a sham? a picture composed of brick or stone clothing or screening a whited sepulchre well prepared for the cremation of the inmates? It consists of an outer wall of brick or stone inclosing a wooden structure of the most dangerous kind; it is usually but a system of combustible wooden cells each connected with the other from cellar to attic by open wooden ways in walls, floors, and partitions alike. Had the motive been to house the inmates of most hospitals, asylums, and hotels under conditions which should assure the greatest possible destruction of life and property from the

least possible cause, greater success could not have been secured than has been attained in most of these buildings, in many of which the danger is enormously increased by the use of gasolene vapor for lighting. How soon a remedy may be found for these faults rests with the public to decide. The builders of factories in city or in country may perhaps derive some useful information from this description of

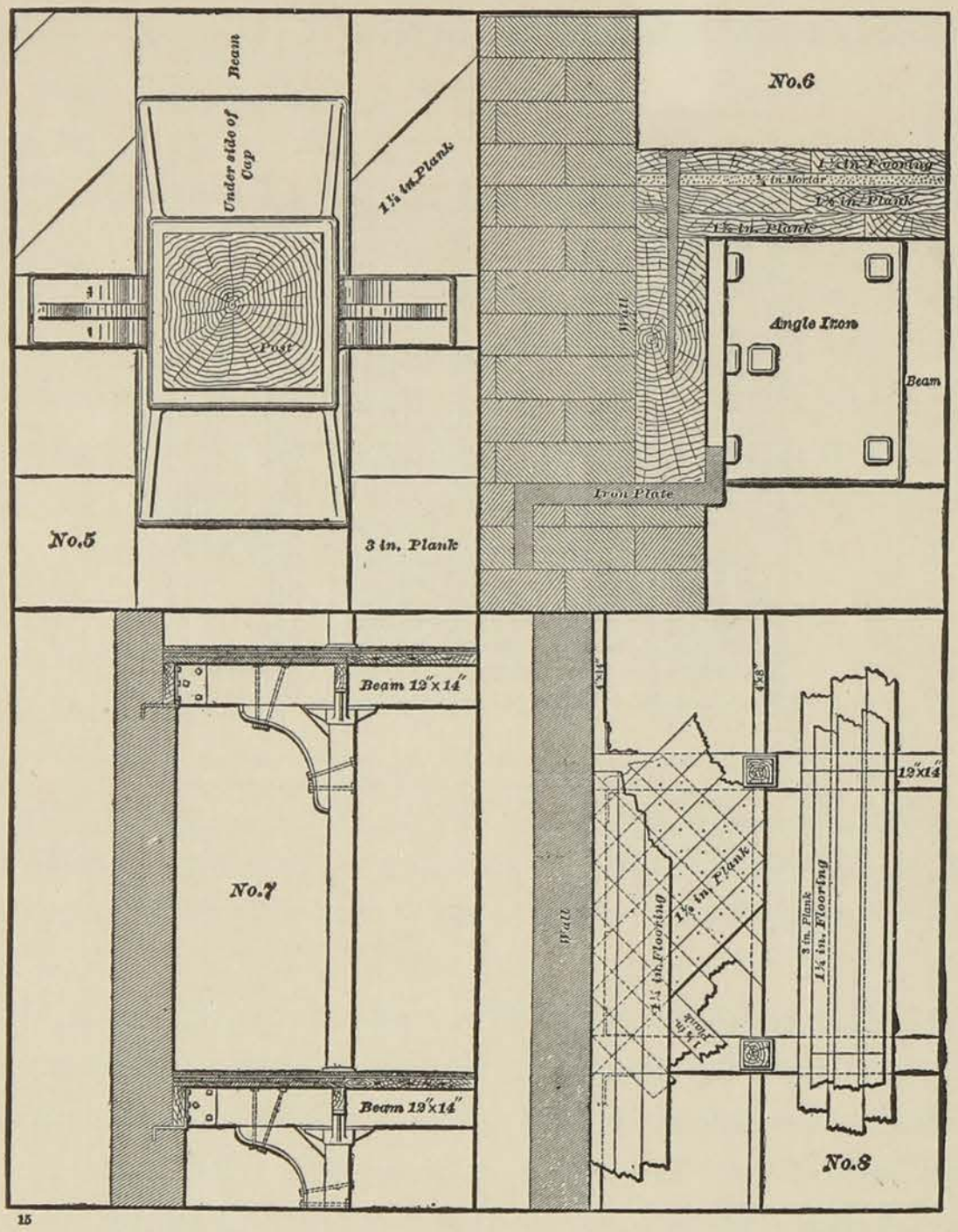
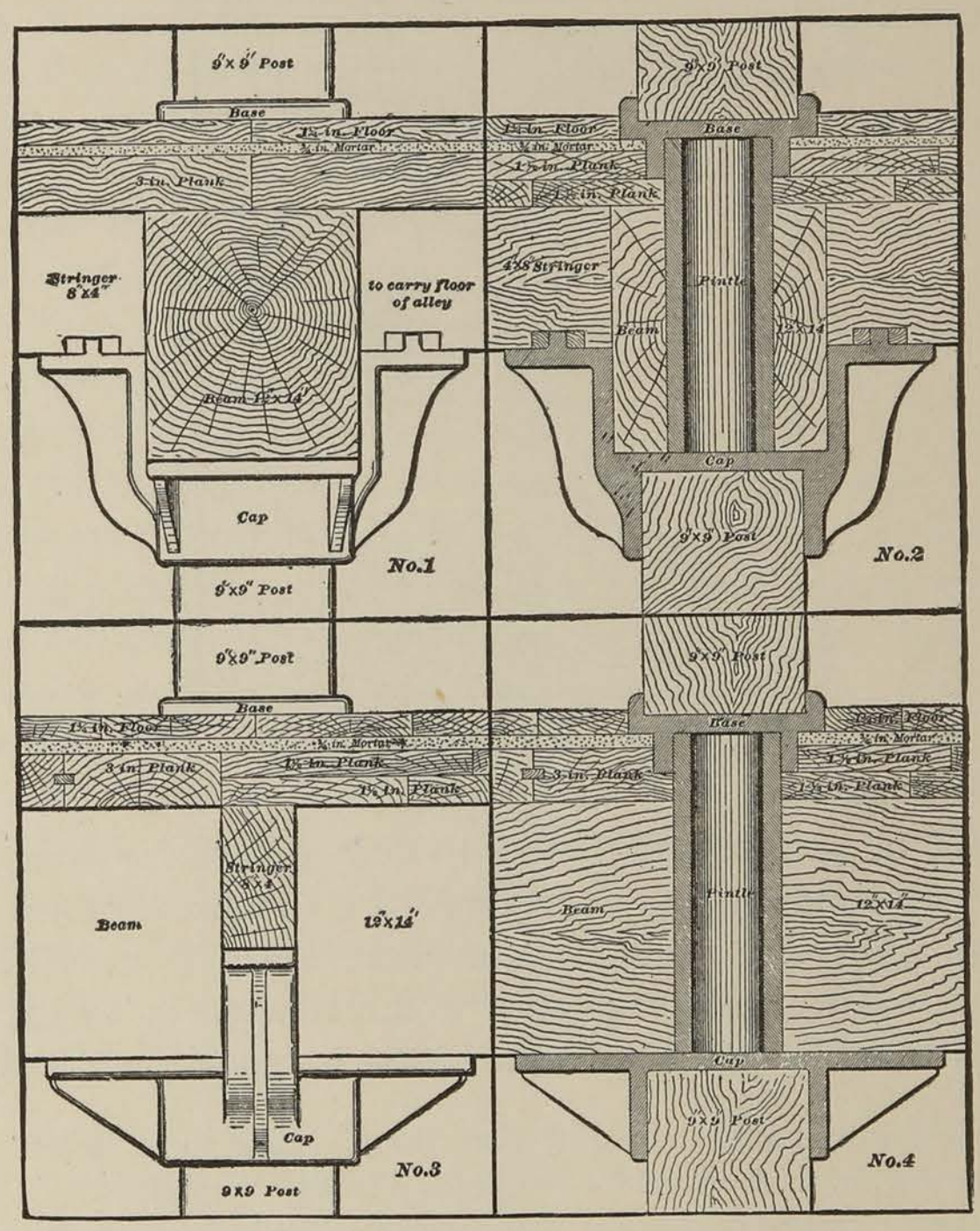


DIAGRAM SHOWING THE OUTER LINE OF POSTS (HORIZONTAL TRUSSES OR ALLEY-WAYS) AND OUTER WALLS, SO ADJUSTED THAT THE FLOORS INSIDE THIS LINE OF POSTS MAY FALL AWAY FROM THEM WITHOUT STRAINING THE POSTS OR THE WALL. IN ANY CUSTOMARY METHOD THESE POSTS SHOULD BE FIRE-PROOF.

slow-burning construction, for the reason that if carried out consistently and economically it will cost less than the ordinary method of combustible architecture.

It may be interesting to add that a mill building of from three to five stories in height can now be constructed in New England in accordance with these plans at a cost above the foundation varying from sixty to seventy-five cents per square foot of floor, counting every floor, but not counting the basement unless it is a high basement, to

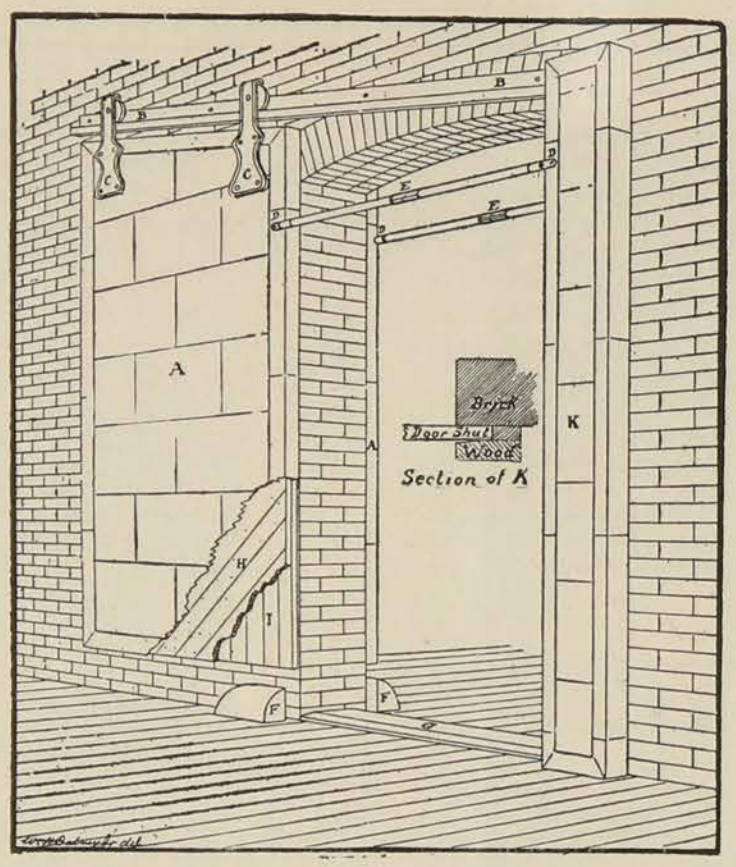
be made use of in the same way that the other floors are used. The cost per square foot of floor will vary somewhat according to the position, and according to the interior finish required with respect to sheathing and other matters. A mill two stories in height, *i. e.*, of two floors for use, can be constructed at somewhat less cost, as the walls may be lighter in proportion to the area.



POSTS, PINTLES, AND CAPS CUSTOMARILY ADOPTED IN MILL CONSTRUCTION.

Under ordinary conditions a mill of one story in height can be constructed at about the same cost per square foot of floor as the four- or five-story mill if the ground is level and the subsoil is such as not to require any excessive expenditure in the foundation. A lighter framework and less expensive methods have been adopted in some cases in one-story construction, so that the cost of the building per square foot of floor has been considerably less than the sum named—even as low as fifty cents per square foot of floor. For many purposes, such as for shoe factories or other light work, these changes and this kind of economy may be admitted, provided a false economy is not applied in the construction of the roof. The whole comfort and

welfare of the operative in the one-story factory depends upon the solid construction of the roof and the monitors, the plank to be three inches thick. Ordinary sloping skylights should never be permitted, as they transmit heat ; while the monitor, with its vertical windows, reflects the heat and may be made use of to promote ventilation. In all cases the windows in the monitor either should be double or the



AUTOMATIC FIRE-DOOR.[1]

sash should be glazed with two plates of glass in the same frame, in order that the condensation of moisture on the inside of the windows may be avoided. Experience proves that these flat-roofed buildings, even when constructed from one to three acres in extent, are not more liable to collect snow than are other forms of roof, and they are

[1] SPECIFICATIONS FOR AUTOMATIC FIRE-DOOR.—Door to be made of dry pine, matched boards, $\frac{7}{8}$ in. thick : for all door openings smaller than 4 ft. × 6 ft., to be made of two thicknesses, crossed as shown at H and I on plan, and for all door openings larger than 4 ft. × 6 ft., of three thicknesses crossed, to be thoroughly nailed with clinch nails.

The finished door to be covered with heavy tin upon the whole surfaces and edges, leaving no wood exposed ; tin to be lock-jointed and without solder. The edges to be covered by sheets lapping around on either side, as shown at A on plan, so as to leave no joint on the edge.

Door to be hung by strong "barn-door hangers," which may be found at any hardware store. The rail may be fastened directly the wall, or, if necessary, put upon a wooden stringer tinned on the outside. In either case, the rail is to be bolted to the wall by bolts passing through the wall. In no case must the rail be fastened to a wooden rail which is held by nails or spikes driven into wooden plugs driven into drill-holes in the wall. All woodwork to be tinned.

Door hangers to be fastened to door by carriage-bolts through the door, and not by wood screws.

A wooden jamb-casing "K" to be fastened to the wall by through-bolts, at the lower side of door-way, with a wedge recess to receive the door and force it against the

very much more easily cleared of the snow when it does collect. The English saw-toothed roof, so called, generally placed over their weaving buildings, has not proved to be desirable in this country north of Philadelphia owing to the tendency of the snow to collect in the valleys ; it is also more costly than the roof of the one-story building lighted by monitors, as given in the previous. The light in the saw-toothed roof being always taken from the north may possess a slight advantage, but in the monitor the windows towards the south can be clouded so that there will be no objectionable glare within the room.

The plan has been adopted in many cases of carrying the brick-work to the roof between the windows ; more often, though, the brick or stonework is carried only to the windowsills, the superstructure being wholly of timber and glass.

In many cases it is desirable that there should be no open space under the floor, both with the view to avoid danger and to give stability and freedom from vibration to heavy machinery. To meet these conditions special plans are furnished by the factory mutual companies for laying plank directly on the ground without danger of decay.

It is not a pleasant experience for the officers and inspectors of the factory mutual insurance companies to pass, day by day, bad examples of combustible architecture occupied as shoe factories, clothing factories, and the like, or to see other unsafe buildings in which branches of industry are conducted which have not yet come under the supervision of skilled inspectors and underwriters, but which in their intrinsic hazard are safer than the textile arts. It is not pleasant to witness the mushroom growth of five-story wooden buildings standing often in the middle of a field where land is of little value, in which hundreds of people may be daily exposed to great danger, and hundreds of

brick jamb, as shown by section of K. All to be thoroughly covered with tin, same as door. Jamb-casing to be made of stuff not less than two inches thick.

A stop, shown at F, to be fastened to floor, placed so as to crowd the bottom of door against the brick jamb.

An automatic door-closer, shown at D, with fusible joint, E, to be placed upon each door, when, for convenience of work, the door must be kept open. One end of the rod which keeps the door open can be held over a hook, from which it can be removed at night, in order to close the door. The rod, made of wood, is cut diagonally across the middle, but is held firm by the copper sleeve, F. This sleeve is made in four parts, each soldered longitudinally to the other, with solder which melts at 160°. It is expected to yield and to permit the door to close from the heat of a fire at a considerable distance.

If the door must be painted, white paint only must be used. The tin reflecting the heat, it is best not to paint at all.

A threshold from $1\frac{1}{2}$ in. to 3 in. thick should be placed in door-way to prevent flow of water, in case of a small fire, from one room to another.

This door was first devised by Hon. Byron Weston, for use in his paper-mill. The automatic-closing apparatus has since been added.

thousands or even millions of dollars' worth of property are subject to a heavy charge for insurance because the buildings have no right to exist. These officers and inspectors know from their own experience or that of their predecessors, covering fifty years, that more commodious, better ventilated, better lighted, more comfortable, and safer buildings could be constructed for the same or for less money than these examples of combustible architecture usually cost.

It would not be within the province of this article to describe the customary equipment of factories with pumps, pipes, hydrants, automatic sprinklers, watchman's electric record clocks, fire-escapes, and the like ; all these safeguards are fully described in the technical publications of the factory mutual insurance companies. The purpose of this paper is only to call attention to the relatively low cost of slow-burning construction, and to suggest that because the customary methods of building are bad it is not therefore necessary to rush to the opposite extreme and to spend money in futile attempts at fire-proof building for ordinary uses. In fact, there is no such thing as a fire-proof building : a building may be constructed wholly of incombustible material and may yet be totally destroyed by the combustion of the contents, especially when the iron members of such a building are unprotected from the heat of a fire among the contents. Granite is one of the most worthless materials for withstanding heat. In a recent fire in one of the factories insured under the supervision of the writer a granite post 12 × 12 inches was reduced to sand by the same fire that burned into a wooden post next to the granite less than one inch. Sandstone and marble are not quite so bad ; unprotected iron is most treacherous and unsafe, especially cast iron ; brick, having already passed the ordeal of fire, is substantially indestructible, and when combined in a suitable manner with heavy timber and plank, the latter being protected by wire lathing or by other methods for retarding the action of heat, serves the best for the safest construction.

In recent years the profession of the architect has been raised above that of a mere artist or draughtsman, capable only of making an attractive elevation and of planning a building with little regard to the safe or suitable disposition of the material, to the level of some of the architects of old time, who, like Brunelleschi, combined with the functions of the artist the skill of the craftsman, the builder, and the engineer. The progress of combustible architecture is therefore likely to be checked as the young men who are now graduating from the Massachusetts Institute of Technology and from other architectural schools supply the places of those who, having had no technical knowledge themselves, have been unable to prevent the owners and contractors from committing the follies in construction by which our cities are now rendered so dangerous.

Objection has at times been taken by some architects to the comments of the mutual underwriters upon the architects' customary methods, that the factory building planned and constructed under their supervision is but a shell or skeleton of the building which the architect is commonly called upon to plan and supervise. This may be admitted ; yet there have been, and are, architects who have proved themselves competent to clothe this skeleton and to adapt it to more æsthetic purposes than the factory, by covering the timbers in such a way as to make the method of construction even safer and more slow-burning than when the timbers are left clear, without losing sight of the prime motive—safety of property and of life. The great warehouse built by Richardson and his successors for Marshall Field is but a glorified cotton factory, and the lovely little building connected with the home office of Mr. Richardson in which his art treasures were safely housed was but the picker building of a cotton factory with a touch of genius added.

Moreover, the architects themselves are now finding it expedient to adopt the same method of subdivision in their work which has become necessary not only in many of the practical arts but even in the legal profession, viz., either to employ special experts in the different departments, or else to organize firms in which one should be the artist, another the builder, another the engineer. Modern requirements make specialization necessary, and there are few indeed who can qualify themselves for all the requirements of almost any profession.

In view of the attention which is now being given to the application of the "factory floor" (as it is called) and the "factory roof" to other buildings, it may be that the time is not far distant when it will be safe and prudent for the owner who intends to construct a textile factory to employ a professional architect without incurring the danger that the purpose to which the building is to be put will be lost sight of in the attempt to apply meretricious or misplaced art to a building in which economy and utility must not be disregarded.

THE MISSING SCIENCE

THE MISSING SCIENCE.[1]

COCTOR NON DOCTOR.

[In public addresses and in private demonstrations Mr. Edward Atkinson of Boston has shown the remarkable results of his investigations on cookery. He has now made such arrangements that others can profit by them. The "Aladdin" cook-box, or portable stove, which can be carried anywhere and used anywhere, is now ready for sale.

Mr. Atkinson permits us to print some passages from a paper which he read to the Boston Thursday Club, one of the oldest and most distinguished of the Boston clubs. The reader will see at once that the new invention takes rank among the foremost improvements which affect the health, comfort, and larger life of our time.—EDITOR.]

THE struggle to support the material life of men and women is directed :

First : To putting a few bits of board, supported by brick, timber, or stone, over our heads for shelter.

Second : In this, the best-clothed country in the world, to converting on an average each year sixteen pounds of cotton and ten pounds of wool per capita into cloth, carpets, blankets, and other textile fabrics. [An average family of five persons consumes annually eighty pounds of cotton, worth $8.00, and fifty pounds of wool, worth, in the grease, $10.00 per year.] The average of raw cotton and wool per capita being about $1.80.

Third : To securing our food and preparing it, the proportion varying in some measure with the section of the country and the climate.

The provision for shelter and the adequacy of the shelter varies more than any other element in life in ratio to the income of the family. Working people do not have as many clothes at one time, but they wear out more clothing than the well-to-do. There is a closer approach to communism or equality in the food supply than in any other element of life ; food differs in quality more than in quantity, but the working-man can eat more and digest more than the man of leisure. An average workingman at moderate work must have one quarter of a pound of nitrogeneous food or protein, one-eighth of a

[1] Reprinted from *Lend-a-hand*.

pound of fat, and one and a quarter pounds of starch every day, combined with water, making three and a half to four pounds a day. Those who do the hardest work require more fat and protein and less starch.

Physiologists differ a little as to the relative chemical proportion of the nutrients which are considered necessary for subsistence, yet when their formulæ are reduced to *calories*, or mechanical equivalents of heat, the dietaries established by Voit, Playfair, and others become almost identical. The application of the system of *calories*, or the mechanical equivalents of heat, to the food question, has been invented and adopted by Professor Atwater in his researches upon food, with some very curious results. On comparing two tables of the amounts of food consumed by working-men, he struck two cases where the heat units of the food said to be consumed were double that of a German soldier on a forced march. Thinking there must be an error in the statement, he investigated more closely. In both cases he struck a brick-yard ; one in Somerville, Mass., the other near Middletown, Conn. In both these cases the proprietors had found that they could obtain the greatest tale of bricks by feeding their workmen with the largest amount of beef : the dietaries were correct at double the amount of food consumed by the German soldier.

When computed by the day the requisite amount of food seems small ; three to five pounds of solid and liquid food to an average working-man ; by the year, however, according to our extravagant mode of using food, so much of which is wasted, each adult needs to have prepared for him two hundred to three hundred pounds of meat, about two hundred pounds of flour, making two hundred and eighty pounds of bread, fifty to one hundred pounds of milk, fifty to one hundred pounds of butter, fifty to one hundred pounds of sugar, six hundred to seven hundred pounds of vegetables, one hundred pounds of salt, pepper, cheese, fruit, spices, and sundries, making from fifteen hundred to seventeen hundred pounds in all. In many cases, in the families of the well-to-do, a ton of food is converted to use or to waste, as the case may be, in each year for each person. The flour, meat, and butter may be brought over the railway one or two thousand miles at the price of a day's wages of a working-man.

In the past few years all the utilitarian sciences have been wonderfully developed, and scientific methods have been applied in almost all arts relating to the production and distribution of materials ; but there is one art, perhaps the most important of all in its relation to the material, moral, and intellectual welfare of the community, to which little or no science has as yet been applied ; in which there is no well developed technical art capable of being taught upon a scientific method, or of being learned except by empirical practice, and that empirical prac-

tice is usually conducted by a very ignorant class of persons. That factor in life upon which comfort, health, and strength most fully depend has been almost entirely overlooked, ignored, and neglected to the end that I can find no book treating this subject which even approaches the standard of science as applied in the other arts; no attempts are made to teach this fundamental art, on which we all depend, that are above the level of a mere jumble of empirical devices. This fundamental science to which I refer is the science of applying heat to the materials which we eat, commonly called cooking. I think that you will all concur with me in this statement when I set before you the facts which are capable of illustration, and which will be illustrated by the apparatus now before you.[1] In any family in which two kerosene lamps, each having a circular wick of one and a quarter to one and a half inches diameter, are burned for the purpose of lighting the household four hours, a sufficient amount of heat is wasted to cook fifty to sixty pounds of bread, meat, and vegetable food, with the expenditure of one quart to three pints of kerosene oil, costing by the barrel, for the best quality, two and one half cents per quart. Sixty pounds of cooked food would be sufficient for the supply of fifteen adult working people.

In this oven which is made of wood-pulp one inch in thickness, I can prepare four charges of food in eight hours; two charges of ten pounds each of bread, two charges of fifteen pounds each of fish, meat, vegetables, and puddings. By its use a family of five persons can do every thing but fry; they can stew, simmer, bake, and roast in this oven, and can readily prepare twenty pounds of food a day, with a consumption of oil not exceeding two cents' worth.

I have placed in this oven three and one half pounds of round steak, with one half pound of suet, two pounds of corned-beef, two pounds of salt codfish, one half pound salt pork, three pounds of veal, one pound of ham, two pounds of potatoes, one half pound of beets, one half pound of carrots, one pound of cornmeal, one pound of oatmeal, and one and a half pounds of milk, making nineteen pounds in all, combined in six different dishes, the total cost being $2.10. These are all dishes which require long, slow cooking, and they have been subjected to the heat of the lamp for four hours. The corresponding starchy food which should be added to this ration of meat and other articles would be sixteen to twenty pounds of bread, sixteen to twenty pounds of potatoes, and a few condiments. The whole cost of sixty pounds in this combination, which would be cooked on the same day in this oven, with one quart of oil costing two and one half cents, would be $3.20, making sixteen full rations at twenty cents each for an aver-

[1] This was written for a club, and while being read twelve separate preparations of food were cooked in two ovens with two lamps.

age working-man, or twenty average rations for a working-woman not engaged in arduous or mechanical labor.

In this other oven of a little different construction I have prepared some rather fine cooking ; the contents are four pounds of the best sirloin and tenderloin steak, cut very thick, without bone or flank, prepared with mushrooms ; three pounds of halibut *à la crême ;* eight quail, a dish of macaroni, a dish of stewed celery, a dish of salsify, or oyster plant. There is hardly room for the right proportion of potatoes with these six dishes, and I have therefore decided that the family oven for a family of eight persons should be two inches longer in order to make room for the additional quantity of vegetable food called for with this quantity of fish and meat. A good deal more could be put in if tin pans were used instead of vegetable dishes, but I think that fine cooking is better done in porcelain or in china than in metal.

Now when we consider the nature—I may say the infernal nature—of the common cooking range or stove or frying-pan, as commonly used, especially infernal in summer in the small houses and dwelling-places of the working people, I think that you will be prepared to admit that there has as yet been no practical science in applying heat to the cooking of food. There has been a great deal of art and perhaps some science applied to the preparation of food to *be* cooked, but this is a separate matter.

Now, when we bear in mind that the price paid for the materials of food by ninety per cent. of the people of this country takes up one half of the income of the family, or more, I think that you will again concur with me that there is no new science which could be presented for your consideration of greater importance than the science in which I propose to make a crude beginning at this time.

. . . . . .

Let me refer to the common impression that the rice-fed coolies of India and China are very strong, and that they derive their strength exclusively from their diet of rice. Now rice is almost all starch ; it contains a very small amount of protein, or nitrogeneous material, which is necessary for the formation of muscle ; hence a rice-fed population would be an under-fed population. In a recent report which I have received, made on behalf of the English government, the competition of India wheat with that raised by English farmers is treated, and the limit of production of the wheat which can be exported is stated to be the amount of available land which can be spared from the cultivation of rice and pulse. That word *pulse* reveals the secret ; leguminous plants, peas, beans, and the like, are rich in nitrogen, and by that report it appears that a much larger proportion of land is devoted in India to the cultivation of the pulse crop than to the rice crop. There is also

an upland rice of which we know little in this country, which I have reason to believe is more nutritious than the swamp rice.

. . . . . .

While the ordinary cookery book is deficient in any scientific instruction, yet there is one noted cookery book which contains a famous receipt—Mrs. Glass, in her celebrated receipt for cooking a hare, says : "You must first catch your hare." In my instructions for cooking I lay down the rule : "You must first catch your heat, and then keep it where it will do the work in the right way."

My first hint how to do this was derived from a description of the Norwegian Cooking Box ; I had never seen one. The instinct of the Norwegians had taught them that the most suitable buildings for their climate should be built of timber and plank massed together in thick walls, wood being the most effective of all non-conductors of heat that could be put to common use.

The Norwegian cooking apparatus consists of a box of wood lined with hair felt, or fur, and then with metal. A smaller box made of metal, adapted to receive the food, fits loosely in this outer case. The space around this inner box is filled with boiling water, and the heat, being kept in by the non-conducting outer wall, does its work upon the food, of course at somewhat below the boiling point. This proves at once to you that there is no necessary connection between the boiling point, which at our sea level is 212 degrees Fahrenheit, and the degree of heat necessary to do the cooking of our food. This fact was discovered by accident, even by Count Rumford, who had thought that the way to boil meat is to boil it, when, in fact, the way to *spoil* meat is to boil it. A leg of mutton was accidentally left by him all night in a drying room used for other purposes, and exposed to a heat from about 140 to 180 degrees, as I remember the statement ; in the morning, to Count Rumford's surprise, instead of being dried up, it was nutritiously cooked and of full flavor.

In order to convert the Norwegian Cooking Box into a constant cooker, all that was necessary for me to do was to add a circulatory apparatus similar to the one with which your bath boilers are heated. This was the apparatus which I brought to a meeting of the club three or four years ago. Into it a working-man may put the materials for a hearty breakfast, light the lamp, go to bed, and on getting up find his breakfast ready ; but with that apparatus I could only simmer and stew, and the American people will not be satisfied with stews. In some of the reports of the lectures which I gave to the working-men, when put on file in the public libraries, curious comments have been made. For instance : "We don't want your pigwash," "We won't have bone soup ; we want sirloin," etc., etc. I have therefore substi-

tuted a column of heated air for the column of heated water in this oven, in which you can not only simmer and stew, but also roast and bake. There is, as you will observe, no direct communication between the lamp, or source of heat, and the inside of the inner oven, in which the food is placed ; therefore if the lamp smokes or gives off fumes of kerosene oil, for want of being rightly trimmed, the food is not tainted.

I have made no attempt to promote the general introduction of this apparatus, until it should be completely perfected and reduced in cost. My first experimental ovens were wholly made of metal, filled with non-conducting material, and were costly. We have used this apparatus in my own family for more than one year, and have done, at least, nine tenths of our cooking with it. We have been obliged to light the range to warm the kitchen, and, it being lighted, some of the breakfast cooking has been done on it. I also light my household with kerosene oil, as I detest gas-light. Our family consists of from ten to twelve persons ; I buy the best oil by the barrel, and it costs me ten cents a gallon. My bill of oil for lighting and cooking for the year has been thirty dollars.

A lunch has been established for the employees in my own office, as well as for myself. About twenty persons are served with a substantial mid-day meal every day ; since we began a little over four thousand meals have been served. We are obliged to buy our oil in small parcels, at retail prices, therefore the cost of fuel has been seven tenths of a cent per meal ; at wholesale it would have been one half a cent. The plan works to the great benefit of the employees, whose mid-day lunch, or dinner, costs them eighteen to twenty cents each for food and fuel.

Astonishing as these facts are in regard to the economy of fuel, I am of the opinion that this is purely a secondary matter ; economy of food is of the first importance, coupled with the saving of work on the part of the cook. I have proved, I think conclusively, that the operation of heating a room, or of heating water for circulation through the house, is absolutely inconsistent with the true methods of cooking. Heat cannot be properly regulated for cooking when applied to other purposes. If I were to build again, I should make arrangements for heating the water from the furnace, with a small heater set alongside the furnace for summer use, and in place of the range in the kitchen I would put a small heater, like a flat-iron heater, with a place to boil water on the top. One of my friends has built and furnished a house in this way and is quite enthusiastic over it. I might add a grill, which is very useful in any household, but my main dependence for cooking would be upon the lamp, or Aladdin, oven.

In the development of the science of cooking I think it will appear that there is a true degree of heat by which flavors are developed

or actually created ; for instance, if we grind green coffee we get no good result and no true flavor ; if we roast it too much we destroy the flavor and get an acrid and impalatable residuum. If we apply the exact degree of heat to roasting the berry, we develop the flavor and other qualities which are desired. I have lately observed that the same rule seems to apply in the application of heat to meat, fish, vegetables, and meal, especially cornmeal. If not cooked enough, meat will be sapid and flavorless ; if cooked too much, flavorless and soggy ; if cooked at the exact point, the finest flavors are developed, especially in fish and fruit.

The advantages which are beginning to be apparent in the use of these ovens are as follows :

First : In respect to bread. Bread baked twice the usual time at 300 to 320 degrees Fahrenheit does not quickly become covered with a hard crust, as in the common stove. This crust when formed is a non-conductor, being like wood, carbonaceous in character ; this prevents the penetration of heat, so that the interior of the loaf is not cooked. It is also said that in such case the yeast plant is not killed and may go on fermenting, or else the bread moulds quickly or dries up. In bread baked in my oven the heat penetrates to the very centre ; it may be eaten fresh with impunity, and can be kept sweet for many days. It may even be over-baked with good results. In some of the over-baked loaves, especially those which are three or four days old, there is a crust-like flavor throughout, probably due to the partial conversion of the starch into dextrine. I have kept bread of this kind in good condition for eight days.

Second : In respect to meat. It begins to be apparent that the right method of cooking meat is to keep it at such a degree of heat as will cook it without dissociating or "*cracking*" the animal fats or converting the juices into volatile vapor. Cooked in this way tough meat becomes tender. I also find that in proportion to the freedom from the smell of cooking is the flavor retained. I am informed by physicians that when animal fats are cooked in this way the fats of the meat remain nutritious and digestible, whereas, if the fats are exposed to a high degree of heat, so that the volatile parts are "*cracked*," or dissociated, the remainder of the fat becomes acrid and indigestible. It is possible that we may impute the prevailing dyspepsia of the day to the highly heated ovens of the range or stove in their effect on fats, as well as to the frying-pan.

There is one point which requires a little skill : it is difficult to brown meats or poultry so as to give as good an appearance as is desirable. We have succeeded fairly well in imparting a brown appearance and appetizing look to many of our dishes by the skilful use of powdered crackers and butter, which brown more readily than the fat of the

meat itself. But, in order to give a fine æsthetic effect to a bird or a joint, all that is necessary to be done is to have a larger lamp, or such as I call a *Jumbo* lamp, whose wick is nine inches in circumference, and which is 160 candle power, for final use. A short and careful application of this lamp for ten or fifteen minutes does the work of browning extremely well.

I have taught three cooks of average capacity how to use these ovens each in a single lesson, and they have never served a meal in which any part was spoiled. Occasionally some kind of vegetable (vegetables requiring a higher degree of heat than meat), with which we were not perfectly familiar, has been served underdone. Sometimes a big joint of meat has not been kept in the oven quite long enough. We have been obliged to experiment with each oven ; each has a different *normal*, so to speak ; but we have cooked to perfection in comparison with any other method, sirloins of beef weighing twenty-four pounds, turkeys, and geese weighing eighteen pounds each, a whole saddle of venison, which weighed, untrimmed, twenty-five pounds, and also single pounds of meat and small birds ; all weights and kinds have been put to the test. Parts of the meat, like the flank of the sirloin, which are spoiled when roasted with the joint, we cut off and simmer in the cooker, and afterwards convert into the most appetizing dishes in the oven.

Again, meat which has not been subjected to a high degree of heat makes a better hash or mince, and has no unpleasant tang. It would be difficult to distinguish between two turkeys, one re-heated and the other freshly cooked ; I attribute this to the fact that the fats are not dissociated by the low temperature, and there is no flavor of grease rendered.

This is all I yet know about this somewhat crude invention somewhat crudely used ; the whole field of this new science remains to be explored. I have somewhat to my own surprise, lately come into possession of a small literary income. I have somewhat the same feeling about it that I had when I received a check for my first article printed in the *Atlantic Monthly ;* it did not seem to belong to me, I therefore expended it for Christmas presents, and my children were somewhat surprised at my unwonted liberality. The next year, not having received a check, my presents were smaller, and my little girl asked me why I did not give them more.

"I have no money to spend this year," I replied. At which she rejoined :

"Well, papa, I think you might write another article for the *Atlantic ; anybody* might do that !"

But when one is engaged in active business, and can only give little bits of time to literary work, without any real opportunity for consecu-

tive thought, a literary income hardly seems earned. I have therefore devoted the fee of an article yet to be written to experiments conducted by Miss Marion Talbot, under the superintendence of Mrs. Richards, at the Institute of Technology, by which I have, at least, partly proved that all my theories are well grounded.

Miss Talbot's report is a model in scientific form. After describing the personal equation, and after referring to the eminent olfactory abilities of one of the professors, she says : " Miss Talbot came to the work with some training in physics and chemistry, a knowledge of housekeeping and marketing, considerable ease in turning from one occupation to another, and almost uniform *failure* in the few attempts she had made to cook in an ordinary stove or range. Miss Bragg's ignorance in regard to cooking was still greater, but was offset by promptitude, intelligence, and ability to conquer obstacles. The inexperience of the cooks, which at the outset seemed to doom the work to failure, from an epicurean standpoint, is noteworthy in view of the exceptionally good culinary results obtained."

The quantity of each dish prepared was sufficient to supply from three to six persons. The varieties of food treated were bread, baked potatoes, baked apples, beefsteak, macaroni, rice pudding, roast chicken, mutton chops, apple tapioca, escalloped potatoes, baked custard, baked haddock, roast beef, bread pudding, ham, gingerbread, mince pies, rolls, chowder, corn bread, apple dumpling, with foam sauce, baked halibut, grouse, and citron cake.

Reference is made to the particularly fine flavor of cornbread and fish. Escalloped potatoes were successfully made from raw potatoes cooked slowly in milk. The cracking point of the animal fats was not reached except in the small oven, and a little difficulty in the browning is referred to. In conclusion Miss Talbot says : " The economy, cleanliness, and simplicity of the ovens has been amply demonstrated. They are certainly *magnum in parvo*, and, if it were not for the Yankee determination to have *omnium in parvo*, the claim might be made that they can do all the work that could be fairly demanded."

Many of you will recall the half-hour's entertainment which I attempted to give you two or three years since at the house of a late valued friend and fellow member, when I came to the house clad in an eight-dollar suit, with my supper in a small cooking box, and showed how a man could live comfortably and be well nourished on an income of $200 per year. I was not myself entirely sure whether I was quite serious in the matter, and whether my cooker might not be a mere plaything. Since then I have come to a more certain conclusion. I may sometime prepare, with the aid of Professor Atwater, a large number of scientific daily rations ample for a working-man, to cost from twenty-five cents each per day down to ten cents. At twenty cents an ample

variety of nutritious food can be prepared in either one of these ovens by a single man or woman at as low a relative cost as for a large number. The whole supply for the day can be cooked over the evening lamp, a part to be re-heated for breakfast and dinner on the next day, without losing its appetizing quality.

In order to maintain my reputation as a man of figures, I will repeat again the sum which might be saved to the people of the United States. The average expense of a working-man in full work is twenty-five cents per day for the materials of food ; the measure of waste at a moderate computation is twenty per cent., or five cents per day. This includes the waste of rich and poor alike ; of the first-class hotel and of the factory boarding-house. The consuming power of the United States at the present time is that of over fifty-two million adults, counting two children of ten or under as one adult, and the objective point of my work is to save five cents a day on fifty-two million, which would amount annually to about one billion dollars.

(In order to save myself a part of the burden of correspondence on this subject, I may venture to state that circulars giving prices and direction for the use of the Aladdin Cooker and Oven can be had on application to Kenrick Brothers, Brookline, Mass.)

A SINGLE TAX ON LAND

A SINGLE TAX ON LAND.

THIS proposition, which has been sustained with so much sincerity and ability by Mr. Henry George and his coadjutors, for the collection of all public revenue, both for national, State, and municipal purposes, by a single tax to be imposed upon the valuation of land, has attained a strong hold upon the minds of a considerable number of able and sensible men. Many of them are, however, persons who can hardly claim to have given much attention to the problem of taxation before this theory had been brought to their attention. This theory is apparently so simple, and would seem to be so effective in practice, that it appeals to the imagination, but it may not stand the test either of history or of logical analysis.

This plan is not new ; it originated with the school of economists known as the Physiocrats of France, whose principal exponent was Quesnay, and whose theory in respect to land as the source of all value, and therefore a right subject for all taxation, was substantially brought into public notice by Turgot, the great finance minister of Louis XVI., whose fall preceded the French Revolution ; it opened the way for some of the final abuses of power which led up to that great event which has worked so much both of evil and of good to humanity.

Turgot's theory, which Henry George now sustains in respect to land, continued to exert great influence after his fall, and greatly affected the legislation of the Republic, leading to some of the worst of the financial disasters of that period. Reference may be made to Leon Say's " Life of Turgot " and Blanqui's " History of Political Economy " for the records.

The consideration of this theory of taxation has been rendered more difficult at the present time by the manner in which it has been presented as a cure for poverty. Doubtless poverty may be aggravated, or in some special cases it may be caused by a bad method of taxation, but he who expects poverty to be cured by the organization of Anti-Poverty Societies, coupled with a change in the method of taxation and a change in the conditional possession of land under the laws of the State, must inevitably be disappointed.

It is very difficult to follow the somewhat vague conceptions and the tortuous reasoning of the supporters of the single-tax theory, and

they frequently object that what they intend to do is not comprehended. If they would present a legislative act for carrying the single tax into effect, these alleged misconceptions would disappear. Their prime object appears to be to force land into wider distribution by the weight of taxation, and at the same time to relieve the people from a part of the weight of taxation by putting all taxes upon land or upon what they call the site value of land. This sounds a little like adding to the burden in order to lighten the weight, but it may be admitted that some heavy loads can be borne when rightly distributed better than lighter loads can be when concentrated in the wrong place. If, however, all people possess all land under the new conditions of possession suggested by Mr. George and his coadjutors, then all people who possess the land must contribute their portion of all taxes. But taxes cannot be derived from land without work. Raw land may support a vagrant and sparse population of hunters or shepherds, but true civilization could have no existence until land began to be fenced in and held in possession, because the product of the soil necessary to subsistence is a product of work, and land must be fenced in and occupied in order that it can be worked, and must be permanently possessed in order that it may continue to be productively worked.

Taxation means work ; the method of taxation is only a method of distributing the products of work. This work may be work of the head, of the hand, or of the machine, or of all combined. It is measured when in the process of distribution in terms of money, but the money itself stands for work or is derived from work. Wages, profits, salaries, rents, and also taxes are alike derived from the annual product of the four seasons, constituting the result of a year's work of the whole community. In this respect it matters not where the tax may be imposed in the first instance, somebody must work in order that the products may be brought forth from the mine, the forest, the field, or the factory, of which the tax constitutes a part. The work of government is as much a part of the work of the community as any other. In this work men, women, and boys are employed, from the President of the nation to the page in the House of Congress, including all the officials in the custom-houses, courts, post-offices, and the like. These public servants must be supplied with shelter, food, and clothing, and in order to supply them others must work in the production of buildings, grain, meat, fibres, and factories, from which the taxes are paid. In the city the mayor, the common council, the firemen, the police, and the women who scrub the floors of the public buildings must be supplied with shelter, food, and clothing, and those who pay the city taxes do the work which is necessary to furnish this supply. The main question at issue must therefore be limited to one principal point. At what point, on what product, in what place, on what subject, or on

what process of work, mental, mechanical, or manual, that can be taxed, ought the taxes to be placed in the first instance? How can the taxes be imposed so that the money shall be secured with the least injurious effect upon the occupations of the people, and so that the burden of taxation shall be most equitably distributed among those who must do the work, mental, manual, or mechanical, from the product of which these taxes are derived? How shall taxes be assessed so as to be in proportion to the ability of those upon whom they fall in the first instance to pay them? When this view of taxation as a mode of work is presented, a wide field is opened for the choice of subjects for taxation.

As nearly as the figures of our national and State accounts enable us to make a computation, the sum of all our taxes—national, State, and municipal—comes to about six per cent. of the value of our annual product in a normal year, this annual product being valued at the point of ultimate consumption; conversely, six per cent. of all our work, or about that percentage, is and must be devoted to the support of government, since the value of the annual product is the measure in money of the work that has been done by the whole community of which the work of government is a part.

It will doubtless be admitted by all competent persons that the taxes should be imposed so as not to impair the productive power of the community as a whole. In what does this productive power consist? May it not be held that it is divided into three parts, representing different directions of mental, mechanical, or manual force?

Does it not consist, *first*, in mental capacity; that is to say, in the capacity of those who by way of invention, by the application of science, or in some other way of applying the work of the head rather than the hand to the conduct of the work of society—save the community a large part of the mechanical work and manual work which had been necessary, or which would otherwise be necessary were it not for the application of this mental factor in production? Is not the mind of man the prime motor in all material production?

Does it not consist, *second*, in the direction or application of the natural or mechanical forces either in the primary, secondary, or subsequent processes of material production under the control of skilled workmen, tending to the saving of a great part of the manual work or labor previously required? As the mind of man is the prime factor, is not skill the equally necessary secondary factor?

Is not the *third* application of force that of mere manual labor or work of the muscle rather than that of the mind to the primary and crude processes of production?

If these three phases of productive energy be considered in ratio to their relative effect upon the joint product, does it not become evident

at once that those who occupy the third position or lowest plane, although most numerous, will be capable of producing the least quantity of exchangeable products in ratio to the quantity of work, labor, or time which each may devote to a specific branch of industry? Is it not also evident that those who are in the second and third classes, or in the various gradations by which one class merges into the other, may obtain results or products of greater and greater value somewhat in inverse proportion to the mere manual or physical effort or to the time which each may devote to his respective branch of work? Does it not follow that those who are capable of taking position in the higher planes may in a few hours' work produce vastly more than is required for their own subsistence, while those in the lowest plane may only be capable in long hours of work of producing enough for a bare subsistence? If then, heavy taxes should be imposed upon those who occupy the lowest plane, taking from them by taxation a part of that meagre product which is necessary even to their bare subsistence, that system of taxation might reduce them from poverty to pauperism.

On the other hand, if the same amount of taxation should be imposed, in the first instance, upon those who are in the higher planes, all of whom produce much more than is necessary for their own subsistence, may not such taxes only take from them a small part of that which they can spare without in any way affecting their productive ability or diminishing their necessary consumption, either of their own products or what their own products can be exchanged for? Does it not then follow that taxes should be imposed as nearly as may be in ratio to the productive capacity of those upon whom the taxes are assessed, sparing as much as possible those whose productive capacity barely suffices for their own support or taking from them by way of taxation only such products as are not necessary to subsistence but are more or less of voluntary use, such as whiskey, tobacco, and beer?

There is no charity in such a view of taxation; it is consistent with the keenest business sagacity. The burden upon the members of the community who *can* pay and who must pay will be greatly increased if taxes are so imposed that those who have been poor but yet have been self-sustaining, should be forced to become paupers either by heavy taxes on the necessaries of life or on the land of which all must occupy a part.

It should be remembered that there can be no great elasticity in that part of our taxation which is absolutely required to meet the necessary expenses of the government. It varies with the duties or functions imposed upon the government. I have said that our present taxes come to about six per cent. of the value of our entire product, but there is no absolute basis for this computation. In 1880, I think, the rate was considerably higher. There is, however, a certain sum, whatever it

may be, that must be devoted to the support of the government every year, even though the product of one year may vary very greatly from another. It has been very truly said that "there is nothing sure but death and taxes." Now if some persons produce much more than they can consume, while others produce barely enough, then it follows that if the assessment of the necessary sum of taxation is not put in the first instance upon those whose productive capacity is the greatest, then it must fall upon those whose productive capacity is the least: this view leads again to the expediency of putting the taxes where they can be most easily collected without injury to productive capacity; that is, upon those classes who possess the greatest productive capacity either in the possession or use of land; in the possession or use of capital; or in the mental power or skill which enables them to render large services for which they may receive large compensation. In this view of the matter, an income-tax would be the surest measure of the productive capacity either of the man himself, or of the land, capital, or skill with which he may be endowed, consequently an income-tax might be the ideal tax, were it not for certain practical difficulties which forbid it being the chief source of revenue. A succession-tax —that is to say, a tax levied upon bequests of property—might also be one of the most feasible and judicious sources of revenue, and why such a tax has not been more deeply considered and more commonly adopted in this country, is one of the difficult questions to answer.

On the other hand, may not a tax limited wholly to land valuation be as far removed from a tax assessed in proportion to the productive capacity of a community as can well be conceived? Raw land of itself produces nothing more than might suffice for the support of a vagrant population of hunters or shepherds. The productive capacity of a man is neither measured by the land which he owns or occupies. It is measured by what he can do for other men better than they can do it for themselves, whether by the use of mind, muscle, machinery, or land; and by that measure his income will be greater or less. Neither is a man paid in proportion to the land occupied in his work, nor for the quantity of the physical effort which he puts into his work; neither is he paid by others according to his own estimate of the service which he renders to them; he is paid, or he earns income according to the estimate of those whom he serves, of the labor or work which he saves them from doing, which they would otherwise be obliged to do for themselves if they tried to serve themselves in the same way. A man's income is therefore measured by his capacity to save other people a part of the struggle for existence, and since there is no compulsory service and no compulsory payment either of wages, profits, or rent, in this country, each man can be said in the long run to fix for himself the rate of his own wages, his own earnings, or his own rents, by the

amount of capacity or capital which he puts at the service of those who pay him for the use of his land, capital, head, or hands.

If then, we could tax men exactly in proportion to their productive ability or capacity, we might reach and secure a share of the annual product of the community in an equitable manner, while at the same time taxing it at a point where the tax would limit further production or draw upon the necessary subsistence of the community in the least measure.

The answer to this proposition by the advocates of the single-tax system may be, that a great many men are forced to devote a large share of their work, or to pay others a great deal of money without getting any adequate return from them, because some men own or control the land while others have none ; it being held by them that any payment of rent for land is not conditioned upon service. It is held that men who hold land under the present conditions of possession do not earn the rent upon land, and that rent is paid simply because some men own or control the land while others have none; therefore, it is held that rent may be something that is not rightly due or that is not equitably earned.

At this point the difference begins in respect to the true source of production from land which must control the true science of taxation. It will be admitted that all material productions are derived in the first instance from the land, the forest or the mine, with the slight exception of products gathered from the sea. The sea is not divided or owned to any great extent,—only the waters near the shore. All are free to derive their food from the sea outside a narrow shore line, if they choose to do so. Land is, however, the main source of crude products ; but these crude products must be converted and re-converted and must be wholly changed from their primary form before they are ready for ultimate consumption. More value can be, and is, added to these crude products by those who do not work directly upon the land than by those who work directly upon it in the primary processes. Therefore land must be considered as of the same nature as all other instruments of production, effective only in ratio to the work put into or upon it.

There is a fallacy even in attributing all crude products to land only. Land soon fails in its inherent properties or power of primary production and will in a very short term of years fail to sustain any considerable population. It will only yield a permanent product in ratio to what is put into it. What is put into it is capital and this capital is applied with more or less labor. Capital in a material form is a product of past labor saved and converted to reproductive use by the service of those who do the present work. Land, labor, and capital must therefore of necessity coöperate in order that either may be of

adequate service in the subsistence of mankind. Both land and capital are inert without the service of labor, and labor is also incapable of abundant product without capital or land. A tax upon land which might restrict its use or upon capital which might impair it in amount and render its service less effectual, would therefore ultimately fall most oppressively upon labor which cannot wait. In respect to rents it is admitted that the money that is derived from the sale of the crude products of the forest, the soil, and the mine, is divided among those who do the actual work and those who own or hold conditional possession of the soil, the forest, and the mine under existing laws. This share which those who possess the land now receive in the form of rent is what is aimed at by the advocates of the single-tax system upon the theory that private rent can be converted into public taxes. It is held by them that if this rent could be secured by taxation under the new system of the conditional possession of land proposed by Mr. George and his associates, then this rent would suffice to meet all the expenses of government, and that those who now subsist upon these rents would then be compelled to go to work for their living, if they were not already working. That is to say, they hold that if rents or rental value could be diverted from private to public use, the burden of taxation which would become a substitute for the burden of rent would be so much derived directly from land and that it could not be distributed; therefore it is affirmed that those who now subsist upon rent would be obliged to work, and those who now pay the rent and taxes would save one or the other, and would have more leisure and more to spend upon themselves for other purposes.

When the subject is presented in this way the main questions are at once brought out:

1st. Does land produce any product available for rent or taxes without work?

2d. Are land and labor in the limited sense in which the word labor is commonly used to designate the manual, mechanical work of the person who applies physical force or manual labor directly upon the land, the only factors in the primary production of the crude products of the soil?

Or, in other words, if all land were either held in common or in severalty, free from private possession and free from rent but subject to a single tax, would labor when in possession of land but without capital be capable of sustaining a community? The advocates of the single-tax system, and Mr. George himself would immediately answer this question in the negative. They admit that the possession of land and the application of capital to it by private persons under certain conditions established by law, are an absolute necessity to abundant production, and that both capital and labor must be

applied to land and are therefore necessary even to the collection of the single tax which may be put upon land. What is the limit of the production from land unless capital is applied to it? It needs but a moment's reflection to prove that land and labor without capital would be wholly incapable of sustaining a civilized community; it matters not whether the capital be only a rude hoe or a pointed stick with a handle to it, to be used for a plow; or a steam plow and a self-binding reaper. Some kind of capital must be placed at the service of man, or else the laborer himself could barely subsist even on the best land. Has it not been proved conclusively by experience that in proportion to the quantity and effectiveness of the capital applied to land is the quantity of labor diminished and the quantity of product increased? Is it not also true that as the quantity of crude products derived from the soil is increased by the application of capital and the adoption of improved machinery, the more abundant production gives the workman of the present day a wider opportunity and a better subsistence in the struggle for existence than he ever had before?

Again, if land without capital is almost useless and incapable of production, then a tax on productive land is undoubtedly a tax on the capital and labor applied to it.

The contention of Henry George and his coadjutors is, that since production comes in the first instance from land, all people should have some share in all land; but since land and labor by themselves are incapable of abundant production without capital, does it not follow of necessity that all who have a share in all land must of necessity also have some share in all capital? Otherwise of what use would the land be to them? What is this but Socialism or Communism if brought into effect by legislation?

Conversely, does it not follow that if private property in capital or in things already produced from the soil, the mine or the forest, is admitted to be necessary to the use of land, then private property in land under similar conditions must also be admitted to be necessary to the use of capital upon it; *first*, in order that there may be an abundant product, yielding a surplus to be saved for conversion into capital, and *second*, in order that this capital may be applied to reproductive purposes upon the land?

The institution of private property in land and things has been developed not only because it is necessary to the subsistence of those who own the land and capital, but in order to make it possible that the laborer should exist at all. The term *own* is relative; there is no absolute private property or ownership either in land or capital; both are held in conditional possession subject to all that is implied in the power of the State to exert its right of eminent domain. All that

Henry George and his associates have as yet proposed is a change in the terms of the conditional possession of land; they have not suggested Communism or Socialism, although their theory might lead to that conclusion if carried into effect.

If there is any truth in the considerations which have been presented, the proposal to secure all public revenues from a single tax on land does not rest upon any abstract principle of right. In fact it would be difficult to prove that any fundamental principle of taxation has yet been established which can be said to form part of a science which can be applied in all times and all places, and to all conditions alike. In the present state of our knowledge it is almost a necessity that the method of taxation should be treated almost wholly as a question of expediency, and on general principles it is not expedient to put a tax where it will obstruct production.

It is therefore in the first place expedient to consider the conditions under which capital may be voluntarily applied to land, since no compulsion is possible in the nature of the case.

With respect to farm land, no one will improve, fence, or drain it, or erect farm buildings, unless he can obtain permanent possession under some sort of title of an individual kind, such as would warrant him in exerting his labor and expending his capital with a view to future results. What is the present cause of the poverty of the agricultural laborer in Great Britain and Ireland except that he has been debarred from the possession of land under permanent conditions, either by custom or by a bad system of land tenure?

Again, will any man construct an expensive building upon a city lot or a costly factory by the side of a stream, unless he can be sure of the permanent possession of the land on which he invests his capital? If land is not improved, that is, if capital is not applied to its improvement, its quality cannot be maintained and erelong it will cease to yield any adequate return to the labor which is put upon it. When it ceases to yield any adequate product will it not then cease to bear any valuation upon which the taxes can be assessed? Could it then be assessed at a rental value or a site value, or could the taxes be collected if the product failed to yield any thing above a meagre subsistence to the squatters upon it? Does it not then follow that land is a mere instrument or tool of production, and that it cannot be made a possible source of rent or taxes, except in proportion, not to the labor *or* capital, but to the labor *and* capital which may be applied to its cultivation and use?

A city lot possesses even less inherent value than a farm; a farm may possibly yield something for the subsistence of labor even without capital, but a city lot from which the loam has been taken and which is hardly big enough to feed a rabbit upon if planted in clover, can

produce neither rent, profit, nor income, except in proportion to the capital which may be expended upon it.

True, both farms and city lots may be the subject of purchase or sale, but the price that is paid is not paid for any permanent value or any inherent power in the land simply as land to yield either rent or taxes ; it is paid for the choice of position. The capitalist will pay a high price for a city lot in order to have an opportunity to put expensive buildings upon it which may be used as instrumentalities either of production or distribution. The capitalist who pays the highest price for the choice of the highest-priced city lots does so because at that place the community can be served at the least cost—for the reason that these lots are in the most convenient situation for the community to reach in order to buy their goods. The price is paid for the choice of land.

It will be alleged in rejoinder that the high price which may be paid for the choice of position is due to the growth of society, and that any gain which one may make by holding these lots until society settles around them is the so-called "unearned increment." It is admitted that it sometimes happens that a man who holds a vacant lot for a long period may secure a large profit, and the profit which he derives is not due to any work which he himself puts into the lot, but to the growth of society about it. This "unearned increment" has been greatly exaggerated, and is very largely a matter of the imagination ; but whether it is or not, it is evident that if the possessor under the present condition of our laws has no right to any sum this "unearned increment" may produce, then he has no right to *secure* a profit on any thing due to the lapse of time. There is no difference between this "unearned increment" upon a city lot or farm and the "unearned increment" on a share of railroad or of factory stock, or a ton of wheat, or any other product of the land. A man who buys a share in an unfinished railway, and keeps it until the growth of towns along the line raises the price of the stock, has as much right to that advance in price, and no more, than the man who had the foresight to buy a city lot at the risk that even interest and the present taxes might deprive him of any ultimate profit. Men often build factories in advance of the demand ; presently the growth of the population increases the demand for the fabrics ; then follows a rise in the price, due either to greater consumption or to the increase of population. Has he no right to the increased value of the goods made in the factory, because it is due to the increase in population ? Or a man buys at a low price a lot of wheat, foreseeing or hoping to get a higher price in the future ; if he is wrong there is an unrequited *decrement* which society has not yet proposed to take upon itself ; if he is right in his exercise of his own judgment and foresight he gains ; to whom does that gain belong ?

If, then, land is like every other tool or instrument of production, in being capable of yielding product only in ratio to the labor and capital applied to it, it must be considered like any other instrument of production *as only one of the sources of the annual product* to which value is imparted in the process of exchange by the joint work of all who take any part either in production or distribution, whether they be laborers or capitalists.

If this be admitted, it then becomes expedient to explore the subject a little further and to find out what part of the ultimate value of all products has been derived from land considered as the source of primary production. Of course it will be admitted that there can be no material work done except by men who plant their feet upon the soil somewhere. Every man must have a position on the soil somewhere, whereon to rest the lever with which he moves the natural forces towards the subsistence of man ; but the contribution of the different classes of men to the ultimate value of the annual product at the point of final consumption may almost be held to be in inverse proportion to the quantity of land occupied. For instance, it requires from six to eight thousand acres of land and about one thousand laborers to produce about five thousand bales of cotton in a season, at the present meagre proportion of product per hand and per acre. But that five thousand bales of cotton may be doubled or trebled in value, and brought from the crude condition in which it is unfit for use into the finished fabric suitable for clothing, in a factory which covers but a fraction of an acre of land.

Again, a man may be occupying an attic ten feet square in the upper story of a city building, by whose work the future capacity of that factory may be doubled. It is not many years since I paid a visit to such a man, working in a miserable attic in a cheap city building, by whose invention the productive capacity of every boot-maker in New England was more than doubled. He was the first inventor of sewing-machines in which a waxed thread could be used.

A part of what the government needs, and must secure by way of taxation, may be six per cent. of the cotton fabrics made in the factory, such fabrics to be used in clothing the government employés. The science of taxation will therefore consist either in putting a tax upon the field where the cotton is raised or on the site where the factory is built, *i. e.*, on the land applied to cotton and cotton fabrics. This is the policy advocated by Mr. George and his coadjutors ; otherwise a tax may be put upon the goods delivered from the factory, or on the cotton in the bale, or on the warehouses where the goods are stored or from whence they are distributed, or on the railways that move both cotton and goods, or upon the property and incomes of the owners of field and factory and railway. Another way to secure money for the govern-

ment is to put up the taxes upon some other products which are consumed by those who raise cotton or make cotton goods, such as whiskey, sugar, tobacco, beer, and silks, and fancy goods, and other articles, all of which the workmen upon the cotton plantations and the workmen in the factories may or must consume. Another way to secure the necessary revenue for the government is to put a tax for local purposes upon the value of the cotton plantation, upon the value of the cotton factory, and upon the value of the warehouses where the products are distributed, according to their respective place and value. Which of these taxes would be most likely to obstruct the production of the cotton farm or of the cotton factory? Therein lies the whole question of equitable taxation. At what point and in what place can the national and State governments secure from the cotton industry, or from any other branch of production, that part of the supply of cotton goods, food, or other products that the employés of the government must have in order that they may be subsisted? When viewed in this light it becomes apparent that the productive capacity of those who work upon the cotton field barely suffices for their own support, while the productive capacity of those who own or operate the railways by which the cotton bale is moved or produced from the field to the factory, suffices for the support of the railway owners, railway employés, and also, when unobstructed by meddlesome statutes, may or does yield a large surplus over, which may rightly be subjected to a tax. It may appear that the only thing that can be taken from the laborers on the cotton fields, without injury to their productive capacity, may be a part of the whiskey and tobacco which they consume; it may be that those who work in the factory barely earn a subsistence, and that what can best be spared by them would be a part of the silk, ribbons, and fancy goods, or the whiskey, beer, and tobacco which they consume, if by taxation these things cost more, and are therefore consumed less.

Lastly, it may appear that a well-conducted factory in which large capital and a small quantity of labor are directed towards the production or conversion of cotton into cotton fabrics, or of wheat into flour, or of iron and steel into machinery,—may yield subsistence to all the operatives and also furnish an income for the owners more than sufficient for their subsistence. Therefore that property in the cotton factory or in the machine-shop or warehouse might, as a *whole*, and not simply the land only, be a just and expedient subject for local taxation.

It may be assumed that since the consumption of whiskey, beer, and tobacco in this country is fully equal to the entire sum of all taxes, both national, State, and municipal, it may be both just and expedient to tax these articles which are of voluntary and not necessary use, to the fullest extent, since both workmen, artisans, landlords and tenants, clerks, and owners of capital, will all be as capable of productive

energy and even more capable of effective service, the less these articles are consumed by them.

If then, the productive capacity of man is, and may be in inverse proportion to the quantity of land held or occupied by him, does it not follow that while land may be an expedient subject for a part of the taxation it may not be rightly subjected to *all* taxes under the single-tax system, without the danger of very grave injury to the whole people? Moreover, if land were thus made subject to a single tax sufficient to meet the expenditures, it might be a great injustice to collect this tax from those who hold land according to its present value, and if such an attempt were made it would probably limit or reduce the conditional possession of the land to a few large capitalists rather than to bring about a wider distribution of land among the less prosperous classes.

Again, if the single-tax system is sound in principle, it should of course be made the single source of all public revenue,—including both national, State, and municipal taxes,—and it should then be applied to *all* land, farm land as well as city lots. There can be no variation in the application of a *principle* of taxation, but when a method of taxation is treated upon the ground of expediency, a different rule perhaps might be applied to farm land and city property; into that branch of the subject there is no reason to enter in this treatise.

If the advocates of the single-tax system had been farmers, holding the average amount of land and working their holdings year by year in order to gain a subsistence for their families and to sell a sufficient amount of the product of their farms to enable them to buy clothing, groceries, and to pay even their present local taxes, the promoters of this theory would more fully comprehend than they do now how difficult it is for the average farmer to set aside even money enough to pay the present taxes, which constitute only a part of the revenues required by the State, county or town, and which do not include any contribution whatever to the equal need of the national government. They might then realize that the source from which this money is derived is not the land itself; they would then become aware that the product of the land, especially in Massachusetts, is not due to any inherent fertility in the soil, but is due in part to the capital put into the soil in fertilizers; in part to the capital applied to the soil in machinery and tools, but mainly to the very hard work of the head and labor of the hands which is put into the processes of production by the farmer and his men who drive the plows and direct the motions of the farming tools and machinery, to say nothing of his wife and daughters who do the work of the kitchen or the dairy and supervise the hen-yards. The advocates of the single-tax system might then become aware in a practical way, if they never knew it before, that land by itself has no power

of production and no power of subsisting any one except hunters or Digger Indians who live upon wild roots. They might then discover that a tax on land must be paid by work, and that it would be only a tax on work disguised under a specious fallacy.

Let us suppose, however, that the single-tax system had been adopted, and that the farmer must pay by a single tax on land not only the taxes now assessed upon his farm and buildings, which now in part support the local government, but also all the rest of the taxes for the support of the State and municipal government, such as the taxes that are now assessed upon the railways, upon banks, insurance companies, and all other kinds of property—all of these must then be paid by the land. The farmer, having then earned this sum in addition to his present taxes, and set aside enough for the county, State, or town, will then find out that the requisitions of the national government are as great as those of the States and towns. He may then discover that although the expenses of the national government might be somewhat diminished yet even when reduced to the lowest terms the amount of the national taxes is equal to the local taxes. The national government now requires for the civil department: 1st, legislative, executive, judicial, and foreign expenditures, and for the construction and maintenance of public works, not less than $61,000,000 each year; 2d, for the naval establishment, including the construction of a navy, even of a very moderate and limited sort, not less than $20,000,000; 3d, for the military establishment, including very moderate provision for fortifications and public works of that sort, not less than $39,000,000; 4th, for the interest on the public debt, at the present time at least, $40,000,000, therefore omitting pensions and the sinking fund (and assuming what is the fact that all miscellaneous expenses are met from miscellaneous permanent receipts, such as the sale of the public lands, receipts from consular fees, and the like), yet the necessary revenues required by the national government to meet the ordinary expenses reduced to the lowest terms would not be less than $160,000,000. In addition to this, until the public debt is all paid, the requirements of the existing law in respect to the sinking fund increase rather than diminish, calling for not less than $50,000,000, while the sum required for pensions is over $80,000,000 a year; for current annual pensions, about $50,000,000; for arrears, about $30,000,000; the national revenue absolutely required therefore amounts to about $290,000,000. Therefore the annual contribution of the people to the support of the government and to the debt and pensions must be at least equal to the sum now assessed upon property for the support of State and municipal corporations which does not exceed that sum. Exact comparison cannot be made, because the data of local taxation are not as perfect as they might be. This absolutely necessary expenditure of the national government is now met in

considerable part by duties and internal taxes which are assessed upon articles of more or less voluntary use, so that any man who does not choose to contribute may, by giving up the consumption of a few things which he can do without (and perhaps be the better for doing so), put his part of the national expenses upon those who choose to pay for it.

At the present rate of income, the national government secures year by year a little over $100,000,000 from *intoxicants*—that is from the taxes or duties upon distilled spirits, wines, and beer ; from tobacco, $40,000,000 ; from sugar and molasses, $52,000,000 ; from manufactures of silk, $16,000,000 ; from fine linens, over $5,000,000 ; from laces, embroideries, and fine fabrics, which are of the nature of luxuries rather than necessities, made of cotton and worsted, from $17,000,000 to $20,000,000 ; from furs, fancy goods, fruits, sardines, and other articles of like kind, about $20,000,000. The sum of the national taxes imposed upon articles which may be considered luxuries, or articles of voluntary use rather than necessities, comes to $250,000,000, which contribution, is more than sufficient to pay all the necessary expenses of the government and the sinking-fund and nearly all the current annual pensions, the remainder of the pensions being collected from other duties than those enumerated above. When the debt and pensions are paid, the government will be able to spare all the taxes now derived from tobacco and sugar, and these war taxes may rightly be abated when the financial burden of the war is lifted by the payment of the debt and pensions, if not before.

Now if the question were put to the farmer whether he would prefer to be assessed by a single tax upon his land, or to contribute his proportion by a tax on his glass of whiskey or beer, even on his sugar and molasses, or by way of the laces and ribbons which his wife and daughters buy for their Sunday clothes and bonnets, it is probable that he would not hesitate long in which way to make his contribution to the national expenses. In fact, there are very sound reasons why it is expedient that the national revenue should be in some part collected by indirect taxation, and should be imposed mainly upon articles of common even though not of necessary use, so that the ratio of the national taxes should be more nearly in proportion to the population than to the valuation on property. This system of indirect national taxation, which may be paid about *per capita*, may be justified, because the function of the national government is rather to give protection to the people of the whole United States than to the property of the several inhabitants of the particular States, which is fully protected under State laws. Moreover, if the national government elects by vote of the people to collect this revenue, and to maintain custom-houses for enforcing this system of taxation, this method is not inconsistent with the true prin-

ciple of free trade, as alleged by Mr. Henry George. Custom-houses may be maintained for the single purpose of collecting the revenue, without any conflict with the theory that foreign commerce should be free from taxation imposed for purposes of private gain. In fact, if the government is to collect any part of its revenue by an excise on spirits, beer, and tobacco, it becomes absolutely necessary to maintain custom-houses in order to tax imported wine, beer, and tobacco in the same way. Hence even the most bigoted free trader may justify custom-houses for the purpose of securing a revenue from specific articles.

Again, let it be supposed that the taxes are to be put on land, including farm land, does it not follow at once that the man who possesses land and labor supplemented by *insufficient* capital may become unable to get such a product from farm land as would enable him to subsist and pay his taxes? What would of necessity ensue? Would it not be that under this system, land would fall more and more into the possession of great capitalists, who, by the application and use of machinery, fertilizers, and other improved methods, might be able so to increase the gross product of a given area of land as to enable them to pay wages to those who are now independent farmers, and in addition to secure from the land such product as might enable them to meet the taxes? This course might perhaps be justified as the right method of getting the largest amount of product from land in ratio to the labor put into it, but the justification of this course runs in exectly the opposite way to that upon which the single-tax system is sustained. It would tend to concentrate the land in the hands of a few capitalists rather than to increase the number of small farmers or of small holders of land under the new conditions, or to cause land to become more widely scattered among a greater number of people. In other words, the small owners or possessors of land, who may, by their indomitable industry, now get a subsistence from it, and gradually become possessed of capital requisite for the increase of its product, might be crushed by the additional burden of the single tax. Increase the burden of taxation upon the small farmer and it may happen, and it probably would, that the greater part of the land would be taxed out of his possession, instead of the number of independent farmers being increased.

Again, if we take city lots as an example, and suppose them to be subject to the single-tax system, we are led inevitably to the same conclusion, to wit: that the single-tax system would tend to concentrate the possession of city lots or land in very few hands, and would ere-long convert all small owners into tenants—the very reverse of what has been aimed at by the promoters of the system. This subject can be illustrated by an examination of the present condition of the city of Boston, and by comparing the taxes as they now are with what they would be if the single-tax system were adopted.

The sum required for the annual expenses of the city of Boston is a little under $12,000,000. Of this sum $10,000,000 is directly assessed upon property within the city. The remainder is derived from taxes upon corporations, savings-banks, and the like, collected by the State and distributed among the cities and towns. The total value of the property within the city, as given by Mr. Thomas Hills, Principal Assessor, under whom the present system of assessment has been developed in the most perfect manner, was in 1888, $764,000,000—divided as follows : valuation of land, $333,000,000. The valuation of buildings $230,000,000, and the valuation of personal property, aside from that which is taxed through the State, a little under $201,000,000. The direct tax upon property, as now assessed, on land, buildings, and personal estate has been at the rate of about $13.50 per $1,000 in recent years. The debt of the city is kept nearly at the maximum permitted by law, and there are few who do not think that some of the expenditures for which money is borrowed might not well be included in the estimate of taxes. If, however, the revenues which are now required, aside from the debt, were raised by a single tax on land, the rate of taxation would rise from $13.50 per $1,000 and would be not less than $35 per $1,000, for city, county, and State purposes only. The population of the city is in round figures 400,000, their share of the national tax averaged *per capita* comes to a little within $2,500,000. If this national tax were assessed by a single tax on land, the amount which would be assessed in Boston would be vastly increased. What the ratio of the value of the real estate in Boston to the total value of real estate assessed throughout the country at the present time may be it is impossible to say. In 1880, the valuation in Boston of land and buildings was three and one third per cent. of the total valuation of land and buildings throughout the United States assessed for the purposes of local taxation. The population of Boston at that time was only three quarters of one per cent. of the total population of the United States. Such might be the ratios in many other cities. Assuming the same ratios to hold at the present day, and that Boston should be called upon to pay its share of the national expenses assessed by a single tax on land, and that Boston land bears the same ratio to the valuation of the United States that it did in 1880, her proportion of the present national revenue would be $12,000,000 in place of $2,500,000 ; raising the rate of assessment under the single-tax system to over $70 per thousand—$35, or one half, for State and municipal expenditures, and $35, or one half, for national expenditures. What effect would a tax of seven per cent. upon the present valuation of property have upon its future market valuation, or upon its rental value which must be determined for the purpose of being subjected to the single tax ?

Would not such an assessment instantly deprive land of a large part, if not of the whole of its market or salable value? To this the advocates of the single-tax system may assent and may affirm that this is the conclusion which they desire to reach. They may then hold that any person who desires to become possessed of a piece of land might then do so without paying out any considerable sum of money for the purpose of primary possession. *But what would be the conditions?* Any one might perhaps become the conditional possessor of a piece of land with little or no cost at the outset, but it would only be on condition that before he himself could get any benefit out of it he must make use of it in such a way as to be able to pay a sum equal to seven per cent. of its present valuation, before being able to set aside any part of the product of the land for his own use. Or, put it in another way, let it be assumed that the people of Boston or any other city 400,000 in number were subjected to the payment of a tax of $24,000,000,—$12,000,000 for State and municipal purposes, and $12,000,000 for national,—that comes to $60 per head, or $300 a year for each family of five persons. Under these conditions any one who might choose could become entitled to a piece of land previously unoccupied in Boston, free of cost for purchase, but subject to the condition that he and his family numbering five persons should earn by the use of that land $300 per year, to be devoted to the first lien of the State and nation; *i. e., to the single tax*, before setting aside any thing from their work for shelter, clothing, or subsistence. Under these conditions what benefit would the conditional possession of land under the single-tax system be to the poor man? Could any one but large capitalists afford to accept even a gift of land under such conditions? Would not the tendency of these conditions be to depopulate the peninsula of Boston, and to concentrate the land in fewer hands than possess it at the present time under the present conditions?

Again, suppose that this did depopulate Boston and other cities: and did tend to the diffusion of population, would not the burden of taxation go with them to other land which they would then occupy? Wherever they might find an abiding-place, there the single tax on land would extend over the land which they might occupy, because the growth of society adds the unearned increment to the site value of land according to their own theory, and the tax would go with the site or rental value.

Or again, let it be assumed that the same people would remain in Boston, that some one would accept the possession of land under the new conditions, and that it would either cost them nothing, or that it would cost them but a small part of the present valuation in order to obtain such possession; how would the single tax of $24,000,000 then be assessed? There would either be no valuation of land to serve as a

guide for assessment, or else there would be a valuation very much less than the present, while there would be no change in the burden or amount of taxation, therefore if the valuation went down the rate would go up. Advocates of the single-tax system say that the site value or rental value of each lot would remain, owing to the existence of a dense population and the necessity for the use of such lots, even though the cash or money valuation had disappeared wholly or in part. Who would then determine the site value or rental value of each lot, and in what way would the title be vested in those by whom capital must be spent upon the land in order that it may be of any productive use whatever? Would it not become necessary for the city itself to enter into contracts for taxation upon the site value or the rental value *at a fixed rate for long terms of years?* Who would occupy land or spend any capital upon it if subjected to such a heavy burden, unless under a permanent agreement or bargain, which would simply be holding under a lease from the State or city? What would that be but a continuance of the worst form of land tenure—the possession of land under a perpetual ground-rent?

These are simple and practical questions. The sum of all taxation required for national, State, and municipal purposes in the United States is not far from $700,000,000; if that whole sum is to be raised by a single tax on the valuation of land, that part which would fall upon the cities is indicated by the simple fact that the share of the city of Boston would be $24,000,000. The share of other cities and towns would be in similar proportions. The share falling upon the best farm land would also be much greater than it now is, and the share falling upon poor land or land now uncultivated and unoccupied would be very small. It would then of necessity follow that only those who possessed large capital could afford to hold or possess lands under the new single-tax conditions either in the cities, towns, or the best positions for farms; while the very poor, in proportion to their poverty, would be forbidden the possession of land except at points the most distant from the centres of industry. To this conclusion the logic of the system inevitably tends: what answer can its advocates give to these propositions and these demonstrations?

The case must be considered theoretically, because there is no community now existing in which the public revenues are derived from a single tax upon land or site value. The nearest approach to the system was made by the Directory of the French Republic. It broke up a very bad system of land tenure, wholly different from any thing known in this country, and led through great disasters to the present system of compulsory land distribution to which France is now subjected.

The writer is not to be held as fully approving either of the present method of collecting the national taxes, or the present method of

assessing both real estate and personal property for municipal purposes, there are great improvements which may be made in both branches. What he has endeavored to prove is that there is no abstract principles of taxation by the application of which either the causes of poverty may be removed or land forced into wider distribution or more productive use than under the present conditions. Taxation is as yet an experimental science to be tested by its results and brought by experience into the conditions under which the largest revenue required for the use of the government economically administered may be raised with the least burden to the people and the least obstruction to their free choice of the pursuits which they may follow in bringing forth from the soil, the factory, the mine, or the sea that annual product from which all taxes, wages, earnings, profits, and rents must be alike derived.

We are now led back to the consideration of the only grounds upon which the single tax system might be justified, to wit : given a certain sum necessary to the support of the government to be derived from a single-tax upon land,—given a certain sum of rents derived from land by private owners and now enjoyed by them which would be more or less sufficient to meet the necessities of government, whatever the actual facts in regard to the sum of rents may be ; given as complete an act as it might be in the power of men to devise to secure to the people by a single tax upon land a sum equal to the rents now secured by private persons through their possession of the land under existing laws, such sum to be devoted to the support of the government and all other forms of taxation done away with ;—would those who might then come into the conditional possession of land under these new conditions of a single-tax tenure thereafter be capable of distributing the tax upon the consumers of the products derived directly from the soil, or converted in factories, or distributed in warehouses ? In other words, would the conditional possessor of land under the new system bear all the taxes and be incapable of securing rent or profit or both rent and profit from land ? Would there not be a distribution substantially of the same kind, in the same amount, and upon the same persons that now do the work from which rents and taxes are now derived,—whatever kind of work, mental, manual, or mechanical, that work may be ? The sum of all the taxes would be the same that it is now,—the sum of the gross value of the product would be subject to the same variation that it is now ;—that is to say, it would vary with the seasons and with the amount of capital and labor which might be applied to production. The amount of all work of all kinds would be substantially the same that it is now ; a certain proportion of the people would of necessity be devoted to agriculture, another proportion to the mechanic arts, another proportion to manu-

factures and mining, another to trade and transportation, and another to professional services. Would the joint product of all these forces be increased or would it be distributed in any more equitable or even manner? If not, the change in the conditional possession of land might not be worth the cost and difficulty of the undertaking; if otherwise, the change might be justified.

Again, taking once more the three examples of the farm, the factory, and the warehouse: the number of persons in possession of sufficient capital who could make use of land for cultivation would probably be lessened if the occupant were called upon to submit in each year to a first lien of taxation through the land upon its crops to double, treble, and quadruple the amount which the farmer is now called upon to pay. A great number of small farmers now gaining a fair subsistence by their own labor and due in least proportion to the use of capital might then be compelled to take the position of the employed rather than the employer. No capital would be invested in farming unless the product of the farm could be charged, first, with all the taxes imposed upon the land as part of the cost of production, and, second, charged with all wages paid and materials used upon the farm, as a part of the cost of production. Unless in addition, over and above these elements of cost, a customary profit, interest, or compensation for the use of capital and for the services of capitalists could also be recovered from the sale of the products, the products of agriculture would be diminished until they could be so charged. Under these conditions, the tax upon farm lands, equal under the new conditions to what both rent and taxes now come to, must ultimately fall wholly upon the consumers of farm products.

Next, in respect to factories, the area of land occupied by the largest factories and those that are the most productive, is very small in proportion to the product of the factory, and as steam and electricity are rapidly supplanting or taking the place of water-power, the choice of position for large factories may be made almost at will with a view to occupying lands of a minimum rental or taxable value. Under these conditions it would probably happen that the large factories would be relieved from a considerable part of the present burden of taxation upon them if they were called upon to pay a tax only upon the land. Under the present conditions the owners of capital in the factory have no difficulty in charging the heavy tax to which they are now subject, to the cost of the goods, and unless they can recover the cost of material, the wages paid and the taxes as well, from the sale of the product, with an adequate compensation over and above to pay for the service of that capital and for the support of the owners, that branch of manufacture fails to extend, and may even ultimately fail to exist. Since the consumers of goods made in the factory now pay all the heavy

taxes upon the goods made in that factory, would not a single tax on land of less amount be as surely put into the goods, and would not the consumers be forced to pay that tax? What effect would such a single tax on land have upon the profits of the owners of factories?

In respect to the mechanic arts customarily conducted in small shops or buildings less costly in proportion to the product than the factories, and which must of necessity be placed in the neighborhood of the population who are served by the mechanics,—a single tax upon the land occupied would, without question, increase the burden of the occupants far beyond their present share of taxation. Or again, unless under this single-tax system the mechanic could recover from the sale of his product adequate remuneration for the tax, he would not occupy the land and would not pay the single tax. In point of fact, the burden on the mechanic would be a little heavier than it now is, and would surely be distributed upon those who consume the products or require the services of mechanics. With respect to mines: if all taxes should be assessed upon land, including land underlaid with coal, iron, and other mineral products, the proportion now borne would doubtless be greatly increased; but in this case, unless those who occupy the mines under the new conditions could recover the labor, profits, *taxes*, and interest in substantially the same proportions and in the same way that the present taxes are now recovered from the consumers of the products of the mines, these mines would not be worked to the same extent which they are now worked, prices of the products of the mines would rise, and ultimately the consumer would pay all the additional taxes upon mining lands in addition to the present cost of mining these products.

Or in respect to city warehouses, the highest rents are now paid for the choice of position whereon to place the largest buildings, most convenient for distribution. These excessively high rents, however, add to the cost of distribution much less than the low rents of small shops in which a relatively small traffic is carried on. If the single-tax system is adopted, and all taxes are paid upon land, the burden will fall most heavily upon city lots, as illustrated in the example of the city of Boston, but in this instance again, unless this increased burden due to the single tax on land can be charged to the cost of distributing the goods sold in the warehouses, coupled with a suitable charge for the services of those employed therein, the work will not be done in that way. When the warehouse is taxed out of existence in which the cost of distributing goods or wares is least on account of the facilities which it gives, the burden upon the consumers would increase; they would pay a much greater sum than they now pay for the cost of distribution.

If these would *not* be the results of this system, what would they be? The advocates of this system of a single tax on land are invited to answer this question.

If the reasoning on which this treatise has been prepared is logical and conclusive, it therefore follows that the attempt to put the charge for all public revenues wholly upon land, while it might do away with an element of charge now called rent in part or wholly, and while it might alter the sum paid for the choice of position and for the occupation of land under new conditions,—yet it would tend on the whole to concentrate the conditional possession of land in fewer hands and make it a much greater necessity that the occupant of land should also possess a considerable capital than is now needed. It would *not* tend to an increased product, and it would *not* remove from the consumers of the products any part of the burden of taxation or of the rent they now pay. It would not in any way affect the process of distribution except by increasing the disparity between the rich, the moderately well-to-do, and the workman who depends wholly upon his work for a living. The proposition can therefore neither be sustained as a true principle of taxation nor as an expedient method of raising the public revenues.

The final conclusion of the whole matter might be summed up in a very concise statement : land attains value in exchange (rental value or site value, whichever term may be applied) only in ratio to the use to which it may be put as a source of primary production, or as a place on which production can be continued or from which distribution can be made. Land cannot be divided or in itself applied directly to taxation, because taxation is only one mode of distributing the products of land. Production cannot be secured without work ; a tax on land is therefore a tax on all the work of production and distribution in practically even proportion without regard to the quality of the product or the distribution : it falls on all work, whether the product be necessary to life or of voluntary use, and whether the distribution be a mode of necessary consumption or of luxurious consumption. Ninety per cent. of all the people of this country belong in some sense to the working class, according to the narrow interpretation in which that term is commonly used ; that is to say, they work for a living, either directly upon land, or serve others either for small salaries or for moderate wages, producing little more than is necessary for their own consumption. Perhaps about one tenth of the community may be counted among the more prosperous class, that is, among those whose previous earnings have been saved in sufficient measure to relieve them in part or wholly from the necessity of present work or to aid them in doing much more work than is needed for subsistence. A single tax upon land can only be a tax upon all production : it would therefore be a tax upon all consumption of every kind, and therefore might be a true method of distributing the burden of cost of the government upon every class *without discrimination* and without regard to the relative productive capacity of any member of either class.

The merits of the system of a single tax upon land would be that it could be readily and surely collected, and that the burden of such a tax would force the attention of every man and woman to the necessity of limiting the expenditures of the government to the least possible sum necessary to the conduct of its functions.

The fault of the system would be that it would leave no room for expediency in relieving those least capable of sparing a part of their product in order to put that burden upon those whose productive capacity might be greater. It would also do away with the discrimination now somewhat blindly exercised in the choice of subjects for taxation, by relieving whiskey, tobacco, beer, and other articles of voluntary use or luxuries from all taxes. The whole subject must therefore be reviewed upon the grounds of expediency and not of principle. As a principle of taxation, a single tax upon land might be very equal in the burden which it might impose upon all consumers, but would it be equitable in the manner in which it would prevent the division or distribution of this burden in ratio to the productive capacity of each producer?

In this attempt to treat the subject of taxation, I have been led almost in spite of myself to the conclusion that the only way in which those least capable of being taxed, because least capable of making a large product, can be exempted in some measure, from the necessary weight of taxation, is through a system of indirect taxation upon consumable goods rather than upon property; for the reason that wherever or however taxes are wholly imposed upon property (except by a succession tax), the owner of the property, whether in land or capital, can find out a way of distributing the tax and of collecting it from others; while an indirect tax assessed upon consumable products may be avoided wholly or in part by him who refrains from consuming any such subjects of taxation. For this reason, so far as public revenues can be derived from whiskey, beer, tobacco, and wine, or other similar articles of purely voluntary consumption, such a tax may be the most expedient, least burdensome, and although not equal yet perhaps the most equitable mode of collecting a considerable part of the revenue, with the least injurious effect upon productive energy. This conclusion has been reached by the writer by divesting the mind as far as possible of the conception of money as a measure of taxation, and by treating taxation wholly as a mode of work subject to be paid in greatest proportion in the first instance by those whose working capacity, either mental, mechanical, or manual, is greatest, or by those who know how to make the most productive use either of land or capital, wherever the burden may ultimately fall when the tax is finally distributed.

RELIGION AND LIFE

RELIGION AND LIFE.

IN the preface to this book I have given the motive of my literary work.

For nearly fifty years I have been engaged in the practical work of this world, occupied in the functions of life which the priest in almost all churches and under all the various phases of religion has been apt to disparage and to hold in slight repute.

The result of my own observation and experience has sufficed to convince me, if it may convince no one else, that the power which makes for righteousness compels the very selfishness of man to work for the material welfare of his fellow-men. It matters not that the stock and bonds of a railway corporation may be converted into the loaded dice with which an unconvicted felon can defraud a portion of the community; the railway system to which he may apply such nefarious methods must yet be itself conducted so as to carry food to the hungry, clothing to the naked, and shelter to the homeless. The beneficent work which he is compelled to do lives after him; the evil which perverts his own life may be buried with him in his dishonored grave. The older I grow the more profoundly convinced have I become of the truth of a proposition made I think by Sir Henry Maine in one of his works:

"The trust reposed in and deserved by the many makes the opportunity for the fraud of the few."

In the subsequent little tract, I have referred to my own experience in dealing with men for the sale of goods counted even up to more than a hundred million dollars' worth, with but fractional loss for lack of full and prompt payment when the bills were due. For the last twelve years I have been at the head of a Mutual Insurance Company whose principal function is to prevent loss by fire in the textile factories and other works which are insured by it, paying indemnity when unavoidable loss may occur. The system rests but little upon the legal obligations of the members each to the other, but almost wholly upon their mutual good-faith. In thirty-eight years this corporation has insured over thirteen hundred million dollars' worth of property—yet it has

never been subjected to a lawsuit or been obliged to have recourse to a court on its own behalf. In its whole history it has met but one loss, which could even on suspicion be imputed to a fire set by an owner or manager of the works in order to defraud the corporation, and that single suspicion could not be sustained by any adequate proof. I have myself been subjected to heavy loss, due to the perversion of trust on the part of the head of a great railway corporation, and to deceit practised upon the Board of Directors ; I am well aware that base men still possess great influence in political life ; yet my confidence in human nature remains the same, and my hope of the ultimate attainment of human welfare is unimpaired.

The malignant forces which have caused war and wretchedness among men, and the perversion of public and corporate trust to purposes of private gain and fraud, may continue perhaps for a long period. There must yet be one great convulsion, perhaps more, in other lands away from us, by which dynasties and privileges may destroy themselves ; yet there again upon the ruins of the past shall surely be built up the welfare of future generations of men, and then "the ships that pass between this land and that shall be like the shuttle of the loom weaving the web of concord among the nations."

I have endeavored to present this ideal aspect of life based upon the study of material things in the subsequent pages, which first constituted an address a little out of my common line of work, and which I have entitled *Religion and Life*. I submit this essay as the conclusion of the whole matter.

The following essay was prepared for a meeting of the Norfolk Unitarian Conference, and afterward read at a meeting of the Unitarian Club in Boston.

The writer had not before taken any part in the treatment of religious subjects ; but being impressed with the necessity of bringing the functions of the preacher more into line with the necessary work which must be done so long as man dwells in the body which he occupies while upon the earth, so that it may be sustained, he ventured to hold up the layman's mirror for the clergyman to look upon, in order that the true purpose of the material work which men must do might be more justly comprehended.

The separation of matters pertaining to religion in a technical sense from the life which men must of necessity lead has, I think, a great deal to do with the waning interest in the religious, or the irreligious creeds as some of them may more rightly be named. It may also account for the lesser number interested in the organization of churches and parishes. The aspect of life to the busy student of affairs, who is also occupied in the daily work of business, is one of profound interest to him who is capable of looking a little below the surface and comprehending the true function of himself and of his associates. When I was called upon a year or two ago to address the alumni of Andover

Theological Seminary,[1] I chose for my subject the intimate relations of ethical and economic science ; and, as I desired to make a good appearance before the graduates, I asked Dr. William Everett to give me a Latin phrase by which I might convey in sonorous words the idea that unless the human body were well nourished and cared for there could be no harmonious development of the human soul or spirit. He instantly replied, "Non est animus cui non *est* corpus." Has a man a soul whose body does not eat? Not here, certainly,—perhaps somewhere else. The sound mind, the true spirit, and the well-nourished body are but three phases of the same life, each the complement of the other. As Dr. Reuen Thomas said at the opening of our Union the other day, quoting from another : "'He who treats of food treats of morality also.'" If I and other men like me did not preach the potato gospel, on what fulcrum would you rest the lever of your spiritual gospel?

Now, then, according to the old Orthodox creed, the world, the flesh, and the devil are held to be absolutely synonymous. Therefore, the business man who is occupied in the world with the concerns of the flesh, and who really knows what his function is, rejects the whole creed without any hesitation. He does not stop to reason or to determine in what way the world and the flesh may become of the devil. He simply says : "That man does not know what he is talking about. I wont listen to that sort of thing any more." And he stays away from meeting, as I should do if I could only listen to the ordinary treatment of the subject of religion as practised by most of the Protestant clergy. The Catholic symbolism would be much more gracious to me. Is it just or expedient that men should be repelled from thinking about the true aspect of religion and life by false doctrine? Religion, in a true sense, and life can no more be separated than the soul can be separated from the body, except by physical death. Is it not important that this very foundation, this fact of existence itself, should become a part of the common knowledge and thought of every-day men and women?

I think the common absolute misconception of the real material work of the world and the separation of the functions of religion from the functions of life grow out of the old dead creeds. I suppose everybody has read "John Ward" and "Robert Elsmere"; and they may have been subjected to the same intellectual difficulty to which I have been subjected,—namely, I have found it utterly impossible to put myself in the place of either John Ward and his wife or of Mrs. Elsmere

[1] When first dictating this memorandum I made a singular slip by using the words "Andover Theological *Cemetery*," Perhaps I might have let "cemetery" stand except for the vigorous, active, and good work which is now being done there by Prof. Egbert Smyth and his associates.

and her husband. I cannot conceive that the old dogma or necessity for a formulated belief should attain such complete control over any well trained or well developed human intellect at the present time. My imagination fails to grasp the sense of importance attached to matters of belief like those with which the two men struggled. In order to find out how such men could exist, it occurred to me to find out how children or young people might be educated, even in our day, so as to bring them into such a dreadful condition of mind.

I accordingly started a day or two since on a short walk to the headquarters of the various denominations. I first went to the Episcopal counter in the Old Corner Book-store, and asked if they had a creed to sell, to which the reply was made : "Yes; here it is. The price is two cents." I bought it and went on to the Congregational building, where I asked a young man if there was such a thing as an Orthodox creed. He said he believed they had one; and he went to the back part of the store, hunted about for a while, then called another young man to help him find the creed. I thought this a good sign,—that it took two men to find one copy of the Orthodox creed in the principal Orthodox book-store. I bought that one for two cents. He then informed me that the Unitarian building was on the next corner, and that I might perhaps find a Unitarian creed there. On application I was given a copy of James Freeman Clarke's pamphlet called "Why am I a Unitarian?" I then went down to the Tremont Temple, and was from there directed to the headquarters of the Baptist denomination on Washington Street. The Baptist creed cost me five cents. Then I went back to the Methodist book concern in Bromfield Street, where the Methodist creed was sold to me for two cents; and lastly, I went to the Universalist bookstore, where they presented me with a simple and excellent creed printed on a card, in three articles, without any charge. Since then I have secured a Presbyterian creed for ten cents. It therefore appears that the price of a creed ranges from nothing up to ten cents; and I find the value to be in inverse proportion to the price. I particularly like Article III. of the Universalist creed: "We believe that holiness and true happiness are inseparably connected, and that believers ought to be careful to maintain order and practise good works; for these things are good and profitable unto men." With James Freeman Clarke's creed you are doubtless very familiar. But now we come to what I cannot help calling, without intending any want of respect, *the antique and horrible*. If children are brought up on spiritual food of the sort contained in these so-called religious manuals, "John Ward" and "Robert Elsmere" are not so difficult of comprehension. I will make a few extracts without identifying the different creeds, in order to bring out the whole horror of the thing in the most conspicuous way :—

1. "*Q.*—What is the inward and spiritual grace?

"*A.*—A death unto sin and a new birth unto righteousness: for, being by nature born in sin, *and the children of wrath*, we are hereby made the children of grace."

2. "We believe in the resurrection of the dead, and in a final judgment, the issues of which are *everlasting punishment* and everlasting life."

3. "We believe that man was created in holiness under the law of his Maker; but by voluntary transgression he fell from that holy and happy state, *in consequence of which all mankind are now sinners, not by constraint, but by choice*, being by nature utterly void of that holiness required by the law of God, positively inclined to evil, and therefore under just condemnation to *eternal ruin*, without defence or excuse."

4. "Of original or birth sin. Original sin standeth not in the following of Adam (as the Pelagians do vainly teach); but it is the corruption of the nature of every man that naturally is engendered of the offspring of Adam, whereby man is very far gone from original righteousness, *and is of his own nature inclined to evil, and that continually*."

5. "By the decree of God for the manifestation of his glory some men are predestined unto everlasting life and others *are foreordained to everlasting death.* . . . The rest of mankind God was pleased, according to the unsearchable counsel of his own will, whereby he concedeth or withdraweth mercy, as he pleaseth, for the glory of his sovereign power over his creatures, *to pass by and to ordain them to dishonor and wrath, for their sin, to the grace of his glorious justice.*"

Amid the lurid glare of these unholy flames of hell a faint light still burns upon the altar to the unknown God; and Saint Paul may speak to the heathen to-day, as he did to the heathen of old: "Whom ye ignorantly worship, him declare I unto you."

The fifth creed in which these last awful dogmas are to be found cost ten cents. Perhaps these extracts are more familiar to the clergy than to the laity. I confess that, although I have of course been perfectly familiar with the existence of these conceptions which admit the possibility of righteousness to man only at the cost of imagining Satan to have become the Supreme God, yet, when I find that young men and young women can now actually buy the books containing such pagan conceptions of God, I am almost inclined to wish that there were a power in society like that arrogated to himself by the Pope, so that these fearful causes of infidelity might be put in the Index Expurgatorius, and forbidden to those whose minds may be depraved or whose hearts may be saddened by them.

These are examples of what is called religious teaching from the creeds, catechisms, or manuals of the five denominations of what are

called Protestant Christians, who outnumber all others in this country, even including the Catholics, and who outnumber all Protestants among that part of the Christian population of the world. Now, if this antique and horrible doctrine of original sin and eternal damnation is incorporated in the manuals and catechisms used in what is called the religious teaching of children and of young men and young women,—if such declarations of necessary belief are furnished to clergymen to be used in preparing their sermons,—then one cannot wonder very much at the somewhat irreverent title of the only one of Ingersoll's pamphlets that I have ever read, "An Honest God the Noblest Work of Man." Nor can one wonder that Islam secures a thousand converts from gross Paganism to one secured by a Protestant missionary.

If, on the other hand,—what I believe to be the truth,—these formulæ are simply a repetition of dead, exhausted superstitions, reprinted because men dare not break with old habits and customs, their continued publication and sale by the accredited agencies of their denominations imply such intellectual dishonesty on the part of their leaders as to deprive their representative preachers of any great influence. The clergymen who tolerate the use, but do not believe these creeds, may be most excellent, kindly, and benevolent pastors, an aid and a comfort to their congregations, but can they be leaders of religious thought? It seems to me impossible. Do they not really attain influence only in proportion to their freedom from the influence of these dogmas?

Objection is made to the introduction of religious teaching in the public schools, and a vehement controversy is now going on upon this subject. I find my sympathy in this connection mainly with the Catholics and the Jews rather than with the Protestants. If I were forced to choose which influence I would prefer to have prevail in a school to which I might be obliged to send a child, I should very much prefer the Catholic treatment of the subject of the future life to the Calvinistic. The conception of purgatory imputes less dishonesty to the Creator than the conception of a perpetual hell; and I think that Catholicism can be more readily adapted to the conditions of modern life, and will be more surely modified and purged of that which is bad or erroneous, than the religious system of the Calvinist, which is based on such a logical method that, if the premises are accepted, the conclusion of necessity ensues, as Calvin reasoned. And this conclusion leads directly toward atheism rather than toward modification of religious conceptions, such as the Catholic Church may adopt and may teach. Witness St. George Mivart's two articles in the *Nineteenth Century*, in which the views of a Catholic scientist of the highest ability on evolution and on Biblical criticism are given. It is not only within a single generation, or at the utmost within two, that the Unitarian or

rational type of religious belief has been brought to the notice of every-day or common people who have not much time to devote to the subject? Is it not the function of the Unitarian to bring the concepts of religion into the daily work of men? If the world and the flesh are in their nature bad, corrupt, misleading, and treacherous; if Scriptural texts can be and are perverted so as to condemn worldly prudence, foresight, economy, and the accumulation of capital,—as they are,—then he who feeds the hungry, clothes the naked, and houses the poor in ever increasing abundance, comfort, and welfare is outside the pale of faith, outside the performance of good works; he is but prolonging the lives and multiplying the numbers of those who, being "conceived in sin and born in iniquity," must go down to everlasting damnation.

Now, the very conception of commerce is that of mutual service; yet the very common idea which prevails, especially among the clergy, is that in all trade each man is trying to get an advantage over his customer, that in all manufacturing each man is trying to make the poorest substance that will pass the test of the market, that each man will cheat his neighbor, adulterate his goods, put on false marks, and mislead the ignorant and the poor, provided he does n't get found out. This conception of commerce is so far from the truth as to be almost absurd.

Yet I do not wonder that the representatives of sects who deal in their book-shops in total depravity and eternal punishment at two to ten cents per creed should suspect salt in the sugar, sawdust in the spice, pipeclay in the cotton, or strychnine in the beer in which their parishioners deal. When men impute to the Almighty motives, methods, and acts which, if avowed or applied by any merchant or manufacturer to the conduct of his own life, would destroy his credit and cause distrust of his character, their influence can only be maintained in inverse proportion to the intelligence of those whom they undertake to teach.

I have often had occasion to point out, as others have done before me, that fraud, peculation, and dishonesty in trade are conspicuous because they are *not* common. What were the number of dishonest transactions to-day compared to the number of opportunities for theft, fraud, and cheating? What is the best and most profitable account on the manufacturer's or merchant's books? It may be and often is the guaranty account, *i. e.*, the sum charged to the cost of goods and credited to guaranty, to protect the merchant against bad debts. My father was a merchant for over forty years, dealing with men during the period when capital was scarce and credits were given on almost all transactions. Yet he told me that the losses by bad debts which he had made through his business career would not come to fifty cents on each one hundred dollars' worth of goods sold. My business experi-

ence began forty-six years ago, when the customary credit on domestic cotton fabrics was eight months, and on woolen fabrics ten, sometimes twelve, months. Before the railway had sunk time and distance in a fraction of a cent a ton a mile for the cost of moving the goods, the necessities of the work of distribution required long credit to be given. From that time to the present I have been personally connected with factories whose sales have amounted to at least a hundred million dollars' worth first and last ; and I can safely say that the losses by bad debts throughout this period on the aggregate of these transactions have not exceeded fifty cents, and would probably be less than twenty-five cents, on each one hundred dollars' worth of goods sold. The factories, workshops, and warehouses on which the company of which I am president now carries ninety million dollars of insurance, and, in connection with other companies of like kind, organized in a mutual association for mutual service to the manufacturers, have outstanding policies in all to the amount of four hundred and fifty million dollars. In the next twelve months the value of the goods and wares which will be turned out by these establishments will be more than eight hundred million dollars. In my judgment, if the owners of these establishments would pay any guaranty company one half of one per cent., fifty cents on each one hundred dollars, or four million dollars, to guarantee the prompt payment of the eight hundred million dollars when due, the profit in that transaction would be one half that sum, or two million dollars. What inference as to the character of the community is to be drawn from these facts ?

If the great mass of men did not on the whole intend to live fairly and to deal fairly with others, no commerce would be possible on any large scale. In proportion as the law of mutual service is wittingly or unwittingly applied does the service increase with corresponding welfare to each and all.

In my own experience, I have observed that the best goods of every kind, whether high-priced or low-priced, of which the quality is maintained uniformly through a long term of years, yield the best profit to the manufacturer.

Another rather curious result is this : that when the reputation of any given class of goods is thoroughly established on its name or trade-mark, the middle-man or dealer can secure but the least margin of profit from its sale.

On the other hand, goods which are badly made, adulterated, or which depend upon mere fashion or fancy for their sale, last but a little while, and are dangerous to all who touch them. The skill of the dealer is in meeting the fashion and in rightly estimating the time in which a given fancy or fashion may last, and in getting a big profit on the first sales to cover the possible loss on the stock left when the fashion changes.

In making the broad statement that the law of commerce is, on the whole, one of mutual service, subject only to such exceptions as strengthen the rule, I do not ignore the enormous sales of quack medicines, perhaps the most obnoxious, immoral, and even wicked method of raising money on the pretence of service. But herein, again, comes the necessity for raising the standard of individual intelligence. In this matter, as in speculating in Wall Street, there would be no wolves to shear the lambs if the lambs did not bring their own fleeces to be shorn. If people would not ignorantly dose themselves or ignorantly buy quack medicine in order to take alcoholic stimulants in disguise, the traffic in quack medicines would not pay. It implies a knave on one side and a fool on the other, because it always takes two to make a bargain. That is to say, it is only people who are very credulous in respect to matters on which they are uninformed who are cheated or misled in their purchases of any thing; but, in this matter of trade, all that is necessary is to find out what is the character of the maker or the dealer of whom you buy, and then you need not give a thought to the quality of the goods you buy: they are sure to be as good as the price you are willing to pay will permit. How curiously perverted words become in use! We talk about bargains. Now, if you attempt to bar a reasonable gain for the service rendered by the dealer of whom you buy, you will be sure to be cheated in the long run, because you covet what he ought to gain.

The whole country is now agitated by different phases of what is called the "labor question," and there has never been a period in the history of any country when so much attention has been given to the study of the forces which make for material abundance and human welfare. There are all sorts of empirical devices for improving the standard of living; but to every one who brings to this subject an honest mind it soon becomes apparent that the only way to raise the general standard of living and to benefit the community as a whole is to develop the personal character and capacity of each and every individual member of the community to a yet higher plane. The primary source of all wealth is in the manual and mechanical work which is done by the many under the direction—not control but leadership—of the few, by whom all are served alike. It is as true that capital is placed at the service of labor by the capitalist as it is that labor serves capital in the production of commodities. There never was a time when science and invention had placed such opportunities in the way of young men and young women to live well as at the present time. But the stream cannot rise higher than its source; and if many remain ignorant and incapable of taking advantage of the opportunities which science and invention have placed at their disposal for developing the products of our mother earth, then even a low standard of subsistence may with difficulty be attained, and the hardships to

which the many are subjected will continue to be imposed upon them by their own incapacity.

The mind of man is the important factor in material production. Character counts for more than capital in getting a living. He makes the best use of his capital who by the use either of his brains or his capital, while serving himself, at the same time raises the earnings of the workmen to the highest point by reducing the cost of production to the lowest ; and that is the law of progress. The dollars of the gain which the capitalist earns under these conditions are but a tithe of the service which he renders to all ; he may benefit his fellow-men vastly more in the getting of his fortune or the gaining of his wealth than he possibly can in the spending or disposing of it even for charitable purposes.

But the work in which the business man is occupied, although it is in using the things of the world and in providing for the flesh, is yet fully justified, and its beneficence is acknowledged. One may say : "All this is but a part of the estimation in which men of affairs are now held by Catholic and Protestant, by Calvinist and Unitarian, by Deist and Atheist alike." But is it so ? Is this view of the world and of the material doings of men, which are symbolized as "the flesh" in the text, consistent with the creeds by which the world is condemned and all things in it, and in which it is held that the life of man is misspent unless it is devoted to a little, petty, selfish undertaking for saving his own soul,—a matter about which he need not worry himself in the slightest measure, if he does what is given him to do in this world as well as he knows how to do it ?

The hardships and trials of life may hide from us much that it would be helpful to know ; yet is there not in every man a spark of that inspiration, however dim, which may lighten the way and may bear witness to the life that is beyond ?

> "The one remains ; the many change and pass.
> Heaven's light forever shines, earth's shadows fly.
> Life, like a dome of many-colored glass,
> Stains the white radiance of eternity,
> Until death comes and shatters it to fragments."

Why the work of life should be so hard, we cannot tell. What it must have been before the inventions of science had lightened the work we cannot imagine. This much we do know : that by patient, honest work the character is formed and capacity is developed. We know that the old Hebrew myth, that labor is a curse imposed upon man because of his sin, has no foundation. We know that work is a beneficent necessity, through which men are brought under the healthy stimulus of prospective want to the highest plane which their time and opportunity in this world will permit. We know that the functions of

men of affairs are of the utmost beneficence, even though their work pertains to matters of the world and of the flesh.

I suppose each man's conception of his relation to the eternal, which must be the foundation of all religion, will vary according to the individual development of the man himself. Many may be aided by forms and symbols which to others convey no meaning. What matter? If the conception of religion is true and honest, the life will correspond; if the conception of God implies a power exerted in a mean and unjustifiable manner, then the life may correspond to that type of what is called religious, and may be very ignoble. To my own mind there is something very obnoxious and repellant in the common separation of religion from life, which is implied in the theory of sudden conversion or of revivals; yet more in the ordinary forms of exhortation, by which it is implied that all men must be sinners until they shall be saved in a particular way. Is it not, in nine cases out of ten, either an act of unconscious hypocrisy or of intellectual dishonesty when men apply to themselves in their attitude toward their Creator terms which they would resent with the utmost indignation if they were applied to them by others? I do not think common forms of religion will either gain or retain a strong hold upon men who have passed beyond the phase of superstition, so long as its terminology differs so much as it commonly does from the phrases, forms of speech, and tones or inflections of the voice which are used in every-day life. It is for these reasons that, while I have never felt called upon to join any particular church or to become any thing more than a member of a Unitarian parish, I look upon the ideas which are symbolized under the name of Unitarian as being necessary to the progress both of mental and of material welfare throughout the world.

The open secret which few yet seem to comprehend, although all act consistently with it unless restricted in their individual liberty, is that not only individual wealth, but the common welfare of States and Nations, is attained in most ample measure through interdependence, and not through independence. The higher law on which modern society is founded is that of mutual service.

Those who apply reason to the conceptions of religion may fully attain the leadership which they are rapidly gaining, and to which they are entitled in all sects and denominations by joining religion and life, which have been so widely separated in creed and practice heretofore. The basis of faith will be found in the recognition of the fact that there is a law of harmony in the universe, ultimately controlling the relations of men to each other under the conditions of mutual service. as truly as the planets in their courses are bound by the supreme law which is becoming more and more within the knowledge and comprehension of men as science is more and more developed.

As time goes on I think it cannot fail to become a part of the common economic faith that all the forces which make the rate of wages or the margin of profit, and which control commerce among men, tend to remove the more noxious and degrading conditions from the work ; to lessen the necessity of unduly hard work in mechanical and manual labor ; to secure to the workmen a constantly increasing share of an increasing product ; and to diminish the number of drones who live on the proceeds of others' labor without doing any service in return. It is also possible that within two or three generations the old economic dogma, which is in its place as vicious as the bad creeds from which I have quoted, and perhaps more harmful in its effect upon the material conditions of men than these old pseudo-religious creeds now are in their effect upon spiritual conditions,—namely, *that in all commerce what one gains another must lose*,—may be displaced by the righteous conception that *in all commerce, whether between men of the same nation or with other nations, both parties gain, and that commerce exists simply by the force of the mutual service which is wittingly or unwittingly rendered by every man who buys and sells and gets gain, dealing honestly in wholesome goods and wares.* When this economic faith is joined to a true spiritual insight, then, indeed, all the forces by which human action is guided and controlled will work together for peace, order, industry, good-will, and plenty among the nations. Then may the vision of the poet become indeed a living truth :—

" Down the dark future through long generations
The echoing sounds grow fainter and then cease ;
And like a bell, with solemn, sweet vibrations,
I hear once more the voice of Christ say, ' Peace.'

" Peace ; and no longer from its brazen portals
The blast of war's great organ shakes the skies ;
But, beautiful as songs of the immortals,
The holy melodies of love arise."

My friends, this is an age of freedom. We have attained personal liberty, freedom of thought, freedom of action : we may yet attain freedom of commerce in the broadest sense, in which all men may serve one another. May we not find in these conditions that faith which is " the substance of things hoped for, the evidence of things not seen " ? If this is not so,—

" Of what avail the plough and sail,
Or land, or life, if freedom fail ? "

INDEX

INDEX.

A

Acreage, population and debt in ratio to, 84
Agriculture, extensive, objections to, 208 ; intensive, advantages of, 208
Alabama, production of iron, 20
Amoskeag Manufacturing Co., model factory, 322
Anarchists, in typical township, 223
Andover Theological Seminary, 379
Andrew, Governor John A., wise advice, 28
Annual product, how valued, 144
Architect, profession of, how it may be raised, 334
Architecture, combustible, cost of, 310 ; examples of, 313
Armies, ratio of exempts to service in, 86 ; source of weakness, 96
Atwater, Wm. O., soda laboratory, 159

B

Banking, margin of profit, 230 ; support of, a test of intelligence, 230
Barrett, F. N., estimate liquor consumption, 180
Bastiat, Frederic, Harmonies, 299 ; relation of wages to capital, 263 ; works incomplete but suggestive, 11
Bayard, Secretary, Thomas F., instructions to consuls, 90
Bones, dry, or otherwise, 97
Boot-blacks, how they add to wealth, 153
Boston, city of, taxation of, 362 ; distribution of taxes, 226
Bread, cost of distribution, 223 ; heat required, 345

C

Cairnes, J. E., law of wages, 9
Calories, standard of nutrition, 340
Canada, no guard against, 16 ; repelled by petty taxes, 16 ; mischief of tariff on products, 235
Canadians in factories, work and wages, 193
Capacity, to him that hath shall be given, 91 ; to produce in inverse proportion to land occupied, 363 ; mental, prime factor in production, 353
Capital and labor, shares of product, 305
Capitalist, adds more than he earns, iv
Capital, serves labor by increase of product, 147 ; never exceeds two or three years' product, 198 ; no power of compulsion, 242 ; how saved, 299 ; labor helpless without, 358 ; national, proportion to product, 302
Carey, Henry C., *reductio ad absurdum*, 82 ; on wages and capital, 299 ; relation of wages to capital, 263
Carolina, South, needed manure not secession, 15
Cents, fifty, a day per capita, how to add the test of reform, 220 ; five, per day, profit or loss, 202
Century, nineteenth, what has been done, 28 ; twentieth, what will be done, 28
Character counts more than capital, 246, 386
Chicopee Manufacturing Co., model factory, 323
China, how we trade with her, 217
Churches annually burned, 313
Classes, privileged, what will they do for a living, 97
Clothing, equality of, 242 ; standard of, 104
College buildings and libraries annually burned, 313
Combination leads to abundance, 6
Comfort, how attained, 248
Commerce, alphabet of, 217 ; law of, mutual service, 385 ; supreme law, 388
Common-sense, more potent than Congress, 244 ; ultimate guide to reform, 243
Communists few and feeble, 224
Competition leads to abundance, iv
Conditions of men, three methods of improving, 292
Congress, debates in, mostly examples of unintelligent mediocrity, 271
Construction, how to make safe, 312 ; slow burning, 309

Consumption limited, production unlimited, 6
Consumption, measure of, 293 ; five modes of, 295 ; graphically illustrated, 296
Cookery, domestic, first place in reform, 240
Cooking, bad, prime cause of poverty, 239 ; waste in, 239 ; experiments in, 341
Cooking Box, Norwegian, developed, 343
Co-operation, why not if you want to ? 229
Cost low, wages high, reasons for, 129
Cotton, consumption per capita, 339 ; cheap, by free labor, 19 ; condition of supply, 18 ; free and slave product, 65 ; product of, compared by periods, 65
Cotton fabrics, exchange of, with China, 26
Cotton fibre, why the South controls, 18
Cotton seed, importance of, 19
Credit, effect on prices, 237
Creeds, antique and horrible, 380 ; prices of, 380 ; value inverse to price, 380
Creed, work out your own, 11 ; Catholic, honest at least, 382
Cuba, deposits of iron, 288
Currency, per capita, 187 ; prices and wages compared, 188
Custom-houses not inconsistent with free trade, 366

D

Debts, bad, insignificant compared to payments, 383 ; European and United States, 85
Devil, not always in the flesh, 379
Disarm or starve, the warning of liberty, 71
Dismal science, political economy not a, 3
Distribution, the main question, 18 ; unequal, becomes equitable, iv
Dogma not necessary to faith, 380
Domain, national, proportion in crops, 41
Domestic industry, how to promote, 282
Drink, consumption of, 180 ; cost per year, 39
Dutch, sources of power and wealth, 17
Dwelling-place, how to equalize, 243
Dynasties, doomed, 92 ; how will they get a living, when a settlement of accounts has been called ? 97

E

Earth's capacity not touched, iii
Economic science in U. S., true leaders in, 10
Eggs, value of, compared to iron, wool, and silver, 37
Egypt despoiled by debt, 93
Eight-hour dream may become reality, 178
Emancipation of white man, 244
English-speaking people, trade union of, 267
Ensilage, importance of, 15
Enthusiast, crack-brained, may be true prophet, 266
Euclid, none in economics, 10
Europe, a prey to fear, 207 ; division and dissension in, 48
Everett, Dr. Wm., old aphorism in new form, 2 ; modern aphorism, 379
Exports, must balance imports, 232 ; number dependent upon, 45 ; occupations resting upon, 233

F

Factory building, old style, 312
Faith, basis of, 387
Farmer, choice of subjects of taxation, 365
Farmer's daughters, hours of work and wages, 193
Farms, number and how occupied, 44
Felon, unconvicted, must run a railway beneficially, 377
Fiat money, fraud, 182
Field, Marshall, model warehouse, 315
Financial danger avoided, 185
Fire-door, automatic, 332
Fire losses, fault of owners, 311
Fisheries, failure of treaty, 81
Fishery question, discussion of, a national humiliation, 236
Fish, taxation of, a ridiculous absurdity, 236
Food, basis of morality, 379 ; measure of, 340 ; within one year of exhaustion, 303 ; equal consumption, 242 ; relative cost of, 114 ; cost per year, total, 37 ; standard ration, 103 ; providers, 122
Foreign population in Massachusetts, 17
Free trade, continental system, 244 ; objective point of all, 253 ; test of, 232
Frying-pan, infernal machine, 342
Fuel, cost for cooking, one year, 344

G

Gannett, Henry, estimate of wealth, 301
Garfield, President, clear conceptions of, 11
George, Henry, sincere but fallacious, 351 ; fallacies of, 10
German, farmer and peasant, expenses, 46, 47
Gold and silver, product compared, 116
Government, cost of, 364
Grain, product per capita, 62 ; crops of, compared by periods, 61 ; average product, 1865–1885, 33
Grant, President, stopped inflation, 244
Great Britain, basis of power, 265
Grecian order of society, restoration not desirable, 268
Gumption should be taught, 21
Gunpowder equalized forces, 207

H

Hawley, F. B., method of increasing wealth, 153
Hay, product compared by periods, 63
Heat, measure for good cooking, 345
Hell, unholy flames of, 381
Hospitals, annually burned, 313; whited sepulchres well devised for cremation of inmates, 329
Hotels annually burned, 313
Hours shortened, 193

I

Imports, how diverted, 45; 1881–1885, quality of, 76; of typical township, 214; quality of, 234; what should be taxed, 284; sources of revenue, 286
Incapacity, political, probable in Congress of 1889, 84
Income, measure of, 355
Incomes of rich, how consume , 294
Industrial intelligence, in all commerce men serve each other, iii
Inflation, veto of bill, 244
Insurance, fire, progress of, 309; life, gain in, 69
Interdependence, peace, order, and industry, iii; the rule of nations, 267
Interest, fall in rate, 172
Intoxicants, revenue from, 365
Inventors, destructive work of, 221
Iron and steel, cost of protection to, 257; cost of taxation on, 278; final cost of protection, 287; foundation metals, 257; how to protect, 288; occupied in production, 257; production and consumption U. S., 274; relative consumption U. S., 257; relative prices Great Britain and U. S., 276
Iron, an insignificant product, even in Pennsylvania, 281; cheap production, 5; disparity in price, 64; labor-cost of, 288; production a necessity, 260; production unimportant, 20; product of, compared by periods, 64
Iron, bar, prices compared, 287
Iron ores, dependence of Great Britain, 277

J

Jurist, highest profession, 2

K

Kings, dukes, and lords, superfluous, 206

L

Labor and capital, shares of product, 305
Labor, capital inert without, 358; claims of, must be considered, 207; relieved by inventions, 193
Laborers, German, enemies of, 46
Laissez faire—laissez passer, not a fixed rule, 6
Land, choice of position valued, 360; development by railways, 305; exhausted when treated as a mine, 158; possession more easy than ever, 304; possession necessary to use, 359; raw, has no value, 225; single tax, fallacy of, 227; single tax, ill effects of, 226; single tax treated, 350; valuation, in typical township, 212
Law, higher, ample subsistence for all, iii
Legislation on fisheries, integrity justified at the cost of intelligence, 81
Liberty, cost of, 183; individual, sole condition of welfare, 5; price of, 78;
Life, a conversion of forces, 240; curves of, 70; enjoyment of, v.; human, purpose of, iii; price of, 200; three phases, material, mental, and spiritual, 3
Living, cost of, proportion of product expended, 293
Loan, forced, paper money redeemed, 185
Louisiana, purchase of, changed course of history, 82
Luxury, how much, on 50 cts. a day, 213

M

Maine, Sir Henry, trust in humanity, 377
Malthus, fallacies of, 7; influence of, 9; hypothesis of, 156
Man, American, not deteriorated, 23; Southern, bigger waists, reason of, 23
Mankind, as lazy as it dares to be, 216
Manufactures, household, 211
Materials, crude or raw, free of taxation, 234
McBryde, Pres't J. J., studies in ensilage, 15
McCulloch, Hugh, estimated maximum United States debt, 75
Meat boiled is meat spoiled, 343
Millions, five hundred, cost of taxes on iron, 287
Mind and character, prime factors in production, iii
Mind of man, prime factor in production, 1
Miracle of the loaf, 14
Missing science, *coctor non doctor*, 339
Mivart, St. George, criticism, 382
Model mill, one-story structure, 327
Money, cheap, a delusion, 236; circulation in typical township, 221; in circulation per capita, 187; in circulation, prices and wages compared, 188; not quantity but quality, 189; quality good, quantity will take care of itself, 221
Mortgage, shall one generation bind another? 97
Multiple standard, application of, 170
Myth, Hebrew, labor a curse, 386

N

Nation, ability to bear taxation, iii
National domain, compared with Europe, 55
Nations, strength of, 53 ; weakness of, 80
Needful, one thing, 175
New England, secret of, 22
Nitrogen, importance of, 4 ; whence, 14
Nobility, Chinese titles approved, 206
Nutrients, must be equally supplied, 291 ; necessary proportions of, 340

O

Occupations, in iron and steel, 257 ; in typical township, 210 ; of people analyzed, 204 ; rest on individual capacity, 129
One-story mill, plan of, 324
Ores, iron, abundance in North America, 277 ; fine ore becoming scarce in Great Britain, 277
Oven, description of paper oven, 341

P

Pauper labor, cause of, 49 ; under-fed, therefore ineffectual, 177
Peace, vigorous prosecution of, 28
Penalties of progress, displacement of labor, 113
Pennsylvania, blunders of, 280
Phases of life, material, mental, and spiritual, 3
Physiocrats, theory of land, 351
Plymouth Cordage Co., model one-story mill, 327
Political economy, moral and ethical aspect, 264
Population, Europe and United States, 55 ; growth of, not yet comprehended, 13
Population of United States, compared by periods, 57
Pork, waste of grain, 109
Potato gospel allied to spiritual, 2
Poverty, Anti-, societies obscure the question, 351
Poverty, removed only by self-help, 3
Power, productive, in what does it consist, 353
Price, disparity a disadvantage, 256
Prices, fall in, 115
Privilege, domination of, stops progress, 3
Product, average, per workman, 200 ; how valued, 140 ; per capita, compared, 88 ; annual, in typical township, 213
Production, causes of variation in, 88 ; relative to taxation, 92
Products, how distributed, 292
Profit, margin of, diminishing, 126
Profit sharing, is it profitable ? 230
Progress from poverty, 130, 163
Prohibition, effect on industry, 237
Property insured against fire, 310
Property, possession rests on service, 201 ; private, how developed, 358
Protection, advocates of, sincere, 255 ; test of, 231 ; with incidental revenue, advocated by the feeble-minded, 253
Protective system, modify carefully, 256
Protective tariff, protest against, William Gray, Abbott Lawrence, and others, 261
Protective theory, basis of, 254
Provisions, cost of moving, 1865 and 1885, 34
Pulse necessary with rice, 342

Q

Quarrel with Canada due to stupidity and greed, 236
Quesnay preceded Henry George, 351

R

Railway, miles of, compared by periods, 58
Railways, charges per miles, 58
Ration, daily, analyzed, 35
Relief, cannot be *given*, must be earned, 3
Religion and life, connection of, 377
Rent, judicial, failure in Ireland, 227
Restrictions on labor, bad effect of, 177
Revenue, how to reduce, 283
Revolution, war of, caused by an economic blunder, 7
Ricardo, fallacies of, 8 ; hypothesis of, 156 ; influence of, 9
Rice-fed races, none such, 342
Rich, ameliorate the condition of, 248
Richardson, H. H., architect, methods of, 314
Roman empire, relics of, 220
Roof, bad forms, 319 ; true roof specified, 328 ; factory, safe form, devised by W. B. Whiting, 320 ; purpose of, 314
Roofs, crazy, description of, 314
Rumford, Count, experiments of, 343

S

Salvation, work out your own, 11
Sam, Uncle, gain in power of production, 194
Sausage, German, beat the French rifle, 49
Savings banks of Massachusetts, gain in deposits, 73
Scab, a future title to honor and credit, 245
School, common, solvent of race, creed, and condition, 62
Secret, the open, interdependence not independence, 246
Senators, New England, historic rubbish on fisheries, 81
Service, mutual, developed most fully in United States, 161

Shakers, logical method of, 224
Shelter, how to provide more rooms, 243
Ships weave a web of concord, 378
Silver and gold, product compared, 116
Silver question treated, 115
Single tax, effect of, 301 ; would concentrate land in fewer hands, 373
Slavery destroyed itself, 244
Smith, Adam, method of, 7
Socialists, abortive efforts of, 223 ; German state, have misled young students, 9
Social science, experimental, 10
Soul developed by work, 3
South Carolina University, 29
Southern States, economic blunders, 281
South, industrial progress. 18 ; new, resources of, 5
Specie payment, how resumed, 124
Standard, multiple, 167
Statistical investigation, true importance of, v
Statistics, importance of, 161
Stewart, William P., actuary, curves of life, 69
Strikes, failure of, 139
Subsistence, sources of, 13
Sunny South, resources of, 4
Survival of intelligent and capable, 13
Swank, James M., adjustment of figures on iron, 287 ; authority on iron, 260 ; cited on prices of iron, 287 ; labor-cost of iron, 288

T

Tariff reform, project for, 286
Taxation, a form of consumption, 296 ; at what point to tax, 362 ; limit reached in France, 93 ; means work, 352 ; ratio to product, 303 ; relative burden of, 83 ; relative to production, 92 ; succession approved, 355 ; voluntary in part, 374
Taxes, in typical township, 215
Tax, single, on land, 225 ; merits of, 374 ; no novelty, 227
Theory and practice, workmen's comments, 247
Time, the only common property, 50
Tin plates, what we buy them with, 259 ; cost of protection to, 258
Township, typical, 6,000 people, 209
Trade, foreign, balance wheel, 233
Treaty on fisheries, discreditable debate, 81
Tropical conditions, not conducive to progress, 4
Trust, perversion of, by railway president, 378
Turgot applied Quesnay's theories, 351

U

Unitarian ideas symbolized, 387
Unlearned professors, equal standing, 1

V

Vanderbilt, the great communist, 207

W

Wages, each man makes his own rate, iv ; gain by classes, 72 ; gain in power, 112 ; gain in purchasing power, 106, 169 ; high—cost low, explanation of paradox, 90 ; high rates, and low cost of work, 90 ; how increased, 137 ; iron law, so-called, 162 ; low and high cost of labor, 218 ; raised while cost is reduced, 222 ; rate increased, cost reduced, 132 ; what makes rates high, 89 ; what makes the rate of, 143
War, Civil, fruits of, 29 ; cost of, 182 ; labor expended in, 183
War of Revolution, cause of, 67
Waste, rich and poor compared, 217, 298
Wealth and population, relative gain, 118
Wealth, measure of, 149 ; natural analysis of, 300 ; progress in, 66
Webster, Daniel, a true prophet, 271 ; argument for free trade, 263 ; objections to protection, 261
Webster, Pelatiah, riches of a nation, 53 ;
Welfare, material, cause of, in U. S., 77
Wells, David A., researches on iron, 273
What are you going to do about it ? 203
Weeks, Joseph D., authority for wages and prices, 104
Wheat, production in California, 13 ; product in Dakota, 44 ; relative cost U. S. and Germany, 47
Whigs, cotton, blunders of, 282
Wool, consumption per capita, 339 ; effect of duties on, 258
Wordsworth, quotation from, 30
Workman, income, how spent, 241
Workmen's rejoinder, 248
Work of life, one half for food, 4
World and flesh, not so bad as they seem, 383
World, the best that could be made, 2
Wright, Commissioner, C. D., food statistics, 164

THE
INDUSTRIAL
PROGRESS
OF THE
NATION

ATKINSON

PUTNAM